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RESULTS OF THE TUCSON AIRPORT AREA REMEDIAL INVESTIGATION, PHASE I

VOLUME III

AN EVALUATION OF THE POTENTIAL SOURCES OF GROUNDWATER CONTAMINATION NEAR THE TUCSON INTERNATIONAL AIRPORT TUCSON, ARIZONA

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INTRODUCTION

Groundwater pollution in the vicinity of the Tucson, Arizona, International Airport has been known or suspected since the early 1950's. At that time, although some drinking water wells had been affected, the full extent of the pollution was not investigated. In some measure this appears to have been due to efforts on the part of government and industry to control the effects of groundwater pollution by controlling the above-ground pollution sources and by providing alternate supplies to those affected. It is also possible that the implications of the presence of very low levels of organic pollutants in drinking water were not fully appreciated by those involved at the time. In 1981, extensive groundwater contamination by volatile organic compounds (VOC's) was discovered. The most abundant pollutant found was trichloroethylene (TCE), which has since been shown to occur in an area roughly extending from the Hughes Aircraft Company facility (HAC; Air Force Plant #44 on map) in a north-northwesterly direction to Irvington Road (Figure 1). Other contaminants have also been found in the plume. These include chromium, isomers of dichloroethylene (DCE), benzene, chloroform, and other organic compounds. TCE is a compound suspected of being a carcinogen by the National Research Council, and has been placed on the Environmental Protection Agency's (EPA) list of Priority Pollutants (1). The Arizona Department of Health Services (ADHS) adopted an action limit of 5ppb (parts per billion) for TCE in drinking water supplies (2).

The extent and severity of the contamination prompted action from Federal agencies. The U.S. Air Force began investigations of groundwater conditions in 1981, and in 1982 embarked upon a program of aquifer restoration south of Los Reales Road. The Tucson Airport Area (TAA) was placed on Superfund's original National Priority List in 1982. EPA began investigations under

Superfund to investigate further the sources and occurrence of groundwater contamination north of Los Reales Road. ADHS applied for and received funding from EPA under a Superfund cooperative agreement, and was named lead agency for the TAA Remedial investigation. A Remedial Investigation Team (RIT) was formed, composed of representatives from EPA, ADHS, the Arizona Department of Water Resources (ADWR), and the City of Tucson, as well as Dr. Kenneth Schmidt, a groundwater quality consultant. This report was prepared to fulfill one of ADHS' obligations under its cooperative agreement with EPA and as a member of the TAA-RIT.

PURPOSE, SCOPE AND METHODOLOGIES

PURPOSE

The purpose of this report as stated in the Remedial Investigation workplan (3) is to "find parties responsible for groundwater pollution, assign degrees of responsibility to the various parties, and to present evidence for potential legal proceedings." It was recognized during the course of the investigation that the assignment of degrees of responsibility, in terms of amounts of contaminants occurring in groundwater attributable to specific sources, was dependent on a hydrogeologic analysis of the aquifer system. This is beyond the purview of this report; such conclusions may be found in the RIT report prepared by Dr. Schmidt (4). This document does contain conclusions regarding the relative potential of various sources to have contributed to groundwater pollution, based on the amounts of chemicals used, disposal practices, and other factors described herein.

SCOPE

Geographically, this report considers primarily those potential sources in the vicinity of the main contaminant plume, the most widespread contaminant of which is TCE (Figure 1), although chromium, DCE, and other substances also occur. The main plume is by far the largest near the airport, contains the highest contaminant concentrations, and received the bulk of investigative attention from the RIT. Potential sources located near two smaller plumes east of the main plume were also investigated. Chronologically, this investigation was concerned with activities which took place beginning in 1942, when Consolidated Aircraft opened an airplane refitting facility, extending to the present day.

This investigation focused primarily on those sources with the potential to have contributed to TCE, chromium, and DCE pollution. Other types of sources, such as leaking fuel tanks, are known to exist near the airport. These sources are described in the following text, but care has been taken to conceptually separate sources of TCE and chromium contamination from sources of other kinds of groundwater contamination.

METHODOLOGIES

Several documents have already been prepared on behalf of government entities and potential responsible parties which describe potential contamination sources in the area. Examples include reports prepared by Eberhardt (5), Hargis and Montgomery, Inc., 1982 (6), and Hargis and Montgomery, Inc., 1983 (7); these are referenced frequently in this report. Information from previous source investigations was compiled, and their recommendations provided a basis for many of the activities

which took place as part of this study. Previous source studies provided the information used to select potential source areas discussed in this report. Particularly useful in this regard was the source investigation report prepared by Eberhardt (5), who ranked potential sources according to the likelihood of their having actually contributed to groundwater pollution near the airport.

Apart from previous source investigations, several types of information were used in preparing this report. These included historic records, aerial and other photographs, Resource Conservation and Recovery Act RCRA § 3007 letter responses, interviews with persons having knowledge of potential sources, and surface and subsurface chemical quality data. Historic records investigated included lease files obtained from Pima County and the U.S. Department of Defense. Leases provided definitive information regarding dates of occupation of various sites, especially the airport hangar area, by potential responsible parties. Dates of tenancy given by leases cannot be expected to correspond exactly to the time during which pollution-causing activities took place. They do, however, provide a maximum amount of time over which such events could have occurred and be attributed to any given party. Descriptions of property boundaries provided exact information as to where potential source activities may have occurred. Other historic records sources investigated were the local newspapers, the Tucson Citizen and the Arizona Daily Star. Stories in these papers provided detailed accounts of specific activities at potential source areas, in particular at large industrial installations. Such stories also provided information about the intensity of work at such installations, in terms of approximate employment and shifts worked.

Aerial photographs were obtained primarily from US EPA's Environmental Monitoring Systems Laboratory in Las Vegas, Nevada. Interpretation of aerials was provided by EPA in the form of two reports, one describing conditions north of the Hughes Aircraft Company facility at Air Force Plant #44 (8), the other describing conditions at Air Force Plant #44 (9). Photographs were taken in 1949, 1954, 1958, 1967, 1974, 1976, 1980, and 1982 and were precisely dated. In addition, two aerial photos were provided by an interviewee showing the hangar area during its occupancy by Grand Central Aircraft and Consolidated Aircraft. Aerial photographs provided considerable insight into disposal locations, wastewater paths and relative quantities (as judged from phreatophyte growth), and the levels of activities at various locations as judged by the numbers of buildings, aircraft, autos, etc. Aerial photography was also useful in allowing interviewees to point out disposal sites and other features.

Section 3007 of the RCRA, in conjunction with Section 104(e) of the Comprehensive Environmental Recovery, Compensation, and Liability Act (CERCLA) authorize USEPA to obtain information from potential responsible parties. This is usually done via certified mail (a sample § 3007 letter is shown in Appendix A). A number of businesses currently or formerly in operation near the airport provided §3007 letter responses (Table 1; Appendix A). The quality and amount of information contained in these responses was highly variable, as often happens in such investigations (Donald Harvey, USEPA Region IX, personal communication). In some cases, considerable information was provided as to hazardous materials use and disposal; in others, responses appeared to be largely perfunctory. Responses were relied upon to the extent that they tended to reveal details regarding the activities of potential responsible parties. For example, admissions of TCE use by a company were

TABLE 1.

BUSINESSES TO WHOM RCRA § 3007 LETTERS HAVE BEEN SENT BY EPA IN CONNECTION WITH THE TUCSON INTERNATIONAL AIRPORT INVESTIGATION, AFTER EBERHARDT (5)

Arizona Air National Guard **	McDonnell-Douglas Corporation
Burr-Brown Research Corp. **	Mobat-Adamson Tire Co.
Durodyne, Inc.	Newbery Energy, Inc.
Gates-Learjet Corp.	Pacific Motor Trucking Co.
General Electric *	Paul's Aircraft Service
Hamilton Aviation	Perfection Machine and Tool Co.
Hudgin Air Service *	Sampsonite *
Hughes Aircraft Co. *	Tucson Aviation Center
IBM Corp. (6950 S. Country Club) **	TURCO Products, Inc. (chemical supplier)
IBM Corp. (5580 S. Nogales Hwy) *	Veeco-Lambda Electronics
Industrial Tool and Die Co.	West-Cap Arizona **
Keystone Helicopter Co.	Warner Propeller and Governor Co. **

* = response documented non-TCE solvent use or disposal

** = response documented TCE use or disposal

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considered to be essentially truthful, since such admissions could be a future liability to a company. On the other hand, denial of TCE use was not necessarily considered accurate since a company could have a vested interest in minimizing or denying such use. §3007 letter responses were examined for inconsistencies, such as denial of solvent use by companies engaging in processes known to use solvents, or reported large-scale chemical use without corresponding disposal information. Companies whose responses were considered suspect by US EPA personnel were visited by Field Investigation Teams (FIT's). The results of these visits are noted in this report, and were considered reliable guidelines in assessing the pollution potential of these companies.

Interviews were conducted with persons believed to have knowledge of historic activities near the airport. These persons included employees of businesses suspected of contributing to pollution, local residents, and others with knowledge of local conditions. Names of possible witnesses were obtained from ADHS files, from historic records, and from referrals from businesses (following review of employment records), interviewees, and RIT members. Questions varied from interview to interview, dependent upon the type of knowledge an interviewee was likely to have. Witnesses were questioned primarily regarding matters within their particular areas of knowledge or expertise (purchasing agents were questioned about materials ordered, workers were asked about particular manufacturing processes in which they participated, etc.). Secondarily, interviewees were asked to provide any general knowledge they may have had regarding the generation and disposal of wastes, especially liquid wastes, near the airport. Where applicable, persons were shown historic aerial photographs to aid them in identification of disposal areas. Witnesses were interviewed in person, and also by telephone. Most face-to-face interviews were recorded. The recordings are on

file at ADHS. In addition to original interviews, verbatim transcripts of interviews from previous investigations in ADHS files were used to evaluate potential contamination sources. Names of interviewees have been withheld in this report to protect their privacy.

The assessment of the validity of information provided in interviews was in part subjective, but was also made according to the following criteria:

Direct knowledge of potential pollution-causing activities -- Information from interviewees was considered most reliable if these persons had direct, intimate knowledge of potential pollution-causing activities. This criterion was applied most often to workers at suspect industrial facilities. For example, information regarding disposal practices was considered more reliable if given by a person who had actually participated in disposal practices than if given by a person who had witnessed such activities on a more casual basis.

Recollection of verifiable detail--More weight was given to interviews of people with strong recollection of details, such as exact dates of events, names of co-workers, descriptions of the workplace, etc. Detail was verified through newspaper articles, lease documents, and information provided by businesses in the area, such as lists of former employees. People claiming to remember chemical product numbers were asked to identify such numbers from a list containing real and false numbers to provide a measure of the accuracy of their recollections.

Corroboration by other witnesses--Where several interviewees had knowledge of specific activities, their accounts were compared. Consistent accounts of activities were considered more likely to be accurate than those which differed in some respect.

Consistency of response--Interviewees were asked critical questions more than once during interviews, and summaries of information provided during the interview were read back to interviwees. This helped insure that interviewees understood the questions asked and provided consistent information, and that the interviewer understood the information being provided.

Lack of ulterior motives--Interviewees who were former employees of potential polluters were questioned as to reasons for termination of employment and what feeling the interviewee held toward former employers. Employees were also asked as to their position with former employers. This was done to assure that the interviewee was not attempting, for personal reasons, to use the source investiga- tion to injure a former employer. Conversely, interviewees who held high positions, or received company pensions had responses analyzed in light of potentially overriding company loyalty.

Most interviewees provided information that was considered by the investigator to be highly reliable, and which provided considerable insight into the nature of historic activities at the Tucson airport. A summary of interviews used in this investigation, including evaluations of each witness in light of the aforementioned criteria, is provided in Table 2.

TABLE 2
SUMMARY OF INTERVIEWS USED IN EVALUATING POTENTIAL SOURCES OF GROUNDWATER CONTAMINATION NEAR THE TUCSON INTERNATIONAL AIRPORT

Criteria (see text, pp. 11-12)

No. in Text	Information Provided	Interview Type	Direct knowledge of activities	Recollection of verifiable detail	Corroboration by other witnesses	Consistency of response	Potential ulterior motives	Remarks
1.	Consolidated Aircraft Co. activities	Personal	Witnessed, did not participate in disposal	Good	Other witnesses not located	Good	Fired by company; now probably insignificant	Probably reliable, but did not participate in disposal
2.	Consolidated Aircraft Co. activities	Telephone	Little recollection	Poor	Insufficient information	Poor	None	Little usable recollection
3.	Consolidated/Grand Central Aircraft	Telephone	Little recollection	Poor	Insufficient information	Poor	None	Little usable recollection
4.	Grand Central Aircraft Co. activities	Personal	Participated in decocooning of B-29's	Fair	Some differences in details of disposal methods	Good	None	Generally reliable though recollection of details was incomplete
5.	Grand Central Aircraft Co. activities	Personal	Participated in modification of B-29's	Good	Strong corroboration with #6, below	Good	None	Considered highly reliable due to recollection of detail
6.	Grand Central Aircraft Co. activities	Personal	Participated in waste disposal	Good	Strong corroboration with #5, above	Good	None	Considered highly reliable due to recollection of detail
7.	Grand Central Aircraft Co. activities	Personal, summary from ADHS files	May have participated in decocooning	Not evaluated	General corroboration	Not evaluated	Not evaluated	General information provided corresponds with other witnesses

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Criteria (see text, pp. 11-12)

No. in Text	Information Provided	Interview Type	Direct knowledge of activities	Recollection of verifiable detail	Corroboration by other witnesses	Consistency of response	Potential ulterior motives	Remarks
8.	Grand Central Aircraft Co. activities	Personal, transcript from ADHS files	Did not participate in use/disposal of hazardous material	Fair	General corroboration	Not evaluated	Not evaluated	General information provided corresponds with other witnesses
9.*	Grand Central Aircraft Co. activities	Personal	Purchasing agent for company	Fair	General corroboration with No. 10	Good	Differences with company management; probably insignificant	Provided general information on chemical purchases
10.	Grand Central Aircraft Co. activities	Personal	Purchasing agent for company	Poor	General corroboration with No. 9	Poor	None	Provided general information on chemical purchases
11.	Grand Central Aircraft Co./Homeowner's suit	Personal	Owner of contaminated well	Good	Good agreement with Nos. 12 and 13	Good	None	Considered reliable
12.	Grand Central Aircraft Co./Homeowner's suit	Personal	Owner of contaminated well	Good	Good agreement with Nos. 11 and 13	Good	None	Spouse of No. 11, considered reliable
13.	Grand Central Aircraft Co./Homeowner's suits	Telephone, summary from ADHS files	Owner of contaminated well	Good	Good agreement with Nos. 11 and 12	Not evaluated	None	Considered reliable due to agreement with other former homeowners
14.	Grand Central Aircraft Co./Homeowner's suit	Personal, transcript from ADHS files	Univ. of Az. Engineers investigated complaint	Good	Other witnesses not located	Not evaluated	None	Considered reliable due to recollection

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Criteria (see text, pp. 11-12)

No. in Text	Information Provided	Interview Type	Direct knowledge of activities	Recollection of verifiable detail	Corroboration by other witnesses	Consistency of response	Potential ulterior motives	Remarks
15.	Douglas Aircraft Co. activities	Telephone	Former plant manager, possible knowledge of chemical use and disposal	Fair	Agreement with Nos. 15 and 16 regarding hazardous materials use	Good	Receives company pension	Potential ulterior motive; may not ha direct knowledge of TCE or Cr use
16.	Douglas Aircraft Co. activities	Telephone	Engineer; did not use hazardous materials	Good	Agreement with Nos. 15 and 17 regarding hazardous materials use	Good	Receives company pension	Potential ulterior motive; did not us materials directly
17.	Douglas Aircraft Co. activities	Telephone	Maintenance foreman, good opportunity for hazardous materials use	Good	Agreement with Nos. 15 and 16 regarding hazardous materials use	Good	Receives company pension	Potential ulterior motive; most likel of Douglas interviewees to have direct knowledge of hazardous material use; reliable
18.	Activities at airport general	Personal	Former airport manager; witnessed but did not engage in disposal activities	Good	Differed with other interviewee regarding landfill use	Good	Possible continuing loyalty to Airport Authority	Difference in details of landfill use makes information difficult to interpret
19.	Air Force activities at hangars	Telephone	Air Force crew chief; engaged in disposal activities	Fair	Other witnesses not located	Good	None	Varied from USAF information regarding length of stay at hangars
20.	Former fire-drill activities	Telephone	Former fire chief; supervised drills	Good	Other witnesses not located	Good	None	Considered reliable
21.	Current fire-drill activities	Telephone	Current fire chief; supervises drills	Good	Other witnesses not located	Good	None	Considered reliable

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SUMMARY OF INTERVIEWS USED IN EVALUATING POTENTIAL SOURCES OF GROUNDWATER CONTAMINATION NEAR THE TUCSON INTERNATIONAL AIRPORT

Criteria (see text, pp. 11-12)

No. in Text	Information Provided	Interview Type	Direct knowledge of activities	Recollection of verifiable detail	Corroboration by other witnesses	Consistency of response	Potential ulterior motives	Remarks
22.	Burr-Brown Corp. activities	Personal; transcript from ADWS files	Participated in disposal	Apparently good	Corroboration with Nos. 24 and 25 regarding existence of drywell; interviewed with No. 23	Good	Dismissed by company	Probably reliable, although interviewee No. 25 denied disposal of hazardous materials in on-site well
23.	Burr-Brown Corp. activities	Personal; transcript from ADWS files	Participated in disposal	Not evaluated	Interviewed with No. 22	Not evaluated	Not evaluated	Provided much less information in interview than No. 22, although did generally corroborate that information
24.	Burr-Brown Corp; Hughes Aircraft Co.	Personal	Witnessed disposal & manufacturing process at HAC & consulted on disposal practices; knowledge of Burr-Brown well	Good	Corroboration in some cases unavailable; however, reports exist (unreleased) documenting interviewee's historic activities	Good	None	Considered reliable
25.	Burr-Brown Corp. activities	Telephone	Knowledge of Burr-Brown well; witnessed non-hazardous materials disposal there	Good	Existence of and position of well corroborates with other Burr-Brown interviewees	Good	None apparent	Emphatically denied placement of hazardous materials down well, contradicting Nos. 22 and 23
26.*	West-Cap activities	Telephone	Participated in disposal of solvents	Fair	Other witnesses not located	Good	None	Information provided regarding timing and volume of disposal differs with company 8 3007 response
27.	Hughes Aircraft Co. activities	Telephone	Witnessed TCE use; did not participate	Good	Other witnesses not located	Good	None	Considered reliable

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*requested name be withheld

Another source of interview-type information that was evaluated in this study was the reports received from the general public via an 88-CRIME telephone line established by the City of Tucson Police Department. Several of these callers were subsequently interviewed in this study or by previous investigators. The number of calls received reporting suspicious activities at individual facilities provided insight into public perceptions regarding responsibility for groundwater pollution. Certain large industrial facilities near the airport were not implicated through 88-CRIME reports. This was considered significant and was interpreted as indicating that such facilities may not have participated in pollution-causing activities.

Surface and subsurface chemical quality data were also used in evaluating potential pollution sources. These data were of several types, and were available in varying degrees for the potential sources near the airport. Historic data describing the quality of wastewater discharges and groundwater, as well as surficial soils, were available for chromium and other inorganic constituents for Air Force Plant #44 and its environs. Recent data for inorganic and organic contaminants are available for surface and subsurface soils and perched groundwater for many areas near the airport, though again data are more abundant for Air Force Plant #44. Interpretation of these types of data is difficult, and was made cautiously in this report. The presence of contaminants in shallow soils and perched groundwater ("perched" having been defined by hydrogeologists studying the area) was interpreted as indicating the previous disposal of materials at the site. The absence of contaminants in such media does not conclusively indicate that disposal did not occur, however, since chemicals can be flushed away or degrade over the long periods of time considered in this study. The presence of chemical contaminants in deep soils was interpreted as a probable indicator of previous disposal, with

the possibility that declining levels of polluted water could also account for the presence of contamination in deep soil zones. Wherever possible, hydrogeologists' interpretations of the occurrence of surface and subsurface contaminants were used to support the interpretations made in this report; these are quoted and referenced where appropriate.

In making a determination as to the probable importance of any given facility or activity in causing groundwater contamination, the following factors were considered:

1. Types of activities that took place at a facility were investigated and evaluated as to their potential for use of chemicals of concern. Chromium contamination was considered to have most likely come from facilities that engaged in plating, documented use of chromium-containing compounds, and stripping or application of zinc chromate-based primers. TCE contamination was considered to have most likely come from facilities which manufactured electronic components, engaged in plating, or which routinely had use for degreasing. In this latter respect, aircraft modification facilities which worked primarily on new aircraft were considered to have had less need for solvents than those whose main work was the overhaul of used or mothballed aircraft.

2. Confirmation of TCE and/or chromium use was sought from a variety of sources, including interviewees, §3007 letter responses, and ADHS historic file reports. The presence of unspecified solvents or stripping agents at a site was not considered sufficient to prove the presence of TCE at that site, since it was discovered during this investigation that a wide range of materials was employed in

the study area for such purposes, ranging from kerosene to precisely formulated mixtures of industrial chemicals. The presence of chromium, which is not easily substituted for, was generally easier to confirm or deny at particular sites than the presence of TCE. The inability to discover the particular types of chemicals in use at a facility was not interpreted as discounting the possibility that TCE or chromium existed there. Affirmations by persons with probable knowledge of chemical use at a facility that TCE and/or chromium were not used were considered significant, however, in assessing a facility's probable pollution potential as regards these chemicals.

3. Information was sought regarding the nature, locations, and volume of liquid waste disposal at individual sites. Facilities with known, large-scale liquid waste streams were considered to be highly likely sources of groundwater contamination. Direct measurements of waste stream quality and indirect evidence such as the proximity of chromium and TCE use to the waste stream were considered in evaluating the pollution potential of these wastes. Unintentional loss of chemicals, such as through spillage and leakage was also considered to have the potential to cause groundwater pollution, as this has been shown to be the case at other sites (e.g., 10).

4. The location of facilities relative to the main plume and the two smaller plumes to the east were evaluated, in consultation with Dr. Schmidt, as to their potential for having contributed to groundwater pollution in these areas. Additionally, the intensity

of activities at given facilities were evaluated, as were the lengths of time and time periods during which the facilities were active. Those facilities at which potential pollution-causing activities were intense (as measured by factors such as employment and facilities expansion) and/or at which such activities took place over long periods of time were considered to have had the most likelihood of causing groundwater pollution.

5. Chemical quality data from soils and perched groundwater, from recent and historic sampling were evaluated as described previously.

All of the potential pollution sources addressed in this report have been evaluated according to these five factors as completely as such information is known. The amount and types of information available for individual facilities is variable, owing in large part to the large amounts of data gathered in previous investigations for Air Force Plant #44. A considerable body of information also exists, however, for other sites, especially the hangar area. This information was taken in large part from interviewees. Where the lack of available information proved problematic in interpreting the pollution potential of a given facility or site, it has been noted in this report. Table 3 summarizes the data discovered for potential pollution sources near the airport.

TABLE 3.

SUMMARY OF TYPES AND AMOUNTS OF INFORMATION USED FOR EVALUATION OF POTENTIAL SOURCES OF GROUNDWATER CONTAMINATION NEAR THE TUCSON INTERNATIONAL AIRPORT

POTENTIAL SOURCE	EYEWITNESS INTERVIEWS[1]	HISTORIC RECORDS	AERIAL PHOTOGRAPHS	§ 3007 LETTER RESPONSE	FIT OR OTHER PREVIOUS REPORTS (SPECIFIC)	RECORDS OF CHEMICALS SUPPLIED OR WASTE DISPOSED	HISTORIC SAMPLING RESULTS[2]	RECENT SAMPLING RESULTS[2]
Consolidated Aircraft	yes, 3	yes, lease files	yes	no	no	no	no	yes[3]
Grand Central Aircraft	yes, 12	yes, lease files newspapers, court records	yes	no	no	yes, chemical supplier	no	yes[3]
Douglas Aircraft	yes, 3	yes, lease files, newspapers	yes	yes	no	no	no	yes[3]
U.S. Air Force (at hangars)	yes, 1	no	no	yes	no	no	no	yes
Tucson Aviation Center (post 1970)	no	no	yes	yes	no	yes, from § 3007 responses	no	yes[3]
Fire-drill areas	yes, 2	no	yes	no	no	yes, from § 3007 response	no	yes
Landfills	yes, 2	no	yes	no	no	no	no	yes
Miscellaneous Industrial sources	no	no	yes	yes	yes, Gates-Learjet FIT	yes, from § 3007 responses	no	yes
Burr-Brown	yes, 4	no	yes	yes	yes, FIT	yes, from § 3007 responses	no	no
West-Cap Arizona	yes, 1	no	yes	yes	yes, FIT	yes, from § 3007 responses	no	no
Hughes Aircraft/ Air Force Plant #44	yes, 2	yes, ADHS file correspondence	yes	yes	yes, FIT and private consultant	yes, from § 3007 responses	yes	yes

Notes:
1. Numbers in this column indicate number of persons interviewed. Interviewees may have given information on more than one contaminant source.
2. Includes soil, effluent, and perched groundwater sampling.
3. EPA and ADHS soil sampling.

CONTAMINANTS FOUND IN GROUNDWATER NEAR THE TUCSON INTERNATIONAL AIRPORT

TRICHLOROETHYLENE (TCE)

TCE is a colorless, volatile liquid used primarily as a solvent in vapor and liquid phase degreasing. TCE has been extensively used in this capacity to clean mechanical parts, and to prepare surfaces for metal plating and circuit board production. All of these uses probably occurred in the study area. U.S. production of TCE totaled 234,000 metric tons in 1980 (USEPA, 1) Production of the chemical declined during the 1970's, owing to concerns regarding the health effects of TCE vapors in the workplace, and to its substitution by other solvents, including tetra-or perchloroethylene (PCE), trichloroethane (TCA), and methylene chloride (Wilson, et al., 11). Commercial-grade TCE normally contains other organic compounds as impurities or stabilizers; some of these (for instance, epichlorohydrin) are known carcinogens.

TCE in surface water volatilizes rapidly into the air under turbulent conditions. Once in the atmosphere, it is subject to decomposition in the presence of ultraviolet light. TCE is soluble in water to approximately 0.1% (1,000,000 ppb), a concentration far in excess of those noted in groundwater in the study area. TCE, like other small halogenated hydrocarbons (including DCE isomers), is not significantly retarded by soils and can be assumed to move at approximately the same rate as surrounding groundwater (11). TCE is subject to low rates of microbiological degradation in soils, yielding cis- and trans-1,2-DCE as breakdown products (Parsons, et al., 12).

Exposure to TCE vapor at 100 to 200 parts per million (ppm) has been shown to cause central nervous system depression in human subjects. The compound was formerly used as an anaesthetic. Exposure of experimental

animals to TCE vapors exceeding 1,000 ppm (well over the expected range of normal human exposure) produced liver and kidney damage. TCE has been shown to induce liver tumors in mice. From this it has been inferred that the compound is a potential human carcinogen (NRC, 13) although no epidemiological evidence has been gathered to date to show conclusively that environmental exposure to TCE has resulted in human cancer.

DICHLOROETHYLENE (DCE)

DCE is found in three chemical forms, or isomers. These isomers are 1,1-DCE, cis-1,2-DCE, and trans-1,2-DCE. All have physical and chemical properties roughly similar to TCE's. All three forms have been found in the study area. Neither of the 1,2-DCE forms is used in significant quantities in industry. 1,1-DCE is used primarily in chemical manufacturing, an activity that did not occur near the airport. Their presence in the study area is thus attributed to environmental breakdown of TCE, or the presence of DCE as an impurity in commercial grade TCE. DCE is a secondary contaminant in this case; no primary source of DCE contamination has been found near the airport.

The environmental characteristics of the DCE isomers are generally similar to those of TCE. All are volatile, subject to some degree of microbial breakdown in soils, and soluble in water to concentrations between 0.25 and 0.65% (USEPA, 14). Owing to the molecular similarities between the DCE isomers and TCE, it seems likely that the DCE's are not retarded by soils, and that in aquifers they move at roughly the same rate as the surrounding groundwater.

Most data regarding the health effects of DCE pertain to the more common 1,1 isomer. It, like TCE, has been found to have depressant effects on the central nervous system and to produce liver and kidney damage in animals. All

these effects were from very high dosages of 1,1-DCE vapors. 1,1-DCE is considered a potential carcinogen. The 10^{-6} lifetime excess cancer risk level for this chemical in water has been estimated to be 0.033 ppb (14). Estimates of the potential carcinogenic properties of the 1,2-DCE isomers are not available (14).

CHROMIUM

Chromium is a familiar, bright silvery metal widely and variously used in industry. Chromium was used in the study area in electroplating, which probably accounts for most of the non-natural occurrence of the metal there. However, another potential source of chromium near the airport is zinc chromate, used as a paint primer on World War II - vintage aircraft. This potential source was discovered during an investigation of chromium contamination in Kingman, Arizona (Molnar, 15). Chromium is the only groundwater contaminant addressed in this report that occurs naturally. However, natural concentrations of chromium in groundwater in the Tucson Basin are low and allow easy recognition of cultural chromium inputs (4).

Chromium chemistry is complex, but in nature the metal is found most commonly in two forms, hexavalent chromium and trivalent chromium (USEPA, 16). Hexavalent chromium is soluble in water, and tends to move with surrounding groundwater. Trivalent chromium is much less soluble, and tends to accumulate in sediments. Under certain environmental conditions (as yet not completely understood) trivalent chromium can be transformed to the hexavalent state. The implications of the complexities of chromium chemistry on the distribution of the element in the subsurface near the airport are not fully known.

Chromium appears to be most toxic in its hexavalent state, although rather high levels are required to induce toxicity. Hexavalent chromium is suspected of causing lung cancer following inhalation in some workplace situations, but other types of environmental exposures have not been shown to be problematic (16). The State drinking water standard for total (hexavalent plus trivalent) chromium is 0.05 milligrams per liter, or fifty parts per billion.

CHLOROFORM

Chloroform is a common industrial/pharmaceutical chemical, which has seen some use as an industrial solvent. This may account for its presence in groundwater in some portions of the study area. Another environmental source of chloroform is chlorinated sewage, which contains chloroform and other halogenated organic compounds (USEPA, 17). The use of chlorine gas for treatment of water or sewage was not investigated as part of this study, so the potential for chloroform formation from this source remains undetermined. No specific usage of chloroform was discovered near the airport, and, while chloroform is an abundantly used compound, its presence and distribution cannot be explained on the basis of data gathered in the source investigation.

Chloroform's environmental properties are roughly similar to those of TCE, with the exception that chloroform is not subject to microbial degradation. Chloroform can be toxic at high dose levels, causing liver and kidney damage. Such damage has never been recorded at environmental dose levels, which are much smaller. Chloroform has been shown to be carcinogenic in animals and is considered a potential human carcinogen (NRC, 13). The 10^{-6} excess lifetime cancer risk level for chloroform has been estimated to be 0.19 ppb (USEPA, 17).

BENZENE, TOLUNE, AND XYLENE

Benzene, toluene, and xylene are simple aromatic hydrocarbons, toluene and xylene having one and two methyl groups, respectively, attached to the basic benzene ring. All are common industrial chemicals. They are all highly flammable. Benzene seems to be the most ubiquitous of the three, and has been extensively used as a solvent, especially as a lacquer thinner. All three compounds are found in fuels such as gasoline; xylene may be indicative of the presence of aviation gasoline (13). Leakage or improper disposal of fuel probably represent the most important sources for these compounds in the study area with benzene having an additional potential source stemming from use as a solvent.

All three of these chemicals are highly volatile. Unlike the organic commpounds mentioned previously, though, benzene and toluene are not considered highly mobile in the subsurface due to a propensity to bind to soil particles (18). Xylene may behave similarly based on its similar chemical structure. Toluene is readily biodegradable, further reducing its ability to travel widely underground. Perhaps partially for these reasons, none of these substances has been found widely in the subsurface environs of the study area.

At very high occupational exposures, benzene is suspected of being a contributing factor in leukemia. Toluene has well-known narcotic effects; a primary means of toluene exposure is glue-sniffing. High concentrations of xylene vapors have been shown to alter red- and white blood cell counts in animals. None of those compounds is currently considered carcinogenic at levels encountered in groundwater in the study area, although few data exist to assess this (NRC, 13).

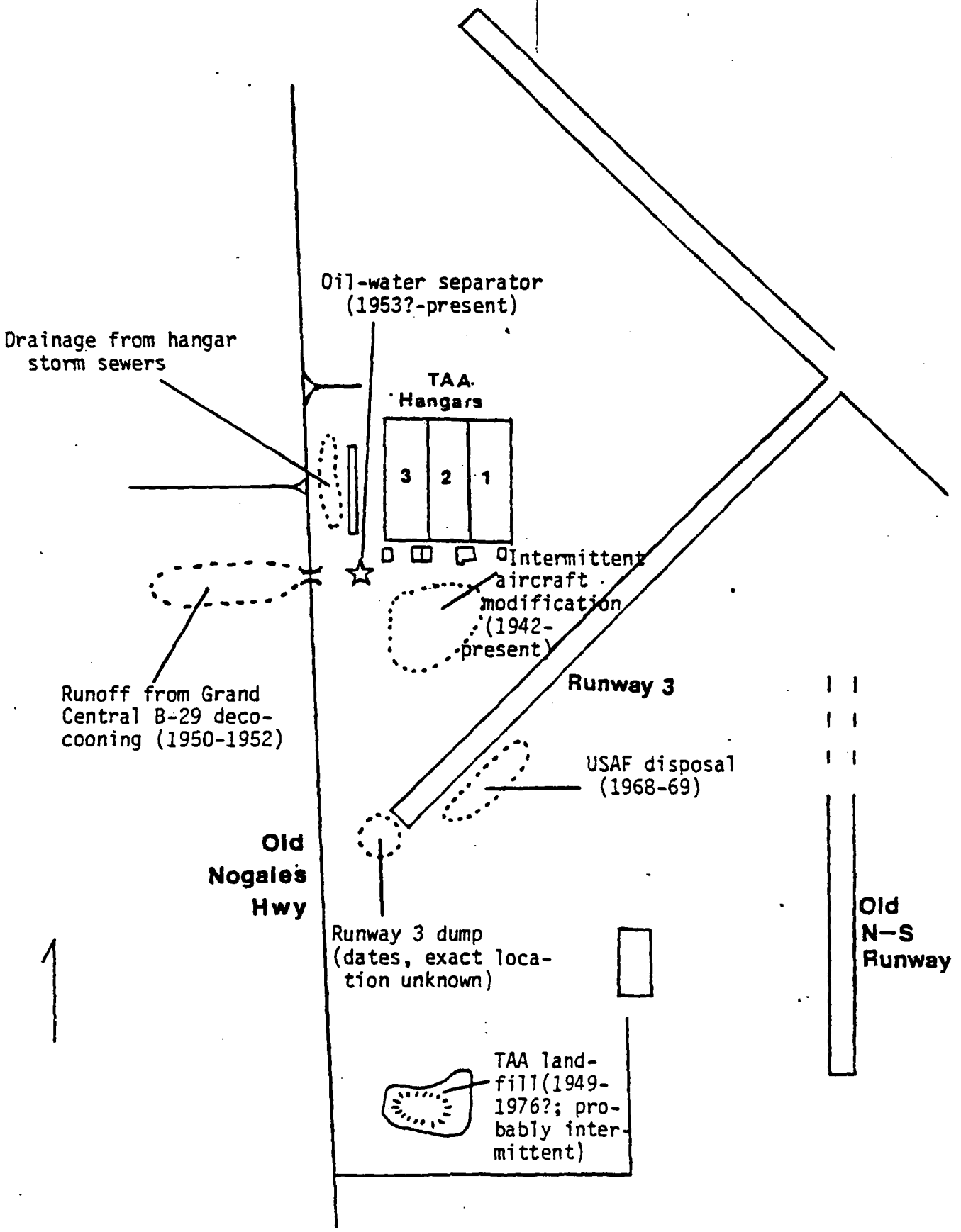
DISCUSSIONS OF POTENTIAL SOURCES OF GROUNDWATER CONTAMINATION NEAR THE TUCSON INTERNATIONAL AIRPORT

TUCSON AIRPORT AUTHORITY HANGAR AREA

The Tucson International Airport was constructed in 1940 as the Tucson Municipal Airport. Construction of the airport was necessitated when Davis-Monthan Field, which had served commercial and military uses since 1925, was given over solely for use by the military. Around 1941, large hangars were built west of the runways; these hangars were enlarged later. The Tucson Airport Authority was formed in 1948 as a non-profit, semi-public corporation to manage activities at the airport on behalf of the City of Tucson. Among the duties of the Tucson Airport Authority was to act as landlord for businesses using the hangar facilities.

The hangars have had numerous tenants over the past forty years, including three major defense contractors, numerous small businesses (including aircraft charter and repair firms), and a brief occupancy by the United States Air Force. The hangars are now occupied by the Tucson Aviation Center, which in turn leases space to numerous private tenants. The following narrative describes the activities of the major occupants of the hangars, and assesses these activities as regards their potential for affecting groundwater quality. Results of soils sampling at the hangars appear in a separate section, as positive sampling results could generally not be reliably attributed to specific activities or occupants. A detailed diagram of the hangar area appears as Figure 2.

FIGURE 2. Diagram of hangar area showing areas of supected disposal of hazardous materials.



Consolidated Aircraft Company

Consolidated Aircraft Company (also known as Consolidated-Voultee; now General Dynamics Corporation) was the first major defense contractor to occupy space in the airport hangars. The exact starting date of Consolidated's tenancy is unknown, but according to witnesses it began about 1942 (no official documents were found to verify this). Tenancy officially lasted until 1948, when lease termination documents were filed. Consolidated occupied land that was leased from the City of Tucson by the Federal War Assets Administration, prior to the establishment of the Tucson Airport Authority.

According to former employees (Nos. 1, 2, and 3, Table 2) Consolidated's plant at the hangars was a new-airplane modification facility, which incorporated recent design changes onto fully constructed planes after they left the production line. At the time of start-up only two hangars had been built west of the airport runways (see photo, Figure 3). The primary plane worked on was the B-24 Liberator, a four-engine heavy bomber. Modifications to the B-24 included installation of nose and belly gun turrets. New aircraft were flown to Tucson from Consolidated's factories in Fort Worth and San Diego. Other aircraft modified at Consolidated included the P-51 Mustang fighter and some B-29 Superfortress four-engine bombers. No estimate of the numbers of planes worked on at Consolidated has been discovered, although the Department of Defense was contacted by ADHS in this regard. Figure 3 shows 48 B-24's and a number of smaller craft along runways and on aprons. No information has yet been found regarding the intensity of modification activities at Consolidated, although it seems safe to assume that such activities would have diminished drastically after the end of World War II, at least insofar as military aircraft were concerned.

Three former employees of Consolidated's Tucson plant were contacted (Nos. 1, 2, and 3, Table 2). These witnesses agreed that most of the activites that took place at Consolidated were "nuts and bolts" types of modifications such as assembly installation, sheet metal work, and some structural modification. Processes such as engine overhaul did not occur at Consolidated's Tucson plant since the planes received there were new. Some activities did take place at Consolidated using materials that may have had groundwater pollution potential, as follows:

Intermittent Paint Stripping and Repainting

While aircraft were painted at the factory where they were built, subsequent changes in assignment were sometimes made which necessitated changing the planes' camouflage coloring. In such cases, paint on the planes was stripped alongside the runways east of the hangars using a lacquer thinner and portable equipment. At least some of the repainting took place on the apron south of the hangars. Paint stripping took place only infrequently, according to a former employee (interviewee No. 1, Table 2), and over a large area at the airport.

Anodizing and electroplating

Many of the metal parts used in modifications at Consolidated's Tucson plant were anodized or heat treated on-site. This was particularly true of alumininum parts, which were heat treated by immersing them in hot baths of concentrated salt solutions. Processes of this type were conducted in out-buildings south of the hangars. Chrome plating may have taken place at Consolidated on a limited scale, according to one former employee's recollection (interviewee No. 1, Table 2). This person, while considered to

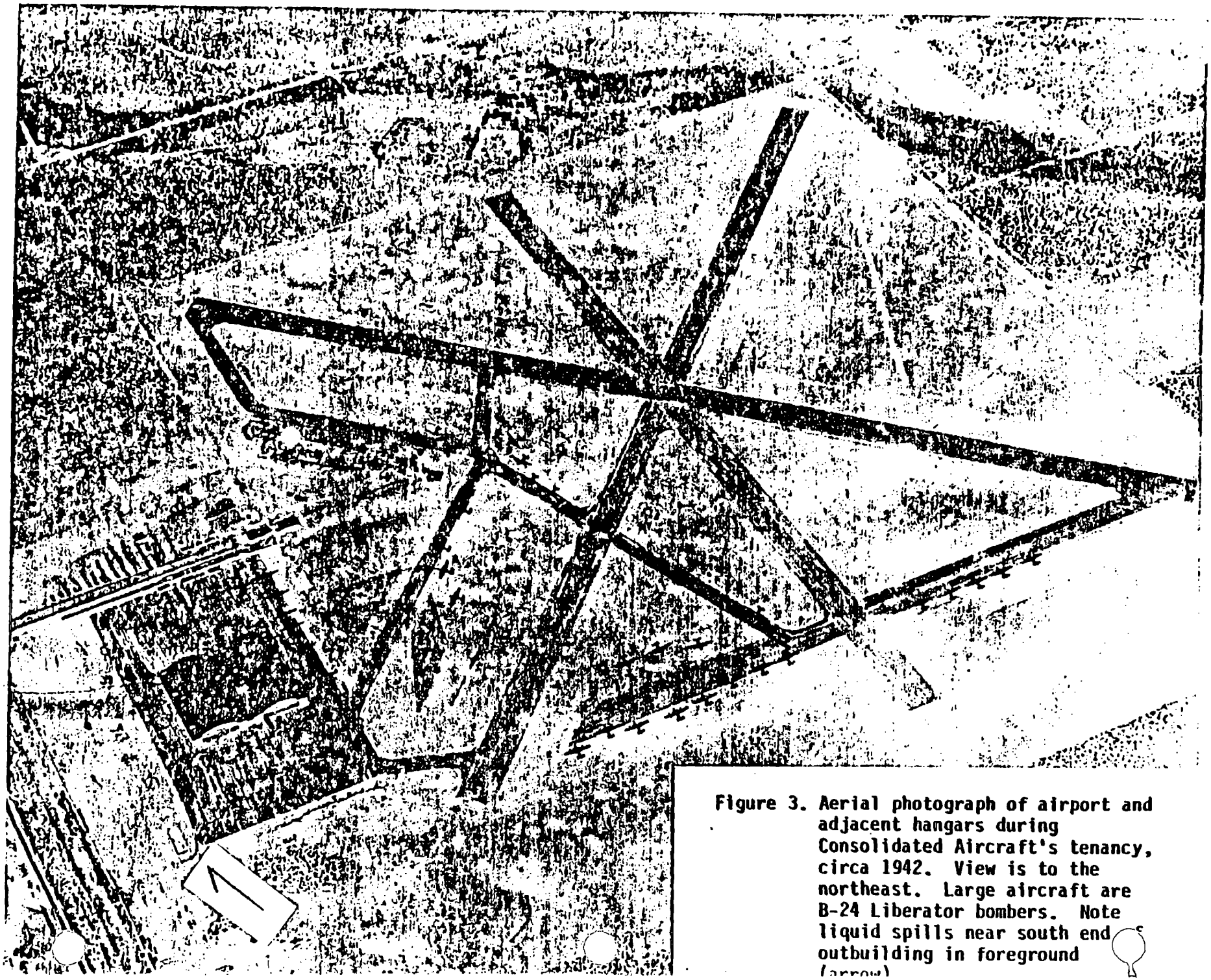


Figure 3. Aerial photograph of airport and adjacent hangars during Consolidated Aircraft's tenancy, circa 1942. View is to the northeast. Large aircraft are B-24 Liberator bombers. Note liquid spills near south end of outbuilding in foreground (arrow).

be a reliable information source, did not himself engage in chromium plating at the Consolidated plant.

Degreasing

Some parts installed into modified aircraft, especially hydraulic lines and oxygen lines, required thorough cleaning. According to one employee, this included degreasing of these parts in vats containg some type of solvent. The degreasing took place in an outbuilding south of the hangars, according to an interviewee (No. 1, Table 2) who remembers the operation taking place, but did not actually take part in it.

The Consolidated Aircraft employees interviewed during this study could not recall names of specific chemicals or brand names of products used at the Tucson plant. When questioned specifically regarding TCE, employees could not remember whether or not that chemical had been used. Records of chemical purchases made by the company have not been discovered, and the quantitites of chemicals used at Consolidated are unknown. According to all the former employees, fifty-five gallon drums of liquids were present on the site. Vats containing chemicals in the outbuildings had estimated capacities of several hundred gallons, according to interviewee No. 1.

Only one of the three former employees (No. 1) interviewed recalled anything about liquid waste disposal at the hangars, although this person did not participate in disposal. Wastes from paint stripping that took place by the airport runways was not contained in any way, and apparently was allowed to evaporate or infiltrate at the spot where it was used. Wastewater from spray painting booths was dumped at some as yet undiscovered spot south of the hangars. The vats in the outbuildings used for anodizing, possible plating, and degreasing could be drained by plugs at the bottom. The drainage from

these vats ran west to the wash by the railroad tracks where it infiltrated or evaporated. The person interviewed specifically recalled this dumping, and said that quantities of chemicals exceeding 100 gallons could have been dumped at any one time. This witness stated that he did not know how often this type of dumping occurred.

Analysis of the aerial photograph of the Consolidated plant (Figure 3) shows liquid on the southwest corner of the tarmac south of the hangars running to the west toward the railroad tracks. There is also some ground staining downstream of the liquid spill running to the tracks, perhaps indicative of frequent liquid disposal in this area. An outbuilding is present in the immediate vicinity of the liquid spill and, while apparently not the source of the spill in the photo, could have been the site of anodizing and degreasing vats described by the former Consolidated employee.

Conclusions:

According to information provided by a former employee, paint stripping, a potential chromium source, took place infrequently and over a large area of the airport during Consolidated's tenancy. No estimates of chromium quantities released could be made, however, based upon this information. The solvents used to remove paint from aircraft at the plant are unknown, but may have contained benzene, which has been used as a lacquer thinner (NRC, 13). The presence of TCE has yet to be demonstrated at Consolidated's Tucson plant. The degreasing that took place there may have used TCE, but quantities that may have been used remain unknown. Degreasing took place at Consolidated on a limited scale according to one former employee (interviewee No. 1, Table 2); the plant primarily performed mechanical work on new aircraft. The disposal of liquid wastes into the wash beside the railroad tracks west of the

hangars alluded to by a former employee appears to be verified by aerial photography, but the nature and quantity of waste so disposed is unknown. Waste disposal at this site took place between 1942 and 1945; the nature of activity between 1945 and 1948 is not known. Based on information gathered to date, the Consolidated plant cannot be conclusively eliminated as a source of groundwater pollution. The evidence actually implicating Consolidated in polluting groundwater is circumstantial, however, and is based largely on the uncorroborated recollections of a single person. While considered generally reliable, this person did not engage in disposal, nor did he use potential pollution-causing chemicals during the course of his job. Documentation of TCE usage at Consolidated, demonstration of its probable presence in the wastes generated by the plant, and reliable estimates of quantities of the chemical disposed of would be needed to more conclusively link the company's activities with currently observed TCE contamination of groundwater. Likewise, while Consolidated's activities possibly resulted in the generation of chromium-containing wastes from primers and possible electroplating, it is not known whether or not these wastes were generated in sufficient quantity and in such a manner so as to adversely affect the quality of local groundwater. It seems likely that Consolidated's chromium use was much less than that of Hughes Aircraft Company, however (see discussion, page 64).

Grand Central Aircraft Company

The Grand Central Aircraft Company of Glendale, California, signed a lease agreement with the Tucson Airport Authority in June, 1950, and occupied the hangars shortly thereafter. At some point prior to February 1949, during Consolidated's occupancy, the two original hangars were substantially enlarged, and a third hangar was added on the west side of the originals.

Figure 2), but by May of 1952 had expanded to occupy hangar number one and virtually all of the surrounding outbuildings. According to lease records, Grand Central's tenancy at the hangars lasted until February, 1954, when the company left following unsuccessful attempts to sell its leases and on-site property to Boeing Aircraft and Convair Corporation. Grand Central later filed for bankruptcy, the company's formal dissolution occurring in California in June, 1971.

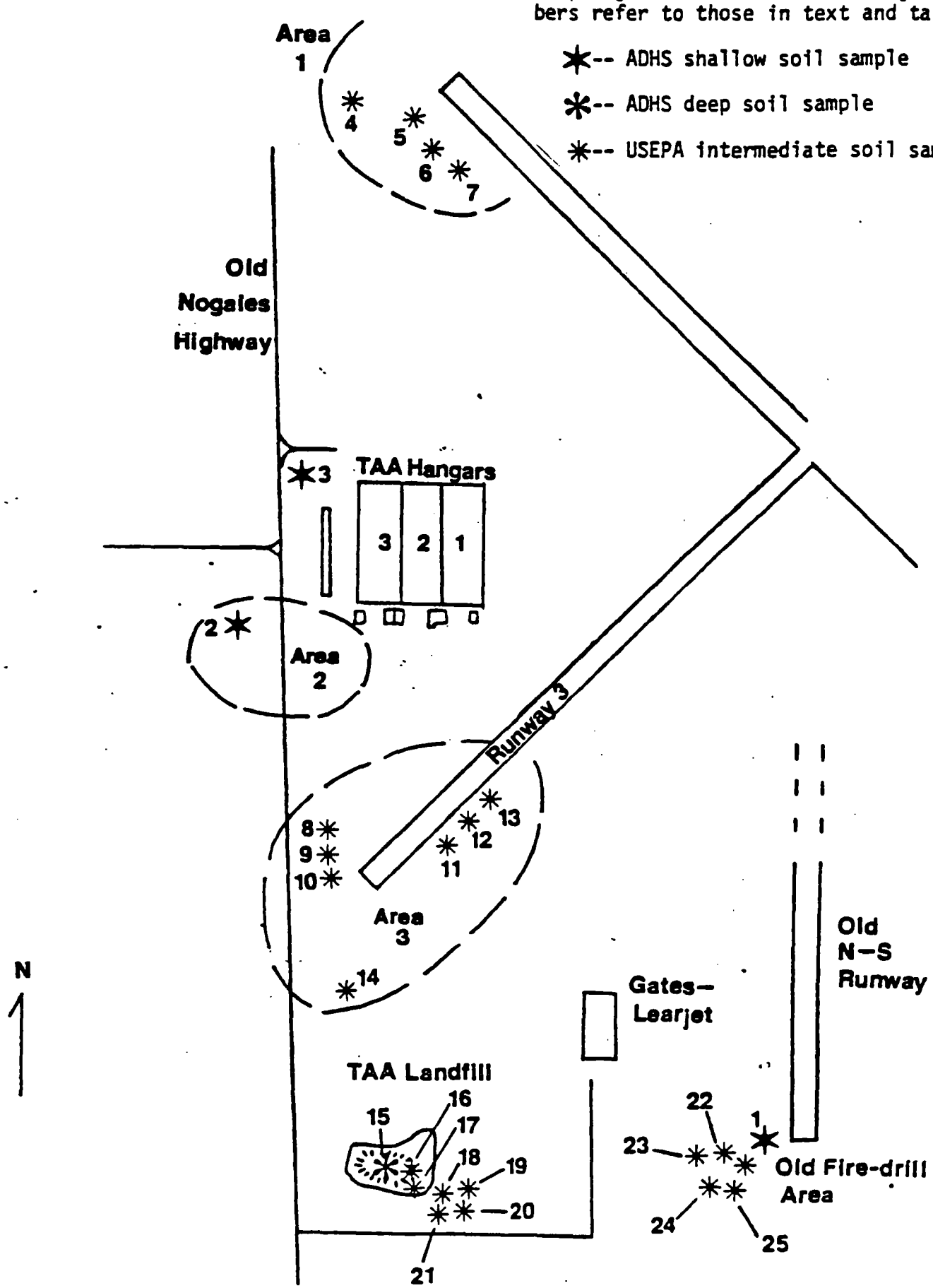
Grand Central was at one time a major employer in Tucson, according to newspaper reports at the time (Arizona Daily Star, 19). The facility had over 4,700 workers during peak activities in late 1951. The plant operated twenty-four hours a day during this period. Employment at the facility dropped to about a thousand by November, 1953, prior to complete closure in early 1954.

The bulk of Grand Central's work was defense-related. Most of the plant's activity centered around the de-mothballing and modification of B-29 Superfortress heavy bombers, which were in storage at Davis-Monthan Air Force Base. The planes were used on active duty in the Korean War and for pilot training. From late 1950 to May, 1953, 275 of these airplanes were processed through the Grand Central facility (Arizona Daily Star, 19). The company also performed electronics modification work on B-47 Stratojets, six-engine bombers, from 1951 until closure in 1954. More information has been discovered regarding Grand Central's B-29 de-cocooning activities, which seem to have been the more significant in terms of possible relation to groundwater pollution. Much of the information given below was provided by former employees at the Grand Central plant (Table 2, Nos. 4-10). These persons are specifically referenced where applicable, and were considered variously reliable according to the information shown in Table 2.

Information in ADHS files from previous source investigations indicates that mothballed B-29's were covered with Cosmoline. According to these files, Cosmoline is a substance resembling petroleum jelly. Photos of the operation, however, suggest that the substance covering the planes was more reminiscent of a thick plastic film (Figure 4). After the planes were towed across the (then) open desert from Davis-Monthan to the hangars, the planes' "cocoons" were removed using a mixture of hot water and chemicals sprayed on with hand-held wands (Figure 4). Similar procedures were also used to apply paint removing and skin brightening chemicals to the aircraft. These chemical products were supplied to Grand Central by TURCO Products, a division of Purex located in Los Angeles. According to TURCO's §3007 letter response (Appendix A) and the apparently highly accurate recollections of a former employee (No. 5, Table 2), three chemicals were applied to the B-29's in the aforementioned operations. TURCO 3095 was applied to remove the cocoons from the aircraft, TURCO 2423 was used as a paint stripper, and TURCO 3002 was used as a skin brightener.

TURCO products supplied formulations for TURCO 3002 and TURCO 2423, but requested they be withheld on the basis that these were confidential business information. None of these chemicals contained TCE. None of the organic chemicals contained in TURCO 3095, 3002, or 2423 has been found in groundwater near the Tucson International Airport. A fourth chemical product, which was not applied directly to the aircraft but rather was used as a parts stripper, was supplied to Grand Central. This product, TURCO 2177, was identified by a former worker (No. 5, Table 2); its formulation was supplied to USEPA as confidential business information. TURCO 2177 did not contain TCE, although it did contain other organic compounds not found in local groundwater.

bers refer to those in text and tables.



indicative of contaminants from that wastewater, or might have resulted from more recent flushings of the tarmac south of the hangars.

Interpretation of the ADHS shallow soils data in relation to current groundwater conditions is problematic. Of particular concern is the predominance of DCE in these samples, a condition which has no groundwater counterpart in the study area. There seems to be no way of reliably relating soils data near the hangars to individual entities that occupied the area. Thus, while soils data are consistent with the interpretation that the hangars are a potential source of groundwater contamination, they do not appear to allow for more specific inferences.

FIRE-DRILL AREAS

Fire-fighting crews have been based at the airport for many years, at least since 1948 according to a former airport manager (No. 18, Table 2) and probably prior to that. A fire-control team is maintained by the Airport Authority, and also by the Arizona Air National Guard 162nd Tactical Fighter Group based at the airport. The two fire departments conduct separate and joint fire-drills, and presumably have since the late 1950's.

A former fire chief (No. 20, Table 2) stated that the first fire-drill area was located in the northern part of the airport property, east of the Air National Guard's present location. Fire training there was described as "infrequent". In 1964, the fire-drill area was moved to a location immediately west of the south end of the now-unused north-south runway. Here, fire training took place on a regular, approximately monthly basis. These fire-drill areas are visible in 1967 aerial photography; by 1973 this area had been expanded by the inclusion of more scrap aircraft. 1976 photography shows the fire-drill areas moved to their present location, northeast of Runway 29

(Figure 11). The old fire-drill area is now covered by a Gates-Learjet parking lot.

The primary materials used to set the fires are and were aircraft fuels, in particular JP-4 jet fuel. Approximately 100-300 gallons of fuel are used per exercise. Other materials used in the past have included spent flammable solvents, including methylethyl ketone, and materials from oil-water separators in use at the Arizona Air National Guard (See Air National Guard §3007 response, Appendix A). Intentional dumping of TCE into the fire pits has not been discovered. The Tucson Airport Authority fire chief reported that no materials other than JP-4 are used in current fire-drills (No. 21, Table 2). The most probable method whereby TCE could have been introduced into the fire pits appears to be through use of material from the Air National Guard's oil-water separator, since the Guard was a documented user of TCE (see §3007 letter response, Appendix A). It is not known whether TCE formed a significant portion of the separator material but this appears unlikely, since the Guard's admitted estimated historic use of TCE was small (approximately 40 gallons per year) in relation to its probable annual use of jet fuel and oils, which presumably formed the bulk of the separator materials.

Several soil borings (Nos. 22-25, Figure 10) have been taken in the Gates-Learjet parking lot, at depths to twenty feet, and analyzed for U.S. EPA priority pollutants. No TCE was found in any of the borings. Also not found were benzene, toluene, and benzopyrene, common constituents of gasolines.

A shallow soil sample taken from the firepits northeast of Runway 29 and analyzed for Priority Pollutants by EPA contained high levels of organic contaminants, including benzene and toluene (Table 5). TCE was also found in the sample at 721 ppb. These data indicate that disposal of chlorinated solvents into this fire pit did indeed occur. One deep-soil boring did show

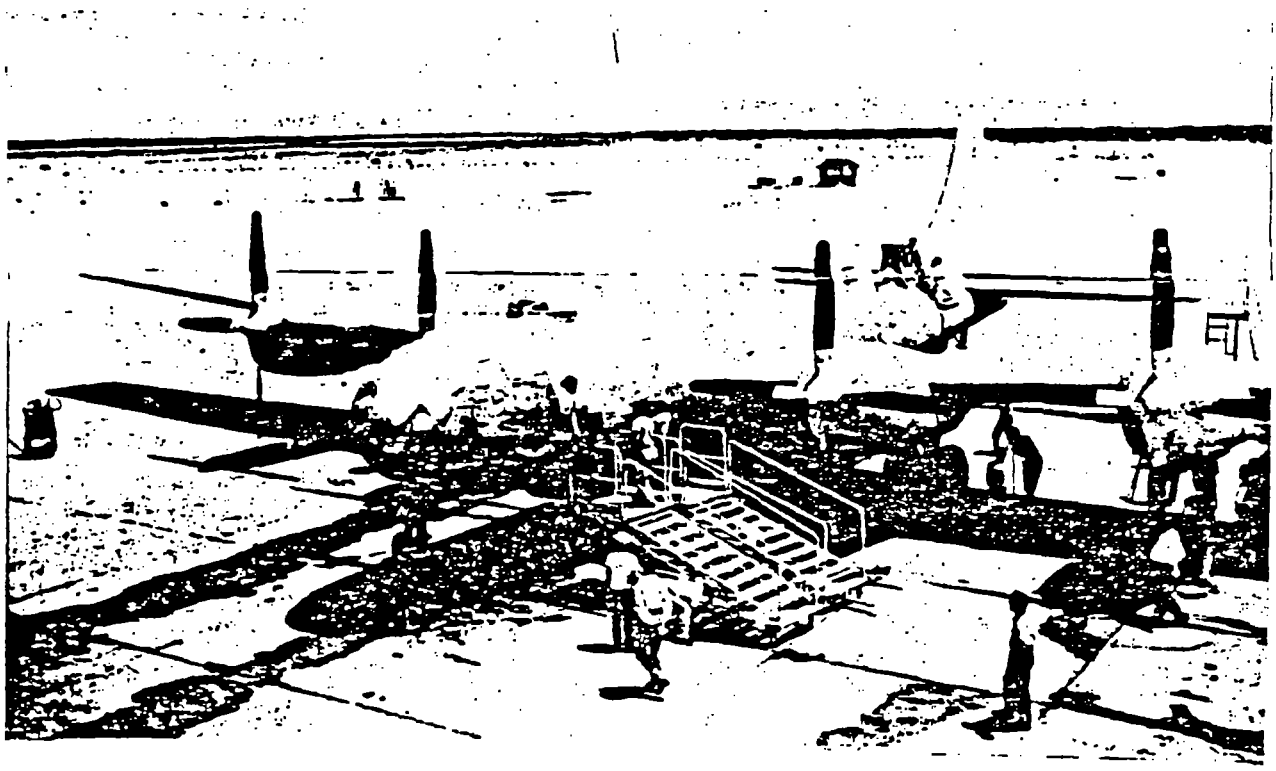


FIGURE 4 Workers at Grand Central Aircraft Company
Removing Cocoon from B-29 Bomber, Circa 1951.
Photo courtesy of Arizona Daily Star

The use of TCE at Grand Central could not be documented via TURCO Products, but use of this chemical was verified by two former employees whose recollections were considered highly reliable (Nos. 5 and 6, Table 2). One employee (No. 5) recalled that TCE was used in a parts-dipping vat in an outbuilding (referred to as the "engine building" by interviewee No. 6), in which engines from de-mothballed planes were apparently overhauled. The other employee stated that TCE used at Grand Central was supplied in blue 55-gallon drums with "trichloroethylene" stenciled on them in white letters.

The use of chromium at Grand Central was difficult to document, apart from its presence in TURCO products. Two former employees (witnesses Nos. 5 and 6) stated that they knew of chrome plating occurring at the plant, one saying that employees in his charge sometimes brought auto parts to work to be chromed. While this reliably points to the existence of chrome plating at Grand Central, no persons were found who actually used plating materials. Thus, no estimates could be made of amounts of chromium used in plating at Grand Central.

Large quantities of chemicals, particularly TURCO, were used at Grand Central. The recollections of several former employees, including purchasing agents, (Nos. 9 and 10, Table 2) indicate that hundreds of gallons of each of the chemicals used to wash down B-29's (i.e., TURCO 3095, 3002 and 2423) were used weekly. Chemical use was probably greatest in 1951, when newspaper reports indicate that B-29 modification reached its highest intensity (Arizona Daily Star, 19), but TURCO products were likely in use throughout the period from June 1950, when Grand Central occupied the hangars, to May, 1953, when the last B-29 was de-mothballed. No purchasing records for this now-defunct company were discovered in this investigation (although former purchasing agents, TURCO Products, and the Department of Defense were all

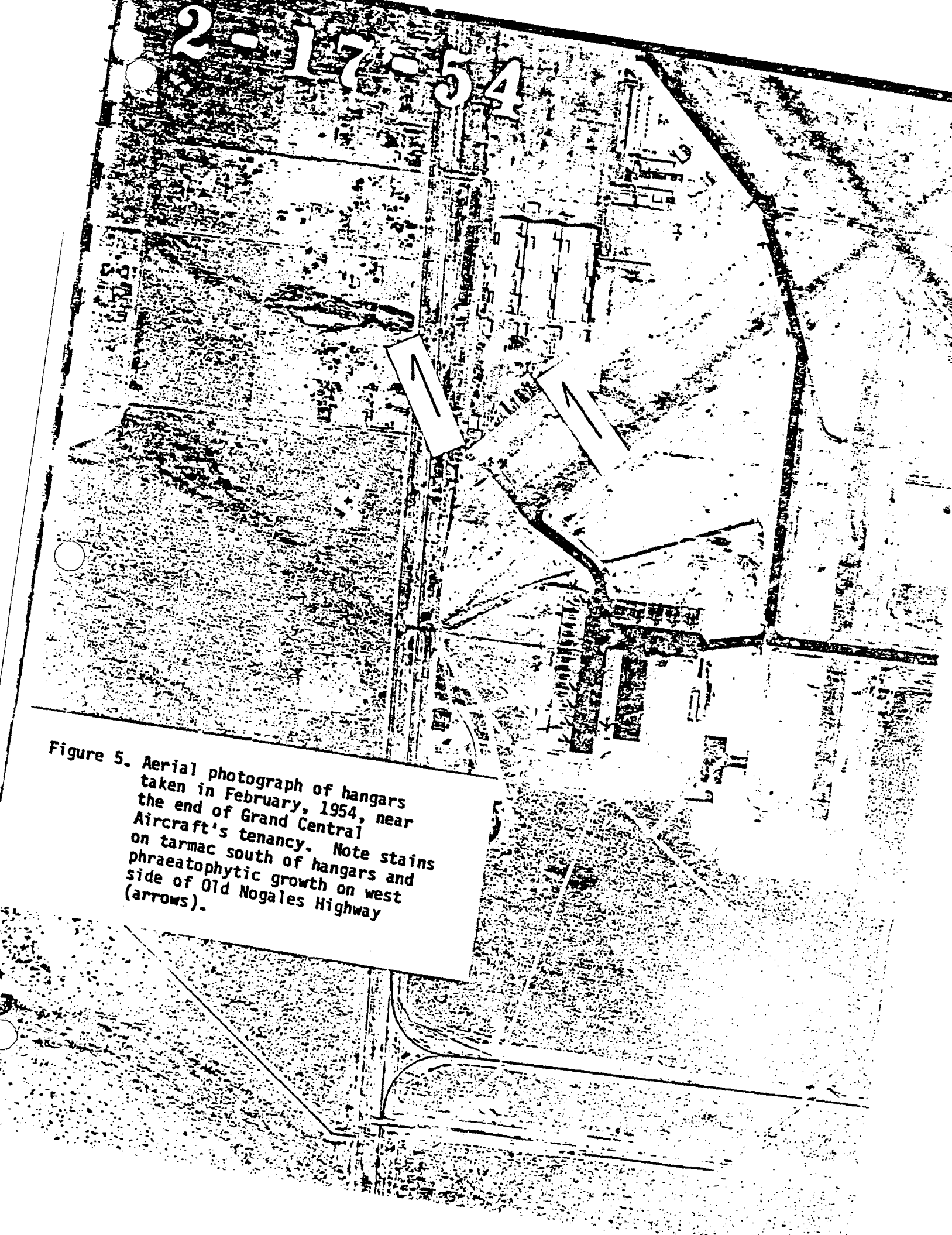


Figure 5. Aerial photograph of hangars taken in February, 1954, near the end of Grand Central Aircraft's tenancy. Note stains on tarmac south of hangars and phraeatophytic growth on west side of Old Nogales Highway (arrows).

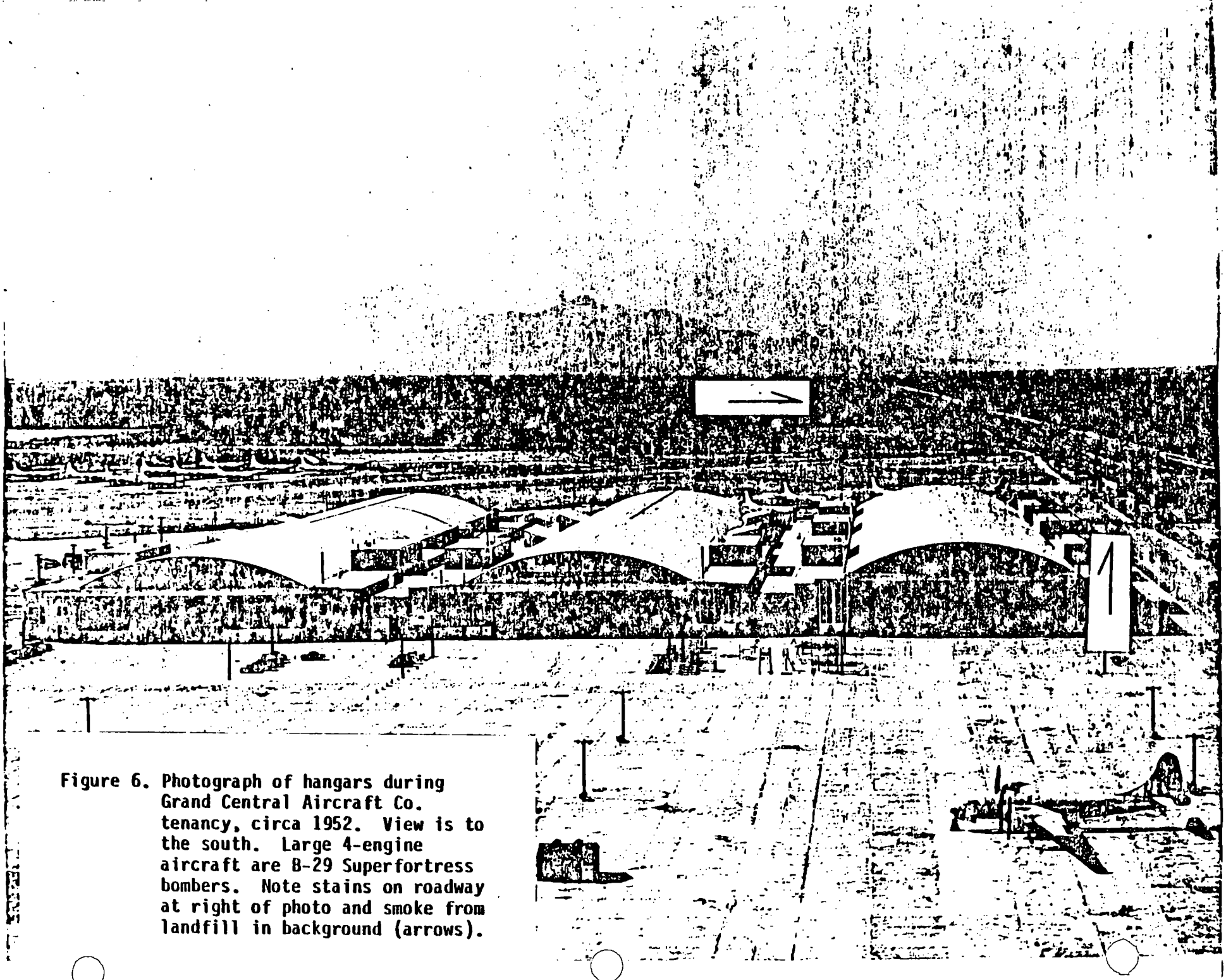


Figure 6. Photograph of hangars during Grand Central Aircraft Co. tenancy, circa 1952. View is to the south. Large 4-engine aircraft are B-29 Superfortress bombers. Note stains on roadway at right of photo and smoke from landfill in background (arrows).

contacted in this regard), so more precise estimates of chemical usage could not be made apart from those provided by the recollections of former employees.

Quantities of TCE used at the plant were difficult to determine, since no purchasing records were found and only two former employees (Nos. 5 and 6, Table 2) had specific recollection of the presence of TCE. One of these former employees (No. 6) recalled that five to ten barrels of TCE were stored outside of the outbuildings south of the hangars at any given time. No estimates of the rate of TCE use was given by former employees, however. TCE was definitely used in outbuildings south of the hangars. Witnesses disagree, however, regarding the use of TCE or other solvent chemicals within the hangars themselves. One former employee (No. 4, Table 2) reported that solvent use on the hangar assembly lines was limited to occasional buckets of kerosene, while a second former emmployee (No. 6, Table 2), recalled that some dipping of parts took place in the center hangar.

The methods of chemical waste disposal at Grand Central varied according to the type of chemical. One former employee (No. 6, Table 2) reported that one of the TURCO products used in an outbuilding for stripping purposes was rebarreled and sent back to the company for reprocessing. This product was probably TURCO 2177. Other handling of waste chemicals was often careless. Runoff from the B-29 de-cocooning operations was at first completely uncontained. This runoff contained TURCO products used on the aircraft but according to a former employee who applied the products (No. 4, Table 2) was largely water. According to witnesses, including former area residents (Nos. 11 and 12, Table 2), quantities of wash water may have ranged to tens of thousands of gallons per day. Such estimates are probably highly approximate. Wash water ran across the tarmac south of the hangars to the

wash by the railroad tracks, crossed the tracks and the Nogales Highway through culverts, and emptied out into an open wash adjacent to a residential area. This drainage pattern is evident on a 1954 aerial photo (Figure 5) which shows staining on the tarmac and well-developed phreatophytic growth immediately west of the highway. A stain is present on the roadway west of the hangars in Figure 6 which probably represents part of the wastewater drainage path. According to former residents (Nos. 11 and 12), wastewater flowed several hundred feet down the wash west of Nogales Highway. Flow was present in the wash 90-95% of the time prior to efforts by Grand Central to control it.

This wastewater apparently contaminated the wells of local residents (Nos. 11, 12, and 13) who said that water from their wells was unfit to drink. The first well contaminated was a 95-foot, hand-dug, uncased well at 530 East Corona Road, located 200-300 feet from the flowing wastewater. According to the owners (Nos. 11 and 12, Table 2), who moved in in 1950 or 1951 after Grand Central had started its operation, this well was contaminated when they took possession of the property. They recalled that the odors emanating from the Grand Central plant, from the wastewater in the wash, and from their well water were similar, leading them to believe that Grand Central was the source of groundwater pollution. The contamination was investigated in 1952 by a University of Arizona engineer (No. 14, Table 2) who likewise concluded that the Grand Central wastewater was the probable pollution source.

Local residents filed suit against Grand Central in 1952, charging that "...chemicals have been flowing into brackish, foul-smelling pools upon the Plaintiffs' properties and destroyed the appearance of said properties, befouled the air with the odor of chemicals, (and) have seeped into and polluted wells located thereon, making said properties unfit for domestic use

and greatly reduced in value." The allegations against the company also stated that Grand Central knew of the effects of the runoff, had been notified by local residents, and had refused to take action to correct the situation The suit was dismissed with prejudice by the Court when it was agreed that the plaintiffs would be given an opportunity to be connected to the City's water distribution system.

In probable response to the civil suit, Grand Central Aircraft took steps to contain its wastewater, although it was difficult to determine in this study what those steps were. Witnesses in this and previous source investigations have referred to the construction of groundwater collection systems, berming, or a holding pond measuring 250 feet on a side. Aerial photographs provide no insight into possible control measures. There is at present on the site a concrete holding structure measuring approximately twenty feet on a side which receives drainage from a line of grates on the tarmac. This structure and its associated drainage line may represent a portion of Grand Central's runoff control program. It is not known what effect these measures, designed to control the movement of surface water, may have had on controlling the movement of runoff into the local groundwater.

According to two former employees (Nos. 5 and 6, Table 2), both considered highly reliable, waste TCE from Grand Central was collected and disposed of off-site. According to the employee (No. 6, Table 2) who actually supervised this dumping, it took place south of the hangars at the Tucson Airport Authority landfill. This employee recalled that one or two barrels of waste TCE, which was picked up at an outbuilding south of the hangars, were dumped in the landfill once or twice a month. Barrels were either drained and re-used, or dumped whole in the landfill. No attempt was made to cover the barrels or the spilt solvent. The dumping of TCE at the landfill continued at

least into 1953, according to this former employee. Assuming that these recollections are accurate, the TAA landfill received approximately 50-200 gallons of TCE monthly during the major portion of Grand Central's operating life. Based on these recollections, the TAA landfill appears to have been the primary repository for waste TCE generated by Grand Central.

The TAA hangars had sanitary sewer service during Grand Central's occupancy, according to lease agreements. Former employees stated that lavatory facilities were not used for the disposal of solvents or other such materials. The hangars and surrounding areas were and are serviced by a storm sewer/drainage system. This system drains the area in an east-west direction, emptying into the wash along the railroad tracks. Industrial waste generated in the hangars themselves was probably drained at least in part by this system.

Conclusions:

Grand Central Aircraft Company occupied the airport hangars from 1950 to 1954, with peak activity concentrated in 1951 and 1952. The company's work was defense-related, consisting largely of de-mothballing and refurbishing World War II-vintage B-29 bombers for use in the Korean War. This operation required large amounts of chemicals, including solvents.

Chromium was used at Grand Central for plating purposes, but the amount used and the nature of its disposal could not be determined. Chromium was present in two of the three products applied to B-29's prior to re-assembly. Based upon this and estimates by former employees that these products were used at rates of hundreds of gallons per week, chromium use from this source was estimated to be less than 150 pounds per year. This analysis is limited, of course, by inexact knowledge of the amounts of chemical products used in

Grand Central's operations. This use presumably ended in 1953, at the end of Grand Central's B-29 work.

Amounts of TCE use at Grand Central can only be roughly guessed at from disposal estimates made by a former employee. This person said that 50-200 gallons of TCE were disposed of monthly by Grand Central at the TAA landfill. Thus, the minimum use of TCE by the facility can be estimated to be 600-2400 gallons per year. According to one user of TCE in the study area, TCE disposal was approximately half its TCE use (see Burr-Brown §3007 letter response, Appendix A). Applying this factor to the previous estimate, Grand Central's TCE use may have been in the range of 1,200 to 4,800 gallons per year. TCE use at Grand Central was probably highly variable in response to the varying levels of activity that took place at the plant. Thus, this use figure should be considered highly approximate.

Waste chemicals were, according to former employees, segregated as to their means of disposal. At least one TURCO product was probably recycled. Other TURCO products, applied to B-29's south of the hangars, were mixed with water and allowed to flow off-site. It is likely that this wastewater contained some TCE from spillage of the chemical on the tarmac. Use of TCE was apparently concentrated in outbuildings, however, and the TURCO products used contained no TCE. Thus, while there is little doubt that this wastewater stream contaminated local wells, TCE in all probability was present in much lower concentrations than other potential organic contaminants, which were major components of TURCO products. Chromium was probably also present in the waste stream, though this, too, was a minor component of TURCO products.

TCE from Grand Central was, according to reliable eyewitnesses, disposed of primarily at the airport landfill. Disposal at the landfill was by spillage of TCE or the dumping of barrels. No effort was made to cover the

barrels. This method of dumping may have allowed significant quantities of TCE to volatilize. The role of the TAA landfill as a source of groundwater contamination is discussed in an ensuing section of this report.

In view of information gathered to date, Grand Central's operations at the airport hangars were almost certainly the cause of groundwater pollution. Organic chemicals used in quantity at the plant, contained in TURCO products used by Grand Central and capable of causing severe groundwater pollution, have not been discovered in groundwater in the study area, however. Chromium quantities estimated to have been used by Grand Central are small in comparison with other users in the vicinity (see Table 9, page 73), although the full extent of chromium use at the facility has probably not been discovered. Chromium was probably present in the waste stream emanating from Grand Central; quantities may have been insignificant, however, owing to the small proportions of chromium contained in TURCO products. TCE was likely present in the company's waste stream, its source being spillage and careless use of the chemical, but it was probably a minor contaminant compared with other substances. The primary disposal site for Grand Central's waste TCE was the TAA landfill. Based on available data, disposal at the TAA landfill seems to be the most probable means whereby Grand Central could have contributed sizeable quantities of TCE to local groundwater. The waste stream may have been a source of lower levels of TCE in groundwater.

Douglas Aircraft Company

The Douglas Aircraft Company (now McDonnell-Douglas Corporation of St. Louis) began its tenancy at the airport hangars in June, 1954. All three of the hangars, as well as the surrounding outbuildings, were leased by

Douglas. At peak activity in 1956, the plant employed approximately 1,400 workers. Douglas' occupancy of the hangars, like those of its predecessors, was brief. The company had difficulty in securing enough contracts to keep its Tucson plant operating, and in the summer of 1958, following labor troubles earlier in the year, shut down its Tucson operations.

Most of the work at Douglas was concerned with modifying and testing new aircraft produced at the company's San Diego plant. Some components were assembled in Tucson prior to installation. Aircraft modified at Tucson included the RB-66, a twin-engine jet reconnaissance-bomber, and the C-124, a four-engine transport. Some overhauling of commercial aircraft such as the DC-6 took place. Flight training was also conducted by Douglas at Tucson.

Former employees of Douglas who worked in Tucson (Nos. 15, 16, and 17, Table 2), including the former plant manager, have stated that production activities there consisted almost exclusively of assembly and installation of new equipment such as electronic and photographic gear into new aircraft. Degreasing and electroplating did not occur, according to these witnesses. With the possible exception of commercial airline overhauling, most of the activities at Douglas' Tucson plant as they are now understood probably did not require the extensive use of solvents or other hazardous chemicals. The former employees interviewed did not recall the presence or use of such materials. The only account of suspect materials at the Douglas operation came from a witness (No. 18, Table 2) who said that there was a dipping vat containing solvents of some kind located in an outbuilding immediately south of the hangars. The size of the vat was given as 3'x3'x8' long, although this witness did not know what specific chemicals may have been in the vat. No complaints from the general public have been received regarding Douglas' waste disposal activities while they occupied the airport hangars. No documentation

of TCE use at Douglas has been found. Both McDonnell-Douglas and the Department of Defense were contacted in this regard.

Little evidence has been gathered regarding the disposal of liquid waste at Douglas. Former employees at the plant have stated that environmentally significant liquid wastes, such as those containing solvents or acids, were not generated at the facility. Aerial photographs of the hangars taken near the end of Douglas' tenancy continue to show stains on the tarmac south of the hangars, as well as liquid runoff around aircraft parked at the ramp south of Runway 3 (Figure 7). One employee stated that aircraft were washed down frequently with water and detergent because of the amount of dust present at the airport. It is possible that frequent washing of planes could have accounted for the features noted in Figure 7. At any rate, no information was found as to the possible composition of this runoff if it were not simply washwater.

Conclusions:

The Douglas Aircraft Company occupied the hangars from 1954 to 1958. The plant's primary function was the modification of new aircraft, although some overhauling of older commercial planes took place. Former employees have stated that degreasing and electroplating did not occur; these employees also stated that hazardous materials were not used at the facility. While it is possible that these witnesses would tend to downplay the use of such materials, their accounts were consistent with one another's and with newspaper accounts of activities at the plant, and were considered by the investigator to be reliable. Only one report of possible solvent use at Douglas was received. No information was gathered to indicate conclusively that Douglas disposed of waste improperly, although stains and standing liquid

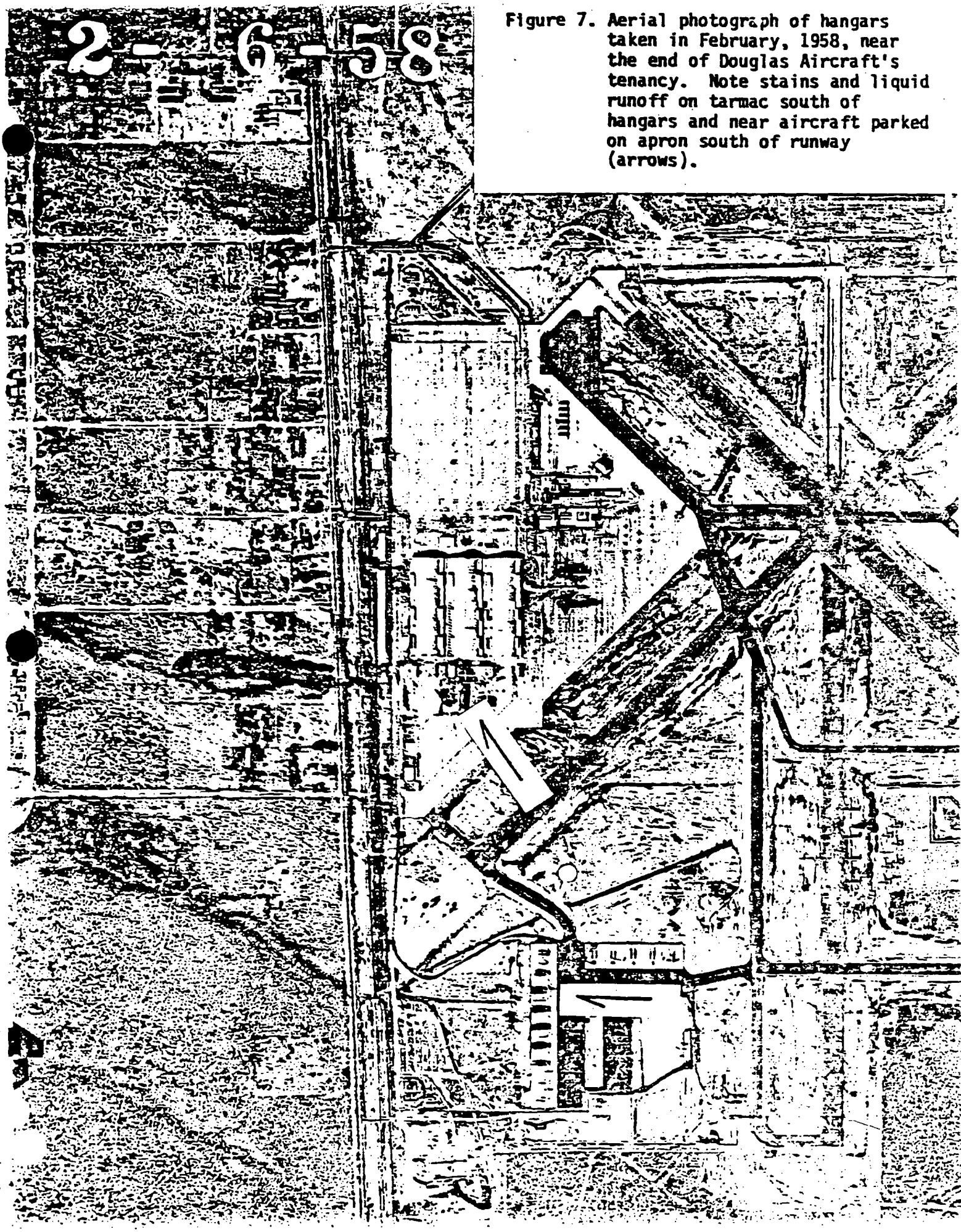


Figure 7. Aerial photograph of hangars taken in February, 1958, near the end of Douglas Aircraft's tenancy. Note stains and liquid runoff on tarmac south of hangars and near aircraft parked on apron south of runway (arrows).

are visible from aerial photographs. In spite of information gathered from former employees, the use of solvents at Douglas cannot be completely discounted, since these materials are often associated with aircraft modification facilities (Urban Research Associates, 20). While such inferential data suggest solvent use (including TCE) at Douglas, the direct evidence that has been gathered to date does not generally implicate the company's Tucson operations as a source of currently observed contamination.

Recent Operators at the Hangars

Douglas Aircraft's tenancy at the hangars marked the last time the site saw large-scale industrial use. The hangars were leased by Hughes Tool Company from 1958 through the late 1960's, but the site was unused during this time. The hangars were occupied by the 4453rd Combat Crew Training Wing of the U.S. Air Force for about a month in December-January, 1968-69, while runway resurfacing was being done at Davis-Monthan. More recently the hangars have been occupied by numerous small operations. Occupancy began in about 1970, when the Tucson Aviation Center began operation at the hangars, serving as landlord to the small businesses located there (see §3007 response, Appendix B). Many of these occupants are aircraft maintenance firms, whose activities continue to this day. Aerial photographs seem to confirm the area's progressive decline into disuse. By 1967, the area had been fenced, no activity was evident, and the hangars themselves had begun to fall into disrepair (Figure 8). In 1973, the south tarmac was littered with a varied assemblage of then-obsolete aircraft (Figure 9). While this may represent the activities of small contractors renovating individual aircraft, it is evident that by this time large-scale, systematic aircraft modification was no longer occurring at the hangars.

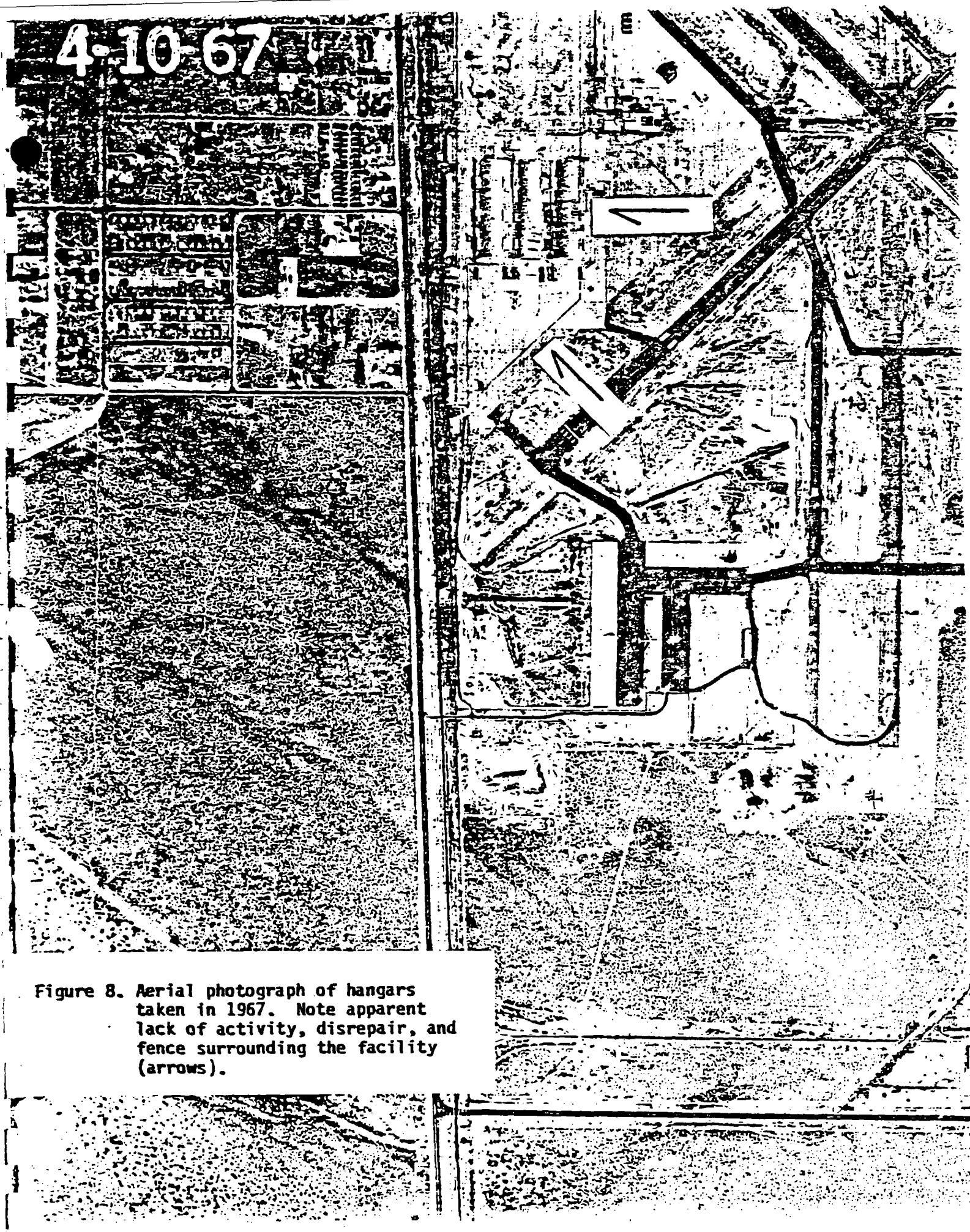


Figure 8. Aerial photograph of hangars taken in 1967. Note apparent lack of activity, disrepair, and fence surrounding the facility (arrows).

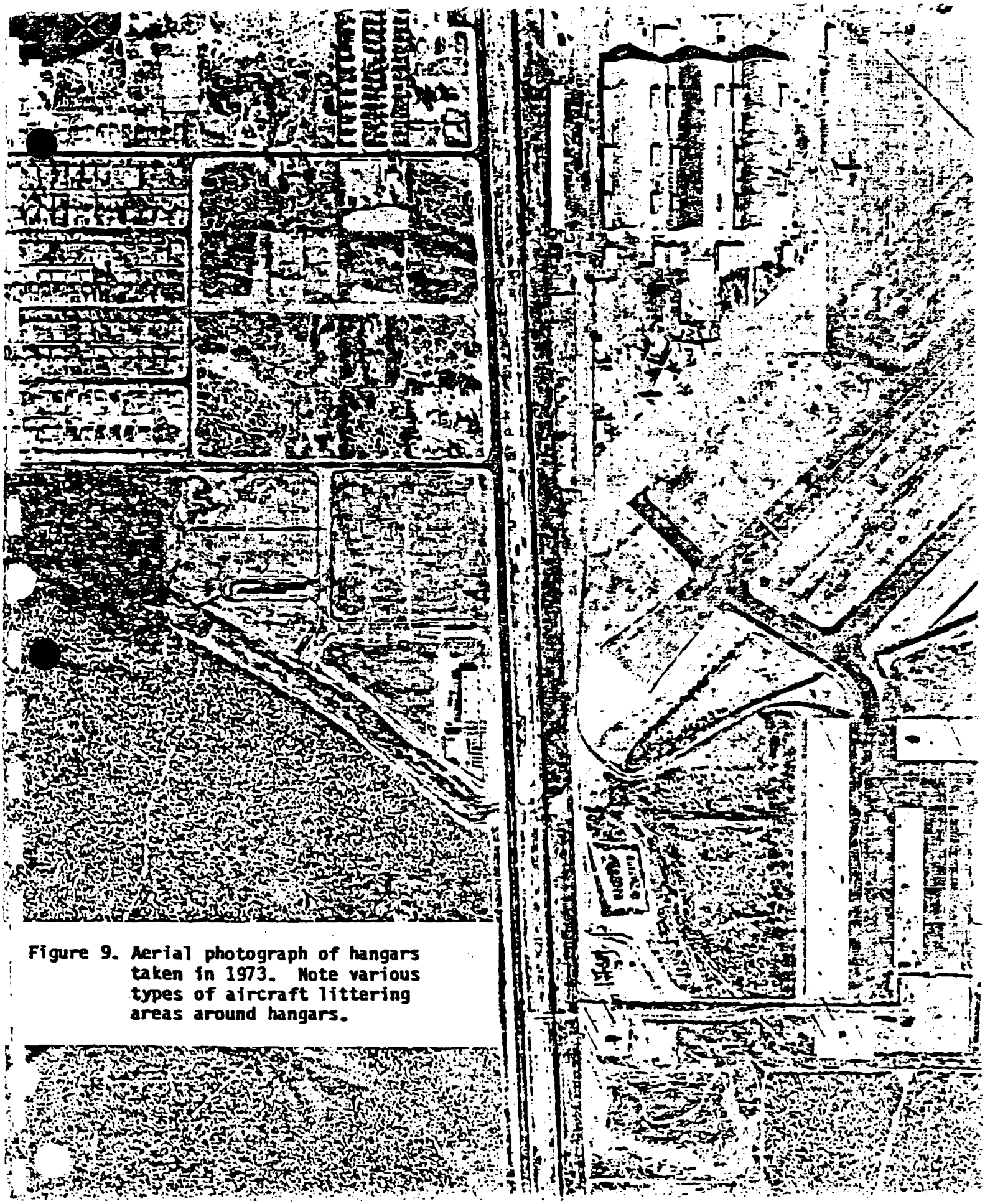


Figure 9. Aerial photograph of hangars taken in 1973. Note various types of aircraft littering areas around hangars.

Use and disposal of chemicals, including TCE, seems not to have taken place at the hangars from 1958 through 1967, when the area was idle. The U.S. Air Force occupied the hangars from December 8, 1968, through January 6, 1969, according to a letter from the Air Force in ADHS files. During this brief period, according to a former crew chief stationed there (No. 19, Table 2) improper disposal of several liquids took place. These included JP-4 jet fuel and TCE. Exact quantities disposed of are unknown, but were estimated to total several hundred gallons. The disposal area used was in the desert southeast of the hangars. USEPA performed a series of soil borings along the south side of runway 3 to evaluate the effect of this reported disposal. No contamination was found in these samples, the results of which are summarized in a 1982 Ecology and Environment report (21).

Other information regarding use and disposal of chemicals comes from responses to RCRA §3007 letters sent by EPA to small business at the hangars (Appendix A). These responses were of varying detail and, probably, of varying reliability. Only four of these businesses (Warner Propeller, Leb's Aircraft Maintenance, Keystone Helicopter, and Hudgin Air Service) responded that they had used solvents; only one of the respondents (Warner Propeller) said that they had used TCE. This firm reported using 300 gallons of TCE during the period 1974-1979. Keystone Helicopter was the subject of a drive-by inspection by EPA personnel in 1982. These personnel concluded on the spot that Keystone's operation was too small to have an effect on groundwater quality. The same is apparently true of other small businesses at the hangars, whose reported use of solvents (according to their § 3007 letter responses) is relatively small, usually less than 55 gallons of any one type per year. This view of the potential effect of small operators in general is held by previous investigators (i.e., USEPA and Eberhardt), who did not

consider them likely sources of groundwater TCE contamination.

A recent report by Urban Research Associates (20) commissioned by ADHS attempted to evaluate the potential for hazardous waste generated by small businesses (i.e., those considered "small quantity generators" under the Resource Conservation and Recovery Act). This document presented the results of a survey of Maricopa County businesses as to their business type and the amount of waste generated. From this, average amounts of hazardous wastes generated per employee per month were calculated. According to this report, small aircraft repair/modification firms in Maricopa County produced approximately 0.25 gallons of spent solvents (possibly including, but not limited to, TCE) per employee per month.

Five firms in the hangar vicinity that reportedly engaged in aircraft repair/modification (Hamilton Aviation, Hudgin Air Service, Leb's Aircraft Maintenance, Paul's Aircraft and Warner Propeller and Governor) were contacted to determine numbers of employees. One firm, Keystone Helicopter, could not be reached. Another firm, Hamilton Aviation, reported that a sizable portion of its business stemmed from flight training and other, non-mechanical activities. For the purpose of this analysis, then, Hamilton's employee number was halved. Following this adjustment, an employee total for these businesses of 65 was reached, yielding an estimated monthly total of approximately 16 gallons of waste solvents and an estimated yearly total of 192 gallons of waste solvent. This is inherently an overestimate of improper TCE disposal, since some waste solvent is probably recycled, and since this estimate of waste encompasses common chlorinated solvents in addition to TCE. This figure is provided here for purposes of comparison with other estimates of TCE use and/or disposal for other potential sources near the airport.

Conclusions

The Tucson airport hangars were vacant from 1958 through 1967. The U.S. Air Force occupied them for one month in December-January, 1968-69. Since that time, the hangars have been occupied by numerous small businesses including a number of aircraft repair/modification firms. The Air Force reportedly dumped hundreds of gallons of materials, including JP-4 jet fuel and TCE, in the desert southeast of the hangars during its brief occupancy there. EPA soil sampling at the reported site of this dumping failed to find evidence of TCE or other contaminants in the vadose zone.

Several current occupants of the hangars have reported non-TCE solvent use in responses to § 3007 letters. One occupant, Warner Propeller and Governor, stated that 300 gallons of TCE were used during the period 1974-1979. Estimates of waste solvent generated by four small aircraft repair/modification firms at the hangars were made on the basis of average waste solvent generated by similar firms in Maricopa County. This resulted in an annual estimated waste solvent generation of 192 gallons per year. While this estimate is probably not highly precise, it indicates that solvent disposal and underlying solvent use by such businesses is much smaller than that of other potential sources near the airport. No significant use of chromium was reported by small businesses at the hangars.

Based on evidence gathered to date, the possibility of TCE contamination emanating from the hangar area following its occupation by Douglas Aircraft cannot be completely dismissed. No subsurface effect from reported dumping by the U.S. Air Force has been found, however, and estimates of waste solvent generated by small businesses indicate that they are probably at most minor

sources of TCE. No significant source of chromium has been discovered in examinations of recent operations at the hangars.

Soil Sampling, Airport Hangar Area

Soil sampling was first conducted near the Tucson Airport hangars by a U.S. EPA Field Investigation Team in May, 1981. This sampling was followed by ADHS sampling. Both shallow and intermediate depth sampling was performed. Results of these samplings are discussed fully in previous reports by Ecology. and Environment (21) and Lemon (22). The soil sampling results are discussed here for the hangar area in aggregate, since, with few exceptions, positive results for pollutants in soils cannot be definitively attributed to any single current or historic industrial operator at the hangars.

EPA intermediate-depth sampling was performed in three areas in the immediate vicinity of the hangars (Figure 10, Table 4). Area 1 was located north of the hangars to characterize drainage from the lots in that area, currently littered with scrap aircraft. Area 2 was located immediately southwest of the hangars to evaluate drainage from the tarmac. Area 3 was selected to evaluate the contribution of reported Air Force disposal. Other areas evaluated an industrial site, the TAA landfill, and abandoned fire-drill areas; these results are discussed in the appropriate ensuing sections of this report.

Boring in Area 2 was stopped because of auger rejection. During drilling, evidence of fuel oil contamination from leaking tanks was discovered. Samples taken from Areas 1 and 3 showed no TCE, toluene, or benzopyrene, a constituent of gasolines analyzed for in these samples. Low concentrations of chromium (up to 3 ppm) were present in some samples.

Sampling depths varied; usually two or more samples were taken at five-foot intervals down to fifteen or twenty feet final depth.

A number of shallow soil samples were taken in the vicinity of the airport by ADHS; three of these were in the vicinity of the hangars (Figure 10, Table 4). These samples were taken at depths of approximately three feet. All samples contained TCE (5 ppb or less), higher levels of DCE (16 to 281 ppb), and some total chromium (values ranged widely, from 4 to 142 ppm). The most highly contaminated sample (No. 3) was found at the entrance to the hangar area. This sample contained 5 ppb TCE, 281 ppb DCE, 142 ppm Cr, and other contaminants including benzene (1.2 ppb), phenol (approximately 3,000 ppb), and tetrachloroethylene (0.4 ppb). Sample number 2, located along Grand Central Aircraft's historic wastewater flow path, contained 1 ppb TCE, 16 ppb DCE, and 10 ppm total Cr.

Conclusions

Intermediate depth soil sampling performed by EPA did not confirm the presence of contamination sources in the area north of the airport hangars, nor in an area southeast of the hangars reported to have received jet fuel and solvents dumped by the Air Force. Shallow soil sampling by ADHS showed very high levels of some contaminants, particularly DCE and chromium, near the entrance to the hangar area. This indicates disposal of industrial wastes at this point or at some point upgradient, and tends to confirm the hangar area's potential as a source of groundwater pollution. The presence of contaminants at this location does not correspond, however, to any as yet identified disposal practice. High levels of DCE, a volatile compound, in shallow sediments would suggest relatively recent disposal here. The lower levels of contaminants along Grand Central's historic wastewater flow path may be

TABLE 4
SUMMARY OF SOIL SAMPLING DATA
NEAR TUCSON AIRPORT HANGARS,
FROM EPA AND ADHS STUDIES (21, 22).
SEE FIGURE 10 FOR LOCATION.
ALL QUANTITIES ppb EXCEPT WHERE NOTED

		Parameter			
Location (Map No.)	Depth (ft)	TCE	DCE	Total Cr, ppm	Other
350' SW of Gates-Learjet. 250' NE of Vega Bioc Lan (1)	2.5	1	1	8.2	NA
W of Nogales Highway; N of El Vaco Dr. (2)	2.5	1	16	10	NA
Entrance to TAA industrial center from Nog. Hwy. (3)	3	5	281	142	NA
Drainage channels N. of hangars (4-7)*	3-14	ND	NA	2	Benzopyrene, 272 Lead, 24 ppm
SW end of Runway 3 (8-10)*	10	ND	NA	2	Lead, 16 ppm
S edge of Runway 3, alleged USAF disposal (11-13)	3-15	ND	NA	3	Phenol, 266 Arsenic, 4 ppm Cadmium, 2 ppm Lead, 32 ppm
Drainage channel from Gates-Learjet and Runway 3 area (14)*	3-13	ND	NA	2	Phenol, 185 Arsenic, 2 ppm Cadmium, 2 ppm Lead, 27 ppm

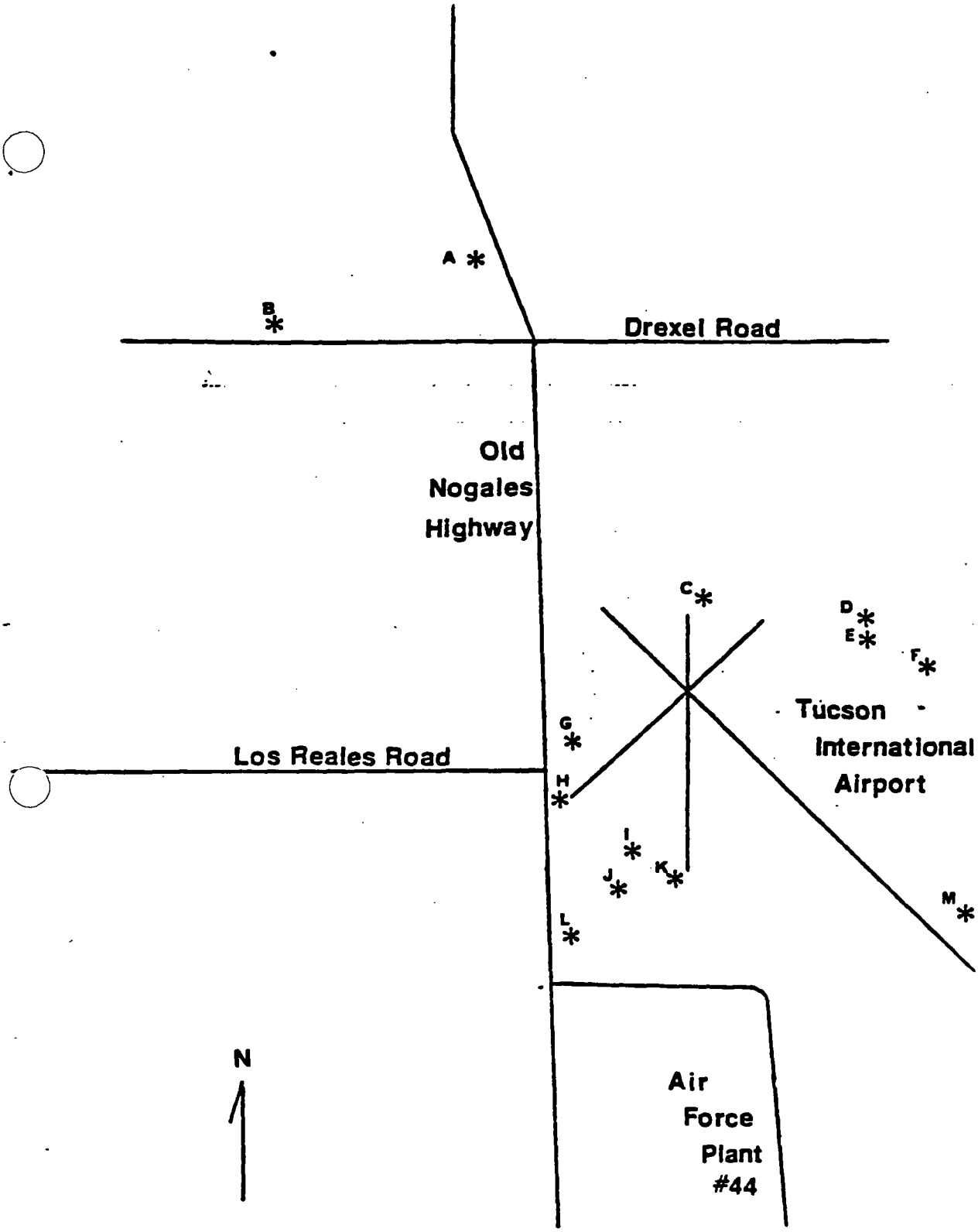
* = Maximum values from several borings and/or depths

ND = Not detected

NA = Not analyzed

FIGURE 11. Locations of fire-drill areas, landfills, and miscellaneous industrial sites near the Tucson International Airport.

KEY:
a. IBM (S. Nogales Highway)
b. Turkey farm landfill
c. Arizona Air National Guard
d. Burr-Brown Research Corp.
e. West-Cap Arizona
f. IBM (S. Country Club Road)
g. TAA hangars
h. Runway 3 dump
i. Gates-Learjet
j. Newbery Energy yard
k. Old fire-drill area
l. TAA landfill
m. Runway 29 fire-drill area (current)


A
B
Drexel Road
Old
Nogales
Highway
C
D
E
F
Tucson
International
Airport
G
Los Reales Road
H
I
J
K
L
M
N
Air
Force
Plant
#44

TCE in soils beneath the pits, but at levels less than 1 ppb (Table 6). Toluene and benzene levels below the pit were higher, ranging up to 12 ppb, perhaps reflecting the predominance of toluene-containing materials (such as gasoline and similar fuels) in the fire pit materials.

Conclusions

Fire-drills have been conducted at the airport since 1948, but do not appear to have been frequent, according to witnesses and aerial photos, until 1964, when they began to take place approximately monthly. Drills at this time were held near the south end of the north-south runway at a spot now occupied by Gates-Learjet. About 100-300 gallons of material were used per exercise. Most of this was JP-4 jet fuel, although material from an Arizona Air National Guard oil-water separator is known to have been contributed. No intentional dumping of TCE into any fire pits has been discovered. Based on information gathered to date, the fire-drill areas near the north-south runways do not appear to be significant source of TCE groundwater contamination. This conclusion is based on the probable relative scarcity of TCE in the materials used to set fires and the probability that most of the TCE placed in these areas was destroyed or volatilized during burning. Deep soil sampling did not reveal the presence of volatile organic compounds in the vadose zone at this site. Surface and subsurface samples at the fire-drill areas near Runway 29 found chlorinated solvents, including TCE. Toluene and benzene were present in the subsurface, as were lower concentrations of TCE. The fire pits near Runway 29 are probably located too far east to contribute contaminants to the main plume (Schmidt, 4). High levels of TCE found in surface soils here do not appear entirely consistent with low levels of TCE found in deep soil borings. This fire-drill area may be a source of local

TABLE 5

RESULTS OF SHALLOW SOIL SAMPLE TAKEN AT TAA FIRE TRAINING AREA NEAR RUNWAY 29 IN SEPTEMBER, 1981

ALL QUANTITIES PARTS PER BILLION

AFTER HARGIS AND MONTGOMERY (7)

Compound	Quantity Found
TCE	721
1,1-DCE	155
Benzene	10,338
Chloroform	3
Methylene chloride	4,308
Trichlorofluoromethane	116
Tetrachloroethylene	3,514
Toulene	160,000
Naphthalene	26,000
Ethylbenzene	23,000

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TABLE 6

CONCENTRATIONS OF TCE AND OTHER VOLATILE ORGANICS IN SURFACE AND SUBSURFACE SOILS BENEATH FIRE-DRILL AREAS NORTHWEST OF RUNWAY 29.

ALL QUANTITIES ARE PARTS PER BILLION

AFTER HARGIS AND MONTGOMERY (7)

Depth (feet)	Compound			
	TCE	DCE	Toluene	Benzene
0	0.7	1.2	9.1	11.6
2.5	ND	1.1	4.9	11.4
5	ND	1.5	6.6	12.6
10	ND	ND	0.3	0.5
15	ND	ND	4.2	0.6
20	0.1	ND	0.6	0.5
25	ND	ND	0.4	0.5
30	ND	ND	0.3	0.5
35	ND	ND	0.4	0.5
40	ND	ND	0.3	0.5
50	ND	ND	0.4	0.5
60	0.2	ND	4.0	0.5
70	ND	ND	0.6	0.4
80	ND	ND	0.5	0.5
90	ND	ND	0.3	0.5
100	ND	ND	ND	0.5
110	ND	ND	0.1	0.4
120	ND	ND	0.8	0.5

ND = not detected

JJR/d
B12GWTABLE

contamination of groundwater, especially by toluene and benzene. However, the extent of groundwater contamination, if any, emanating from the firedrill areas near Runway 29 is unknown, due to the lack of wells in the immediate vicinity.

LANDFILLS

Three landfill areas, apart from dumpsites on Air Force Plant #44, have been identified in previous investigations as having had the potential to affect groundwater quality (e.g., Eberhardt, 5; Hargis and Montgomery, Inc. 6, 7). These landfills are the TAA landfill, a landfill near the end of Runway 3 at the Tucson International Airport, and a landfill next to a turkey farm at Liberty and Drexel Roads in the northern portion of the main contaminant plume. No other landfills of potential significance were discovered in the study area during this investigation.

The TAA landfill, already discussed as a probable TCE dumpsite for Grand Central Aircraft, has been in use since the late 1940's and possibly before. A 1949 aerial photo shows a cleared area in the desert at the landfill site. This area contained some small outbuildings and a place where dumping apparently took place. Subsequent aerial photography showed that the landfill was in use (according to stains and changes in appearance of the area) at least through 1967. A 1976 photo appears to show the landfill in disuse, and an inspection made during the source investigation did not find evidence of recent, large-scale dumping there.

According to a former airport manager (No. 18, Table 2), the TAA landfill was intended for use by tenants at the airport hangars, and was also a repository for waste generated at the airport terminal. According to this source, the TAA landfill received primarily trash, which was burned on a

regular basis. This person stated that disposal of hazardous material did not take place at the TAA landfill, and would have been strongly discouraged by the Airport Authority. A second witness (No. 6, Table 2), however, considered reliable by the investigator, stated that chemicals, waste oil and other materials were regularly disposed of at the landfill by Grand Central and other TAA tenants. Such disposal may account for toluene and benzene found in the soils beneath the landfill (Table 7). Inspection of the landfill, revealed the presence of numerous spent 55-gallon drums, items that would not normally be considered trash. Generally, the drums were old, rusting, and unrecognizable as to their previous contents.

Deep soil samples (No. 15, Figure 10) taken from the TAA landfill do not conclusively indicate that the landfill received TCE, although this appears probable from an eyewitness account (No. 6, Table 2). TCE was detected only in a band of soil 60-90 feet deep (Table 7). Benzene and toluene were found, sometimes at high levels, throughout the soil profiles. Intermediate-depth soil samples, generally taken at less than 25 feet, were devoid of contaminants (No. 5, 16-21, Figure 10)

A waste disposal area was located near the end of Runway 3 in the 1940's and 1950's according to one witness (No. 18, Table 2). This person stated that this area received scrap parts and other such junk, and not hazardous waste. The existence of such an area could not be determined from available aerial photographs. Shallow soil samples from the area were devoid of volatile organic contaminants (Table 4).

The third landfill considered here occupied an area northwest of the International Airport, at the current intersection of Drexel and Liberty Roads. The landfill lay immediately west of a turkey farm, the remains of which still exist. While the turkey farm predates the 1949 aerial photo,

evidence of waste disposal at the landfill site does not appear until a 1954 photograph. Both the landfill and the turkey farm are visible on photographs through 1980. In 1982, a subdivision was built on the landfill site. No evidence has yet been discovered to indicate that the turkey farm landfill received hazardous waste. In aerial photographs, access to the landfill seems to have been through the turkey farm, suggesting that the landfill's primary mission was to receive farm waste. The landfill was reportedly well-known to Tucson residents, who used its contents for garden fertilizer (J. Angell, pers. comm.). Shallow soil samples taken at the subdivision built over the landfill did not contain volatile organic compounds, though the origin of these soils was not determined.

Conclusions

Three landfills were examined as to their potential as sources of groundwater contamination in the vicinity of the Tucson International airport. The Tucson Airport Authority landfill almost certainly received waste chemicals, including TCE, during Grand Central Aircraft's tenancy at the airport hangars. That the landfill received other potentially hazardous materials from other contributors appears highly likely, given its long operating history and the large numbers of abandoned drums that can be seen there today. TCE was detected only at depth in soil borings at the landfill. This may indicate that TCE from historic dumping has migrated through the uppermost soil layers. Conversely, TCE at these depths may be due to contact with contaminated groundwater from another source and thus be unrelated to surface conditions. Toluene and benzene, however, were detected at often significant concentrations throughout the soil profile. These latter data are probably indicative of disposal of waste fuel or similar materials at

the site. With the exception of surreptitious dumping, it is probable that the potential for the introduction of hazardous materials into the TAA landfill corresponded closely to the use of such materials by tenants at the hangars. Grand Central Aircraft Company is at present the only known source for the dumping of TCE into the landfill. As regards unauthorized dumping at the site, access to the landfill at times when the hangars were unoccupied does not appear to have been prohibitively restrictive to persons that may have wished to dump there. This landfill has a thirty-year history of use, of which only a small portion is known or likely to be known. Based upon information gathered to date, the Tucson Airport Authority landfill should be considered a potential source of groundwater pollution. This interpretation is based primarily on information from a person who took part in the disposal of waste chemicals there, and from examination of subsurface data for benzene and toluene. TCE soil sampling data do not lend themselves to an unequivocal interpretation in this case.

The location of the Runway 3 dump could not be confirmed on the basis of aerial photography. The only interviewee who had knowledge of disposal in that area said that it did not include hazardous waste. Soil borings did not provide conclusive evidence in favor of this being a repository for waste TCE or other chemicals of potential concern. Based on this information, the Runway 3 dump does not appear to be a potential source of groundwater pollution.

The turkey farm dump's purpose seems to have been to receive turkey farm waste. Shallow soil sampling there did not reveal the presence of TCE or other organic compounds. The turkey farm dump does not appear to be a source of groundwater pollution.

TABLE 7

OCCURRENCE OF TCE AND OTHER VOLATILE ORGANIC CONTAMINANTS
IN SOILS AT THE TUCSON AIRPORT AUTHORITY LANDFILL
SAMPLES COLLECTED BY ADHS, JANUARY, 1982,
ANALYZED BY EPA LABORATORIES

AFTER HARGIS AND MONTGOMERY (7)

ALL QUANTITIES PARTS PER BILLION

Depth (feet)	Compound			
	TCE	DCE	Toluene	Benzene
0	ND	ND	2.5	0.4
2.5	ND	ND	119.8	0.5
5	ND	ND	140.0	0.5
10	ND	ND	95.6	0.8
15	ND	ND	2.9	0.3
20	ND	ND	26.2	0.4
25	ND	ND	12.9	0.5
30	ND	ND	24.4	0.6
35	ND	ND	1.2	0.5
40	ND	ND	5.3	0.5
50	ND	ND	4.6	0.5
60	0.1	ND	24.8	0.7
70	0.1	ND	4.3	0.6
80	6.7	ND	58.8	1.6
90	0.5	ND	37.6	0.6
100	ND	ND	195.5	0.7
110	ND	ND	295.4	0.5
120	ND	ND	153.1	0.6
130	ND	ND	263.0	0.6
140	ND	ND	226.4	0.7
150	ND	ND	3.4	0.4

ND = not detected

JJR/d

B12GWTABLE

MISCELLANEOUS POTENTIAL INDUSTRIAL SOURCES

A number of potential industrial sources of groundwater contamination near the Tucson International Airport have been identified by previous investigators. These industrial sites are shown in Figure 11, and discussed below.

IBM

IBM has operated two facilities near the airport in recent years. One facility, at 5880 South Nogales Highway, was in use by IBM from March, 1978 until sometime in 1982. The structure was built in approximately 1969 as a W.T. Grant department store. This facility, according to a §3007 letter response, was "involved in the development, manufacturing, and testing of data processing products (Appendix A)". Specific industrial activities there are not known. Use of chlorinated solvents at the facility was minimal according to the company, totaling 13 gallons from 1979 to 1982. IBM provided EPA with an extensive list of haulers to whom hazardous waste (including chlorinated solvents and other materials) was given during the facility's lifetime.

The other IBM facility, located east of the airport at 6950 South Country Club Road, was built by the company in 1978 and has been in continuous operation since. Industrial activities at this facility are believed to be similar to those of the aforementioned plant. IBM's §3007 letter response (Appendix A) indicated that hundreds of gallons of solvents have been used at the plant, including primarily chlorobenzene, methylene chloride, and 1,1,1-trichloroethane. Use of several hundred pounds of chromium-containing material was also documented by the company. Chemical storage occurs at this plant, including a 5,000-gallon underground storage tank. Although the Country Club Road facility does not appear, based on location, to have

the potential to contribute contaminants to the main contaminant plume (Schmidt, 4), IBM in 1982 drilled a series of four shallow wells around the plant's perimeter to detect possible groundwater contamination. Sampling of these wells by IBM and ADHS did not reveal contamination.

Conclusions:

Although both IBM plants reportedly engaged in similar manufacturing activities, their use of solvents was quite different. The 5880 South Nogales Highway facility reportedly used only 13 gallons of chlorinated solvents during its operating history. While the 6950 South Country Club Road facility had significant solvent use, monitor wells constructed around the facility showed no contamination. For these reasons, neither IBM facility appears to be a source of groundwater contamination.

Gates-Learjet, Inc.

Gates-Learjet, Inc., a manufacturer of business jets, has operated an assembly facility at South Nogales Highway, on property leased from the airport, from 1976 to the present. Activities at the facility reportedly include airplane assembly, instrument panel assembly, surface preparation and painting, and customer service. Fueling operations are also located at the plant. Relatively little specific information is available regarding activities at the facility, since the company claimed business confidentiality in filing its §3007 letter response with EPA.

EPA's consultants conducted a walk-through inspection of the Gates-Learjet plant in February, 1983 (Ecology and Environment, 23). The results of this inspection characterized this as an "extremely clean" facility. No improper waste disposal practices were documented. Waste containing

methylethyl ketone was found to be generated by the plant, but was taken by a hazardous waste hauler in accordance with EPA requirements. The inspection team recommended that no further investigations be conducted at the facility.

Conclusions:

A walk-through inspection conducted for EPA indicated that Gates-Learjet's Tucson facility does not appear to be a source of groundwater contamination. Based upon this, no further investigations of the Gates-Learjet facility were undertaken during this study.

Newbery Industrial, Inc.

Newbery Industrial, Inc., is an electrical construction firm which performs work on commercial and industrial projects. The company leases an unimproved storage lot south of the hangar area from the Tucson Airport Authority. Newbery occupied the property in 1973-74 and then from late 1976 until the present.

According to the firm's brief § 3007 response (Appendix A), the leased yard is for storage of surplus construction equipment, including trucks, vans, electrical supplies, etc. In addition to these items, however, 55-gallon drums have been observed at the Newbery yard during this investigation and during previous inspections. The contents of these drums and their eventual disposition is unknown. One report was received by ADHS stating that large quantities of transformer fluid had been dumped in the yard. This report was not subsequently confirmed, however, and no corroborating reports have since been received. Visual inspection of the site did not reveal any obvious signs of large-scale dumping.

Conclusions:

No conclusive evidence has been gathered to date that indicates that the Newbery storage yard is a source of groundwater contamination. Practically nothing is known of historic activities at the site, however.

Burr-Brown Research Corporation

Burr-Brown Research Corporation (Burr-Brown) is a manufacturer of microelectronic components. The company has been based in Tucson since 1956, and has operated at a location near Tucson Boulevard and Medina Road since 1965 (Figure 1).

The use of hazardous materials has been well-documented by the company in its §3007 letter response (Appendix A), although only estimates of chemical usage prior to 1970 were provided. Hazardous substances were employed primarily in the cleaning, etching, and build-up of electronic circuit boards. Materials used included TCE, a variety of other solvents, acids, and heavy metals including chromium. Reported TCE use at the company ranged from 267 kilograms (48 gallons) in 1976 to 10,272 kilograms (1,859 gallons) in 1972. Past 1974 there seems to have been a trend towards the replacement of TCE at Burr-Brown with other solvents, including Freon (variety unknown) and trichloroethane. Chromium was used at the facility in the form of chromium trioxide, of which a maximum 130 pounds were used in 1973, and nichrome, of which a maximum 8 pounds were used in 1982. Some chemical products used by Burr-Brown contained small quantities (less than 1%) of chromic acid.

Waste disposal practices at the plant since 1979 appeared to be well-documented in the company's §3007 letter response, hazardous waste having been removed off-site by several commercial haulers. Before this time, however, disposal practices at the facility, especially for TCE, seem to have been

considerably less formal. According to the company, between 1974 and 1979, waste TCE and other solvents was "accumulated and made available at no cost to outside individuals who picked it up for salvage or recycle". Practically no information was provided, however, as to how this was accomplished. Before 1974, solvent disposal at the facility was even more casual. According to Burr-Brown, waste TCE, freon, and xylene were variously combined and deposited on-site to control weeds and dust, were discharged into the sanitary sewers, or were placed in trash and subsequently taken to the Los Reales landfill.

There exists the potential for disposal of hazardous materials, including TCE, down an abandoned well on the Burr-Brown property. Although this well was not mentioned in the company's §3007 letter response, persons in ADHS file interviews (Nos. 22 and 23, Table 2) have alluded to its existence. Three persons were discovered during the current investigation who had either direct or hearsay knowledge of the well (Nos. 1, 24, and 25, Table 2). The well apparently was originally located south of a private residence on Medina Road which occupied the current Burr-Brown property. The well, referred to as the Dire well in an ADHS file interview, was located approximately 300 feet south of Medina Road and 900 feet west of Tucson Boulevard, according to a 1958 aerial photograph. This location corresponds well to recollections of eyewitnesses. To date, nothing has been discovered regarding the well's construction or characteristics. The wellsite was covered by construction at Burr-Brown in 1976.

Two former Burr-Brown employees (Nos. 22 and 23, Table 2) admitted, in an interview with attorneys from ADHS and EPA, to having dumped various materials, including waste TCE and freon, down the abandoned well. This was reportedly done on orders from the employees' supervisor. One employee in particular related how he dumped one or two, five-to-seven-gallon containers

full of TCE per week into the well. The dumping took place for a period of approximately two years in the early 1970's according to this witness, who was unable to arrive at an estimate of the total amount of TCE that may have been dumped. Dumping of junked electronic parts in the well also took place. During the current investigation, an eyewitness to this dumping was discovered (No. 25, Table 2) who corroborated the fact that electronic parts were placed down the well, but who also stated that, to his knowledge, no TCE or similar substances were put there.

Conclusions:

Burr-Brown Research Corporation is a manufacturer of electronic components that has occupied property northeast of the Tucson International Airport since 1965. The company's manufacturing processes routinely use or have used hazardous materials, including TCE, other solvents, acids, and chromium-containing compounds. Indeed, through the company's efforts, the identities and use and disposal figures for chemicals at Burr-Brown are much better documented than at any other potential source in the TAA. Disposal techniques appear to have been adequate since 1979, but inadequate before then, especially before 1974. There seems little doubt that an open abandoned well existed on the property prior to construction of a new building in 1976. At least three witnesses claim to have seen disposal take place in the well; two of these reported to have participated in the disposal of potentially hazardous materials there. Groundwater contamination has been found downgradient of this location. Based on evidence gathered to date, Burr-Brown should be considered a highly probable source of local groundwater contamination. More monitor wells are needed to determine if West-Cap of Arizona was a contributing source, and assess the magnitude of subsurface

pollution at its likely origin, the Dire well.

West-Cap Arizona

West-Cap Arizona is an electronics manufacturing firm located near the corner of Plumer Avenue and Elvira Road, just northeast of the Tucson International Airport (Figure 1). The primary products manufactured by the company are capacitors. The company has been at its present location since 1963.

Most of the scant information regarding West-Cap's activities comes from the firm's §3007 letter response and from a walk-through inspection by EPA consultants (Ecology and Environment, 24). Use of TCE in large quantities did take place at the firm prior to 1982. Annual TCE use for the two years prior was given by the company as approximately two thousand gallons. Use figures for the 1960's and 1970's are not available, but it is assumed that TCE use was continual during this period, owing to the fact that the company has engaged in the same type of manufacturing since 1963. No information has been discovered regarding what other hazardous materials, if any, may have been used by West-Cap.

Disposal practices at West-Cap are poorly documented for most of the facility's operating life. Since 1980, TCE wastes have been picked up by a commercial hauler according to company representatives. Prior to that time, waste TCE was probably dumped into the sanitary sewer according to the company's § 3007 letter response (Appendix A), although it appears that the company does not have a clear idea what happened to waste TCE generated at the plant. One witness (No. 26, Table 2) said that he saw 55-gallon drums of TCE drained from a tank and poured into a floor drain which he assumed led to the City sewer, though this drain's eventual outfall remains unknown. The drain

was in a building located on the corner of Elvira and Plumer. The witness said that a 55-gallon drum of TCE was dumped in the drain approximately twice weekly during the period 1980-1981. This reported disposal rate exceeds the company's estimated usage of TCE at this time, and contradicts the company's assertion that waste TCE was hauled off-site after 1980. However, the witness report tends to indicate the disposal of significant amounts of TCE in an improper manner during the normal course of operations at West-Cap.

Conclusions:

West-Cap Arizona is an electronic components manufacturing firm that has occupied a site northeast of the Tucson International Airport since 1963. Use of TCE at the plant was documented in the company's § 3007 letter response and estimated at 2,000 gallons annually in 1980-81. It appears likely that TCE has been used at West-Cap since 1963. Disposal practices at the plant are undocumented prior to 1980. From an eyewitness recollection, it appears that a floor drain in a building at the southwestern corner of the facility received significant quantities of waste TCE, although the time period and amount of disposal given by this source contradict information provided by the company in its §3007 letter response. Based on information gathered to date, West-Cap should be considered a possible source of groundwater TCE pollution. More detailed on-site investigations and more monitor wells are needed to assess this facility's groundwater pollution potential.

Arizona Air National Guard

The Arizona Air National Guard facility located at the north edge of the Tucson International Airport (Figure 11) houses the 162nd Tactical Fighter Group. The mission of this unit is to train aircrews for other National Guard

and Air Force units. The unit as of 1982 flew about forty A-7 attack aircraft and one C-131 transport. The Air National Guard has occupied its location at the airport continuously since 1958.

The activities at the Guard base with potential for groundwater contamination include aircraft and motor pool vehicle maintenance (Ecology and Environment, 25). Identities and quantities of chemicals used for these purposes are largely unknown, but according to the Guard's §3007 response could have included any of a number of different solvents (Appendix A). The Guard has provided information that small quantities of TCE (approximately 50 gallons per year) were used at the facility from 1958 to 1965 and again from 1969 to 1978. The last record for TCE use at the facility dates to 1980. Other solvents, such as methyl ethyl ketone, toluene, carbon tetrachloride, and acetone were also used, apparently interchangeably with TCE for most purposes. No estimates of quantities of these materials used at the Guard base are available. A number of chemical solvents are currently used there, including 1,1,1-trichloroethane and perchloroethylene.

Disposal of TCE and other solvents at the Guard took place either by evaporation or by draining them into three oil-water separators located at the facility. Before 1965, separator material was used for dust and weed control in the then-unpaved parking areas. From 1965 to 1974, material was removed from the separators by a local septic tank cleaner and then dumped into the City sewer system. From 1974 to 1980, solids and volatile liquids were placed in the TAA fire-drill pits and burned during fire training exercises. Since 1980, separator material has been taken out-of-state by a commercial hazardous waste hauler. No on-site inspection of the oil-water separators has been made and their potential for groundwater contamination via leakage is unknown.

Conclusions:

The Arizona Air National Guard has based a tactical fighter training wing of the Tucson International Airport since 1958. TCE and other solvents have been used there apparently throughout the Guard's tenancy. Quantities of chemicals used and wastes generated are largely unknown. Used solvents that were not evaporated were, and still are, collected in three on-site oil-water separators. Materials from the separators have been variously dumped on-site for weed and dust control, burned in fire-training exercises, and hauled off-site for disposal. The oil-water separators themselves seem at this writing to be the most likely sources of the low-level TCE contamination observed in the well located on the Guard property. The separators have not been inspected, however, and their groundwater pollution potentials have not been assessed. Based on information gathered to date, primarily circumstantial, the Air National Guard facility at the Tucson International Airport should be considered a probable source of the observed, low-level TCE groundwater contamination. The relationship between activities at the facility and observed contamination remains unclear, however. A report currently being prepared for the Guard under the Air Force's Installation Restoration Program detailing historic waste generation at the facility should provide more insight into its role as a groundwater pollution source.

HUGHES AIRCRAFT COMPANY--U.S. AIR FORCE PLANT #44

The Hughes Aircraft Company, which operates U.S. Air Force Plant #44 south of the Tucson International Airport (Figure 12), is a documented source of groundwater contamination located adjacent to and immediately upgradient of the TAA study area (see Hargis and Montgomery, Inc., 26, 27). TCE and chromium contamination have been identified as emanating from this facility.

Hughes, with Air Force funding, has initiated extensive hydrologic investigations in the area and is currently installing treatment equipment to reclaim polluted groundwater and limit the downgradient migration of pollutants.

Background

The Hughes Aircraft Company occupies land in T15S R14E Sections 29 and 30 owned by the United States Air Force. Hughes also leases land north of the Hughes Access Road from the Tucson Airport Authority. The main building at the plant, Building #801, is located about one mile east of the Nogales Highway along the Hughes Access Road, and about 1 1/2 miles southeast of the Tucson Airport hangars. Hughes first occupied the site in 1951, at which time Building #801 comprised the plant's entirety. Air Force Plant #44 has been in continuous operation since, and has seen considerable expansion since first opening.

Hughes has performed defense-related work for the Air Force at the Tucson plant. Although much of the work is classified, the plant is known to have engaged primarily in the manufacture of air-launched guided missiles, including the Maverick missile currently being produced for the Air Force. The following manufacturing processes were identified by an EPA field investigation team as having taken place at the plant: plating, metal finishing operations, and electronic circuit board production. The degree of activity at Hughes is not fully known, but the company has been and continues to be a major employer in Tucson, currently employing approximately 6,000 persons. Aerial photography and historic documents from ADHS files indicate that initial employment at the plant was considerably less than this, with rapid expansion having taken place starting in about 1955.

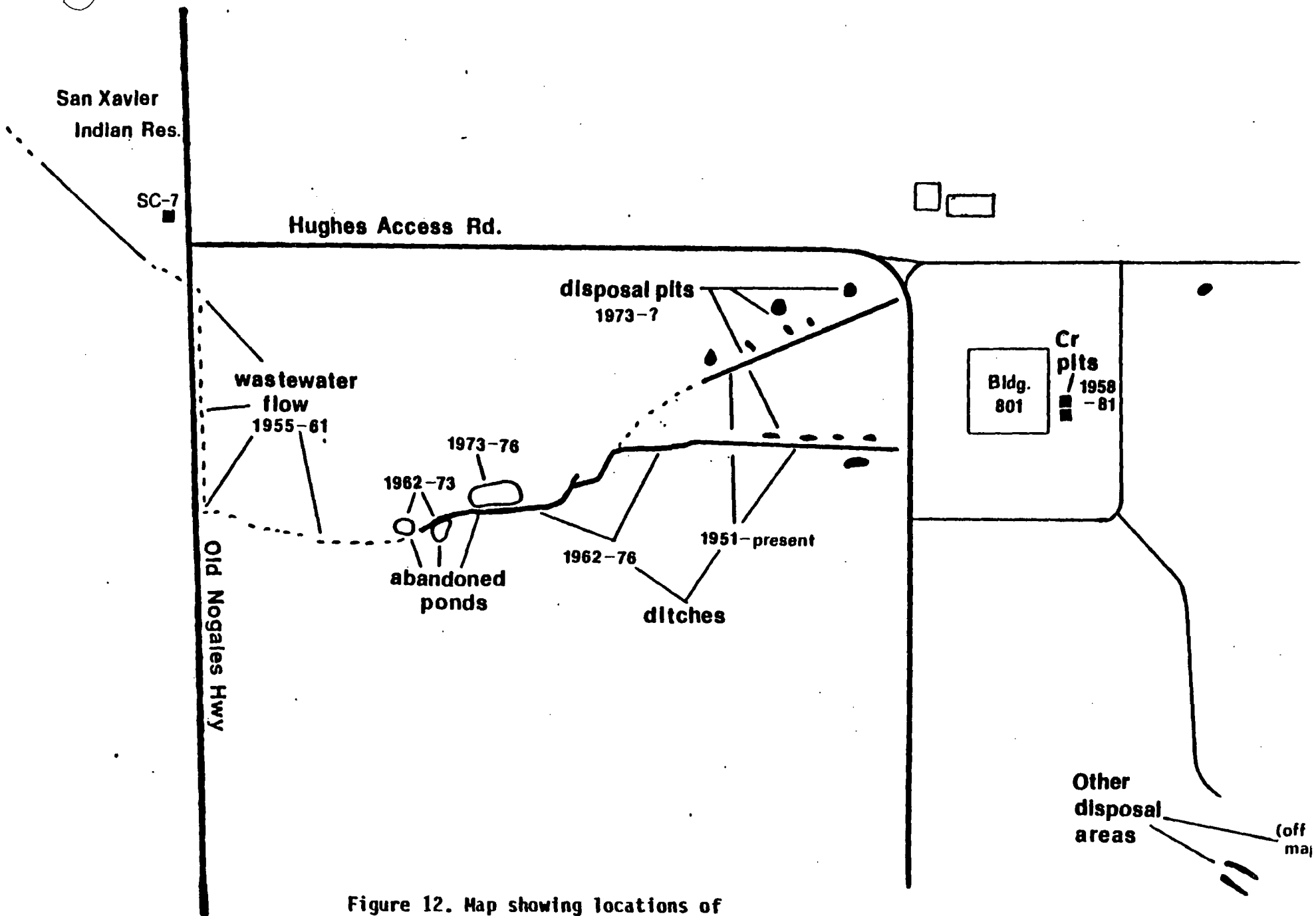

Figure 12. Map showing locations of hazardous waste disposal sites on Air Force Plant #44, after Hargis and Montgomery, 1982

Use of Hazardous Materials

Chromium was one of the materials used routinely at the plant. Hughes' plating operation was probably the largest on-site user of chromium. Much of this chromium was probably present as chromium salts or chromic acid used in plating baths. In a 1959 U.S. Air Force communication, the company estimated its yearly chromium use at 6,800 pounds (28). This magnitude of chromium usage probably dates to 1955, when historic correspondence from Hughes indicated a dramatic increase in plating shop activity from previous levels.

The manufacturing processes at the Hughes plant routinely used solvents as degreasers to prepare material surfaces. Specific use of TCE for this purpose was identified by the company in its initial §3007 letter response to EPA in 1981 (Appendix A). In this response, Hughes cited existing documentation of TCE recycling dating back to 1963. An account from a former plant worker (No. 26, Table 21) stated that 32-80 gallon degreasers were present in Building 801 as of the early 1970's. Earlier documentation of the use of TCE at Hughes is found in a January, 1954 report on environmental conditions at the plant, which noted the presence of TCE degreasers in the plating and machining shops in Building #801 (29). According to this report, degreasing was most commonly performed in the plating shop. Exact quantities of TCE used by Hughes have not been discovered, although a consultant's report estimated TCE usage at 3,600 gallons per year, extending back into the 1950's (Hargis and Montgomery, Inc., 6). This represents one of the largest estimated usages of TCE yet discovered near the Tucson International Airport. Assuming that most TCE use during the 1950's took place in the plating shop, 1955, the year in which plating shop activity reportedly increased may have also been the year in which a corresponding significant increase in TCE use occurred at Air Force Plant #44.

Historic Waste Disposal Practices

Industrial liquid waste was disposed of in two ways at the Hughes Tucson plant. Full-strength liquids, including various solvents, were disposed of in pits and ponds located near Building #801 (Hargis and Montgomery, Inc., 26). This type of disposal took place from 1952 until the mid-1970's, despite the company's initiation of chemical recycling in 1963. Hughes' initial § 3007 letter response indicated that a number of chemicals were dumped into on-site depressions, and included toluene, methylisobutyl ketone, methylethyl ketone, isopropanol, n-butyl acetate, acetone, and xylene (Appendix A). This response did not specifically mention TCE disposal. An interviewee (No. 24, Table 2) who was shown one of the solvent disposal areas in 1976 described it as an impounded wash south of Building #801. This person said that the area contained some solid waste, including paint cans. The disposal area was described as being about 100 feet across. Burning of flammable solvents on-site was a common practice at Hughes; at least one disposal pit was used as a fire-training area and others may have been set afire as often as nightly (Appendix A).

Several separate locations of disposal pits have been discovered at Air Force Plant #44 (Hargis and Montgomery, Inc., 26). From 1951 to 1955, disposal pits in the southern portion of the property were used. From 1955 to 1966, cleared areas in the southeastern portion of the property received waste. Waste disposal from 1966 to 1977 took place in excavations located to the northwest of Building #801. The nature and quantities of wastes disposed in these pits is not specifically known on the basis of information supplied to EPA by Hughes Aircraft. Two small disposal areas were built immediately east of Building #801 in 1961. These reportedly received precipitated heavy metal sludges (including chromium) and chemicals used to neutralize industrial

waste. These areas were used until 1981, when they were covered over by a parking lot.

Liquid waste was also discharged as wastewater into two unlined ditches immediately west of Building 801. This wastewater discharge had several sources according to a U.S. Air Force memorandum (28). Stormwater drainage, cooling water, and drainage water from the plant (including the plating shop) were discharged directly to the drainage ditches without treatment. Concentrated solutions, such as plating solutions, were piped to a treatment plant before being discharged to the ditches. Quantities of effluent varied over the history of the facility, as did the degree of treatment to which wastes were subjected.

Early in Hughes' tenancy at Air Force Plant #44, from 1951 through 1954, wastewater discharges from Building #801 were apparently small compared with those of subsequent years. In October, 1952, representatives from the Arizona State Department of Health (ASDH, now ADHS) inspected the Hughes facility and reported in a memorandum that discharges, including discharges from the plating shop, were limited (30). The limited discharge quantities are apparent from a 1954 aerial photo of the plant, which shows vegetation growing only a short distance downstream of the southerly effluent outfall (Figure 13). Although this vegetation is more highly developed than on a 1949 photo, it is much less extensive than that shown on later aerials. Wastewater is visible in the more southerly ditch in 1954. Wastewater treatment at this juncture was apparently rudimentary; improvements to the treatment system were the subject of a three-year correspondence between ASDH and Hughes. ASDH was at this time most interested in the control of chromium and cyanide in the effluent according to a letter from the then-Director of ASDH (31).

The period from 1955 through 1961 was likely very important in terms of potential effects on groundwater from the Hughes effluent. The company's wastewater treatment plant was completed in 1955, consisting of facilities to remove chromium and cyanide from concentrated wastes on a batch basis prior to discharge to the drainage ditches. Chromium treatment consisted of reduction from the hexavalent to the trivalent state, followed by precipitation. Hughes Aircraft reported to ASDH, however, that the new treatment plant was soon overwhelmed by increased wastewater discharge (32). At this time, according to an historic document (28), plating shop discharge alone rose to 250,000 gallons per day (gpd). By late 1958, Hughes reported total maximum wastewater discharges of 718,000 gpd (28). The water was channeled west to the railroad tracks, north to the intersection of the Hughes Access Road and Nogales Highway (the approximate location of City of Tucson well SC-7), and then northwest onto the San Xavier Indian Reservation. Ponding occurred where the waste stream crossed the highway, this area being described as a "bog" and a potential site for breeding mosquitoes in ASDH and City of Tucson memoranda (33, 34). Figure 14, an aerial photo of the site taken in early 1958, shows clearly the dense vegetation that grew alongside the Hughes waste stream, as well as a channel extending approximately 1,500 feet onto the reservation. This photo shows liquid (dark areas) in drainage ditches, in a culvert crossing the Nogales Highway, and in the ditch extending onto the reservation.

The wastewater disposal by Hughes brought letters of protest from the City of Tucson, concerned about potential contamination of SC-7, and from the (then-) Office of Indian Affairs, concerned with cattle drinking polluted water and the possible effects of the discharge on land values (35, 36). At the time, chromium was identified as the contaminant most likely to cause groundwater pollution; investigators did not address the possibility of TCE

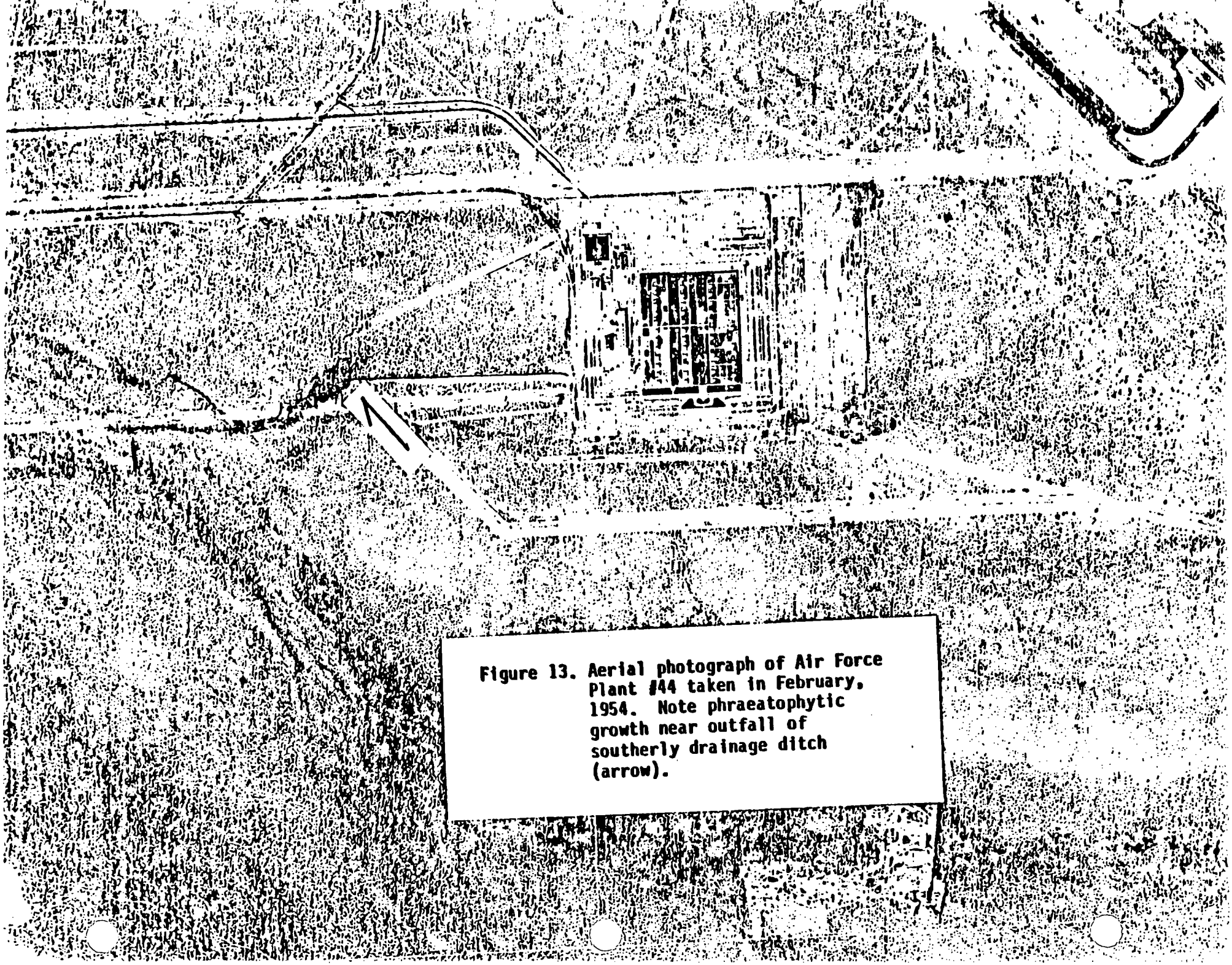

Figure 13. Aerial photograph of Air Force Plant #44 taken in February, 1954. Note phraeatophytic growth near outfall of southerly drainage ditch (arrow).

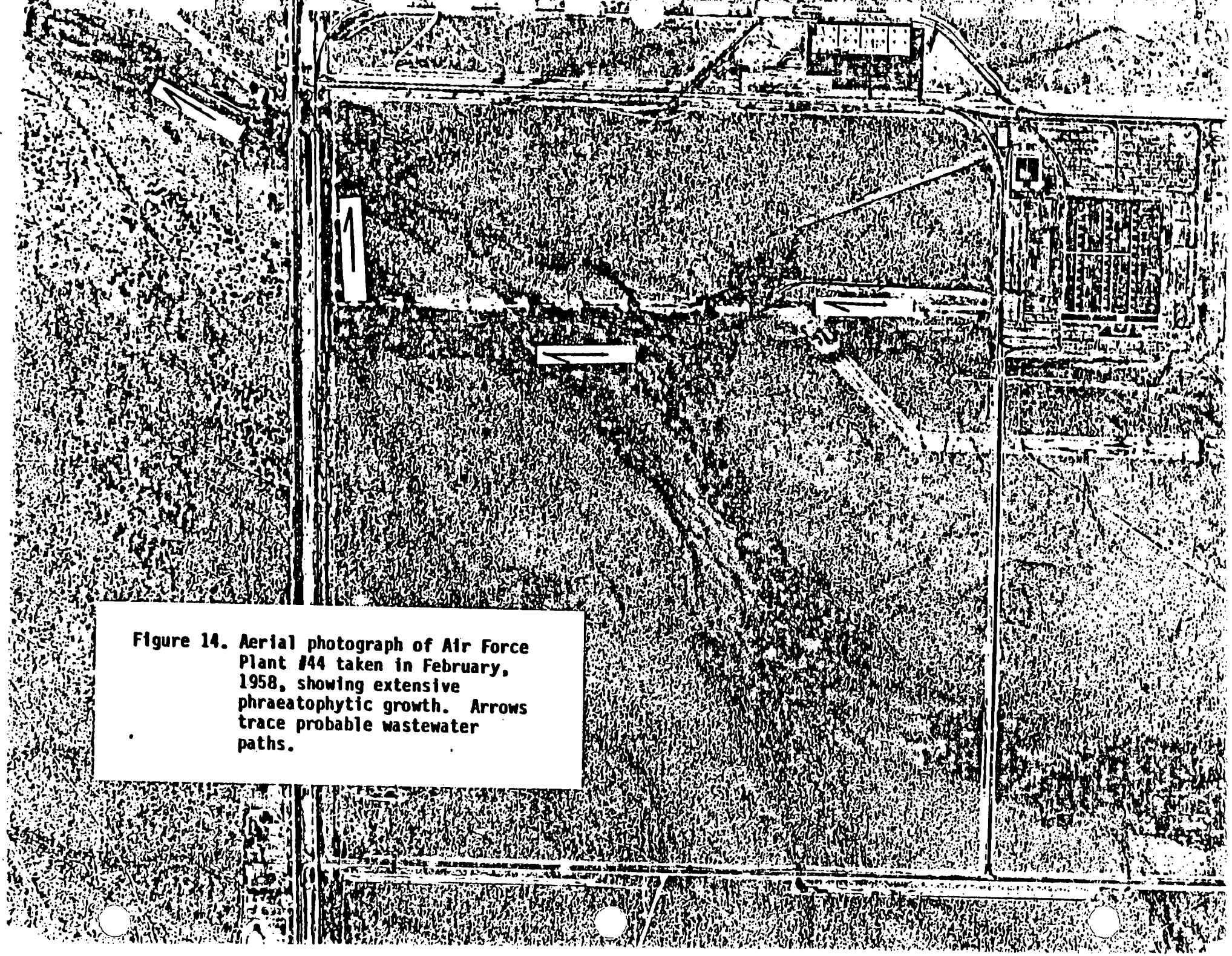

Figure 14. Aerial photograph of Air Force Plant #44 taken in February, 1958, showing extensive phraeatophytic growth. Arrows trace probable wastewater paths.

contamination. The City of Tucson, in a 1958 letter to ASDH, presented data showing increasing chromium levels in water samples from SC-7 (36). From 1957 to 1958, chromium levels in SC-7 increased from 0.02 to 0.05 mg/l, the latter figure equalling the drinking water standard. As with most historic analyses no indication was made as to what form of chromium (i.e., trivalent or hexavalent) was being measured.

The response to the wastewater disposal problem was slow, much of the delay apparently stemming from difficulty in procuring Air Force funding for improved wastewater treatment. In a letter to the Office of Indian Affairs, Hughes reported that some internal plumbing changes were made in 1958 to more fully treat contaminated water from the plating shop, and a water conservation program was initiated (37). Still, water flowed to the Nogales Highway at 130,000 gpd in 1959 (ASDH memorandum, 33), and total non-sewer wastewater discharge in 1963 was estimated at 600,000 gpd, of which 276,000 gpd was estimated as seepage into the ground (U.S. Bureau of Mines, 38). Efforts by Hughes to contain its wastewater discharge seem to have become progressively more effective in the 1960's. In a 1967 photo, the extent of riparian vegetation downstream of the ditch outfalls was much reduced, and wastewater holding ponds were present (Figure 15). Further trenching and reduction in riparian growth had occurred by 1973, when a single, larger holding pond had been constructed. 1976 saw the construction of the system of large, lined holding ponds still in use.

Historic analyses of chromium in the Hughes wastewater discharge exist. Data discovered during this investigation show chromium concentrations in the Hughes effluent ranged from .002 to 100 mg/l. However, most of these reports did not specify which of the two species of chromium (trivalent or hexavalent) was being analyzed. Memoranda documenting Hughes' analytical procedures

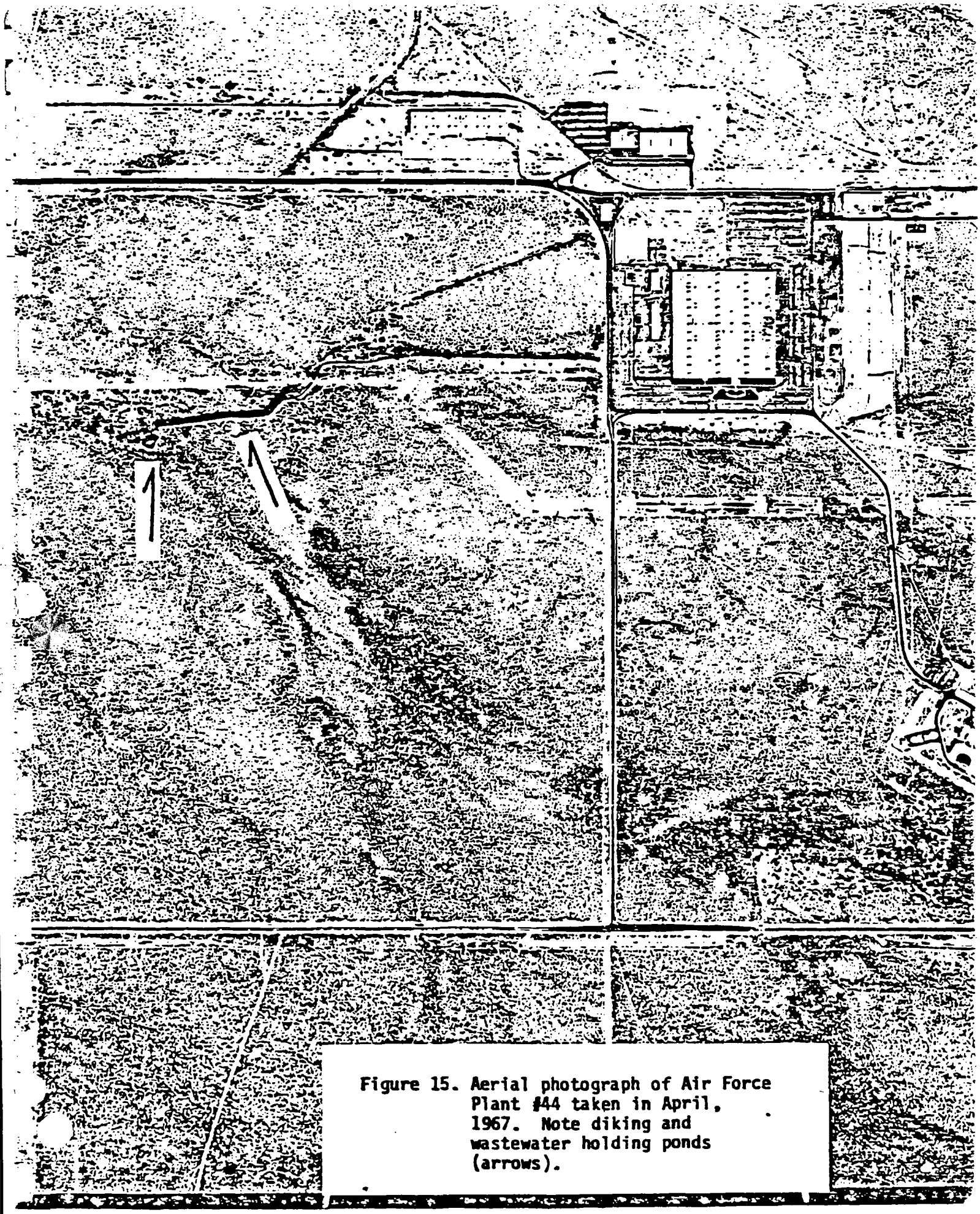

Figure 15. Aerial photograph of Air Force Plant #44 taken in April, 1967. Note diking and wastewater holding ponds (arrows).

indicate the use of the diphenyl carboxide colorimetric method for determining chromium, a method specific to detection of hexavalent chromium (39, 40).

Evidence discovered to date indicates that TCE was also a likely component of the Hughes wastewater stream. The presence of TCE in degreasers in the plating shop, which was an important effluent source, was noted in the environmental analysis of the plant performed in 1954 (32). This analysis further indicated problems in the degreasing process, including dropping of objects at excessive speed and removal of objects away from the degreaser while still wet with solvent. According to this report, practices such as these led to "excessive losses" of TCE and "excessive concentrations" in the area around the degreasing operation. Subsequent communications in ADHS files further indicate that handling of hazardous materials in the plating shop was casual, if not careless. A letter to Hughes in early 1957 mentioned a recent ASDH inspection, saying that, "Attention was called (by ASDH inspectors) to the wet flooring in your plating room, which could drain large concentrations of toxic chemicals (34)." An interviewee (No. 24, Table 2) who was shown the plating shop in the 1950's recalled that it had at that time a raised floor, and that the subfloor was often flushed with water to remove spilled chemicals. This water entered the shop drains, which in turn emptied untreated, into the drainage ditch. Later in 1957, Hughes itself admitted to problems with chemical handling in the plating shop, saying in a letter to ASDH:

> "Our problem of contamination in the lagoon and drainage ditch arises from leaking tanks, spilling chemicals on the floor, the use of rinse tanks not connected with the waste treatment plant and other such accidents. Over the last several months, we have been endeavoring to prevent spillage,

leakage and such causes of contamination but have only been partially successful. It is evident that we will continue to have failures and the human element of error as long as we attempt to operate under our present piping arrangement (32)."

No analyses of TCE in Hughes' wastewater flow have been discovered, nor have reliable estimates of the amounts of TCE that were put into the flow. During overland transport in the drainage ditches, some of the TCE in the wastewater was probably lost to volatilization and photo oxidation (Callahan, et al ., 18), though without more specific knowledge of the physical characteristics of the wastewater stream it is difficult to assess how large these TCE losses might have been.

Currently, liquid waste generated by Air Force Plant #44 is placed in a series of lined holding ponds and evaporation beds located immediately southwest of Building #801. The ponds and beds cover approximately seven acres. The impoundments were constructed in 1976, and were lined with a single layer of 20-mil PVC with a 12-inch earthen cover. The holding ponds receive industrial waste, generally prior to treatment, of the following categories: general industrial waste (including chromium), wastewater treatment sludges from electroplating operations, concentrated acid waste (containing chromium), and concentrated alkaline solutions (i.e., spent cyanide plating bath solutions from electroplating operations). The evaporation beds receive treated liquid waste, including: reverse osmosis unit waste brine, treated cyanide sludges, treated acid waste, and backwash from the filter building. Although previously treated, materials discharged to the evaporation beds may contain hazardous wastes (Hughes Aircraft Company, 1984; 41).

Evidence of the ponds' integrity is, according to Hughes, provided by perched zone monitor wells constructed as part of the company's on-site groundwater pollution investigations (26, 27). Results from these wells have shown a progressive decline in total dissolved solids concentrations in perched zone water since monitoring began. Twenty-four neutron logging holes have been installed around the perimeter of the ponds and beds to detect increases in soil moisture. According to the results of neutron logging and the perched zone water quality, a consultant retained by Hughes has concluded that the lined holding ponds/evaporation beds are not leaking and do not currently pose a threat to the quality of surrounding groundwater (41).

Subsurface Conditions at Air Force Plant #44 (Recent Data)

Extensive characterizations of subsurface conditions at Air Force Plant #44 have been made, including quantification of TCE and other contaminants in soils and perched groundwater (see Hargis and Montgomery, Inc., 26, 27). These investigations have found TCE in at least trace quantities beneath each of the pits known to have received waste solvents. These analyses confirm the belief that TCE was disposed of, at least in part, in on-site pits in addition to the flammable solvents listed in the Hughes § 3007 report. Solvent disposal pits west of Building #801 have been cited as being important potential sources of TCE and other solvents (26). Subsurface investigations of pits immediately east of Building #801 confirmed that this area was used to dispose of chromium sludge, some of which perhaps emanated from the wastewater treatment plant.

Chromium, TCE, and other volatile organic compounds have been found in soils and perched groundwater along the historic course of Hughes' wastewater stream. Borings taken at the south drainage ditch outfall, at the sites of

abandoned wastewater ponds used in 1960's, and at the place where wastewater flowed to the Nogales Highway have all revealed the presence of chromium and TCE in soil or perched groundwater. Samples taken from beneath former wastewater holding ponds were particularly high in TCE. Water samples taken from a perched zone monitor well near SC-7 also contained TCE (Figure 16, Table 8). Assuming that vertical infiltration is the only means whereby TCE and other contaminants could have been introduced to soils and perched water at these locations, then the only currently identified source of these compounds is the Hughes wastewater stream. The subsurface analysis of the western portion of Air Force Plant #44 confirms that chromium and TCE were present in the plant's wastewater discharge, and that this discharge carried with it the potential to introduce contaminants into the regional groundwater system (26, 27). These data also indicate the potential for surface transport of TCE for significant distances in the wastewater stream, as far as the vicinity of well SC-7, and perhaps further onto the San Xavier Indian Reservation.

Conclusions:

The Hughes Aircraft Company first occupied Air Force Plant #44 in 1951 and has engaged in defense-related manufacturing there ever since. The use of large quantities of chromium (6,800 lbs/yr) and TCE (3,600 gal/yr) at the plant has been reported. Also documented is the direct disposal of solvents and chromium-containing wastes into on-site pits and ponds, and the historic discharge of industrial wastewater into ditches west of Building #801. In spite of attempted wastewater treatment, analyses of effluent and groundwater from the late 1950's indicate that the effluent stream contained varying concentrations of chromium that entered the groundwater, causing elevated

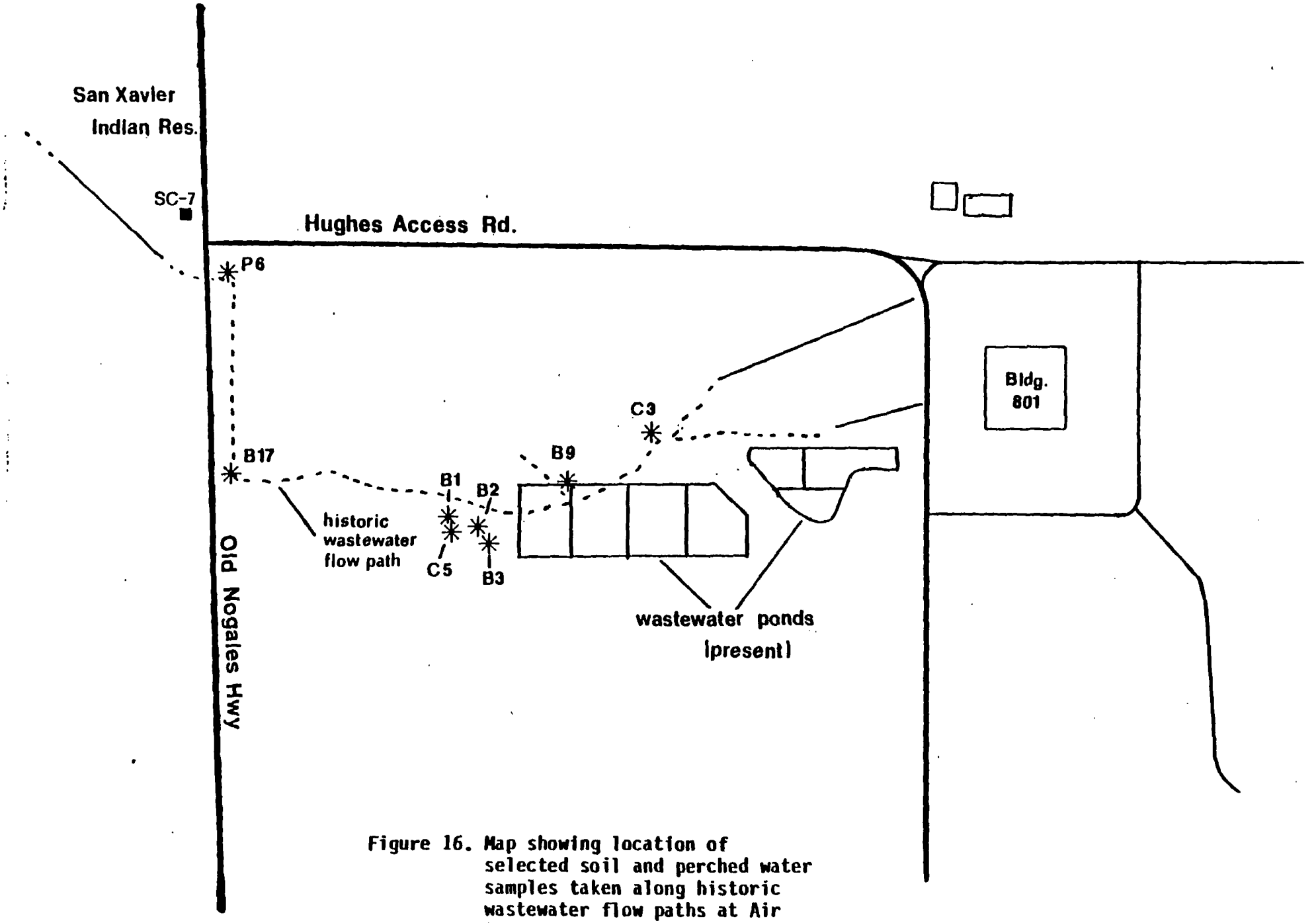

Figure 16. Map showing location of selected soil and perched water samples taken along historic wastewater flow paths at Air Force Plant #44. Analytical results given in Table After Hargis and Montgomery,

TABLE 8

CONCENTRATIONS OF VOLATILE ORGANICS
IN SOILS AND PERCHED GROUNDWATER BENEATH HISTORIC
WASTEWATER FLOW PATHS, AIR FORCE PLANT #44

ALL QUANTITIES PARTS PER BILLION
SAMPLE NUMBERS REFER TO THOSE ON FIGURE 16

AFTER HARGIS AND MONTGOMERY (26, 27)

Sample Number	Medium	Compound TCE	TCA	DCE
B-1*	Perched Water	240	300	480
B-2*	Perched Water	320	140	390
B-3*	Perched Water	1,300	50	690
B-9*	Perched Water	1,500	5	400
B-17	Soil	12	ND	ND
C-3	Soil	6	ND	ND
C-5*	Soil	13	4	4
P-6	Perched Water	46	ND	ND

NOTE: Values for soil represent maximum values along the soil profile, values for perched water are latest data in Hargis and Montgomery reports (20, 21).

* = sampling site located near abandoned wastewater pond

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chromium concentrations in City of Tucson well SC-7. File documents at ADHS indicate continual spillage and leakage of chemicals in Hughes' industrial operations, specifically in the plating shop. Historic use of TCE in the plating shop has been documented, as has the flow of washwater from the shop's floor drains to the wastewater collection system, making it likely that the TCE was present in the company's wastewater. Analyses of TCE in the subsurface, especially in soil and perched water, confirm that TCE was present in the plant's wastewater stream and subsequently migrated into the subsurface environment.

Air Force Plant #44 thus encompasses several types of sources of groundwater contamination. Direct disposal of solvents and chromium wastes into unlined pits and ponds apparently caused very high subsurface contaminant concentrations on the plant site. Wastewater discharges provided a means of transportation and infiltration for associated contaminants, and had the potential to cause groundwater pollution, probably at lower levels than resulted from direct disposal in pits. Based on information gathered to date, including TCE and chromium use, duration of activity, disposal practices, and subsurface data, Air Force Plant #44 appears to be the most significant source of groundwater contamination in the vicinity of the Tucson International Airport.

SUMMARY AND CONCLUSIONS

Several potential sources of groundwater contamination exist in the vicinity of the Tucson International Airport. These are summarized in Table 9. Based on evidence gathered in this and previous investigations, the following conclusions were reached regarding possible sources of groundwater contamination:

1. Air Force Plant #44 is an acknowledged source of chromium and TCE contamination. Use of chromium at the plant was the largest documented in the area; TCE use estimates were among the largest. The duration of large-scale use of chromium and TCE was longer at this plant than at any other potential source, including aggregate use at the Tucson airport hangar area. The site has had a number of potential sources, including pits in which spent chemicals and sludges were disposed of and a wastewater discharge which was not retained on-site until 1961. Historic documents indicate careless chemical handling in areas where drainage systems allowed chemicals to flow directly to open washes, in some cases bypassing the plant's wastewater treatment systems. Historic analyses of Tucson well SC-7 show that the plant's effluent was probably responsible for elevation of chromium levels in groundwater as early as 1958. Analyses of soils and perched groundwater indicate that disposal pits and the historic wastewater were both probable means whereby contaminants including TCE entered the regional groundwater system. The available data appear to be consistent with the hypothesis that Air Force Plant #44 is the most significant source of groundwater contamination in the vicinity of the Tucson International Airport.

2. The Grand Central Aircraft Company almost certainly caused the contamination of local wells through the improper disposal of wastewater. While this wastewater probably contained chromium and TCE, these were probably relatively minor constituents compared to other chemicals known to have been supplied to the plant by TURCO Products, Inc. These other chemicals are known to be capable of causing groundwater pollution but are not now found in local groundwater. Chromium plating took place to some degree at Grand Central, although no estimates of usage were discovered, nor was a means of disposal for plating wastes generated. Use of TURCO products may have accounted for approximately 130 pounds of chromium per year. TCE use at Grand Central may have been as great as 4,800 gallons per year. Waste TCE from Grand Central was disposed of primarily at the Tucson Airport Authority landfill, which may have received as much as 2,400 gallons of TCE per year according to reliable witnesses. While activity at Grand Central was intense and corresponding estimates of TCE use were large, the duration of such activity at the plant was brief, lasting for probably little more than two years of the company's four-year tenancy. Primarily for this reason, Grand Central's potential for contribution of TCE to groundwater, although highly likely, appears to have been much smaller than that of Air Force Plant #44. Indications of chromium use at Grand Central comparable to that which took place at Air Force Plant #44 have not been discovered.

TABLE 9. SUMMARY OF POTENTIAL INDUSTRIAL SOURCES

OF GROUNDWATER NEAR THE TUCSON INTERNATIONAL AIRPORT

FACILITY	YEARS OPERATED	NUMBER OF EMPLOYEES	TCE USE	CHROMIUM USE	REMARKS
Consolidated Aircraft	4-6	Unknown	Possible, unquantified	Possible, unquantified	Nature of activities appea to make widespread CR and TCE use unlikely
Grand Central Aircraft	4	up to 4,700; varied	1,200-4,800 gal/yr (est.)	129 lbs/yr (est.) from TURCO products; plating known but use of Cr unquantified	Widespread use of addition chemicals; probable source of groundwater contaminati in early 1950's
Douglas Aircraft	4	1,500	None, according to former workers	None, according to former workers	In spite of former employe accounts, nature of activi makes some TCE use likely, though quantities were probably relatively small
Tucson Aviation Center	15	Unknown, possibly several hundred	300 gallons documented; est. waste solvent = 192 gal/yr	Negligible use documented in §3007 letter responses	Aggregate of numerous smal businesses
Burr-Brown	20		267-10,000 kg/yr	up to 132 lbs/yr	Waste disposal practices highly suspect
West-Cap of Arizona	22		up to 2,000 gal/yr	None documented	Poor accounting of waste TCE; improper disposal
Hughes Aircraft Co./Air Force Plant #44	34	up to 6,000	3,000 gal/yr (est.)	6,800 lbs.yr (1959 est.)	Documented poor chemical handling and disposal practices; multiple potenti source areas on-site

3. Information on the activities of Consolidated Aircraft at the hangars is very limited, but allows for the possibility that this facility contributed to groundwater pollution. Neither the existence nor the improper disposal of chromium or TCE have been reliably demonstrated at Consolidated. This facility's role as a new-aircraft modification center engaged primarily in assembly and installation would seem to preclude use of TCE or chromium on as large a scale as at Air Force Plant #44 or Grand Central Aircraft.

4. Douglas Aircraft does not appear to have been a significant source of groundwater contamination during its tenancy at the hangars, based on an analysis of work performed there and information supplied by former employees. No TCE or chromium use or disposal was documented at Douglas, although the nature of work performed there allows for the possibility that some use of TCE or similar solvent occurred.

5. The U.S. Air Force occupied the Tucson Airport Authority hangars for approximately one month in 1968-69, and reportedly disposed of hundreds of gallons of liquids including JP-4 jet fuel and TCE in the desert south of the hangars. Subsequent EPA intermediate depth soil borings at the reported disposal sites failed to show evidence of vadose zone contamination, however.

6. Recent operators at the Tucson Airport Authority hangars include small businesses such as aircraft modification/repair companies of a type known to generate waste solvents. The largest reported use of TCE by any of these businesses is approximately 50 gallons per year. Using figures gathered for similar Maricopa County businesses, the aggregate waste solvent generated by the aircraft modification firms currently in residence at the hangars was estimated at approximately 200 gallons per year. While such figures leave open the possibility of groundwater contamination emanating from small businesses at the hangars, they are small in comparison with figures derived for other potential sources. The contaminant contribution of recent activities (i.e., post-1970) thus appears to be minor.

7. Intermediate depth soil sampling performed by EPA in the vicinity of the airport hangars failed to find evidence of vadose zone contamination. Shallow soil samples taken near the hangars by ADHS did indicate disposal there of TCE and, in one instance, chromium. High levels of DCE, a volatile compound, in one of these samples may be indicative of recent disposal activities. Certain aspects of these sampling results, in particular the predominance of DCE over TCE, do not correspond well to conditions in underlying groundwater. Neither did the high chromium level found in one sample near the entrance to the hangars correspond well to known disposal practices there. In general, the presence of contaminants in shallow soil samples could not be conclusively traced to individual tenants or specific disposal activities at the hangars.

8. Three landfills were evaluated as to their probable groundwater pollution potential. Of these, only the old Tucson Airport Authority landfill appears to have received hazardous materials. TCE from Grand Central was dumped in the TAA landfill, along with other waste chemicals. While this is the only known dumping of TCE there, the possibility that other dumping of hazardous materials took place over the landfill's long history cannot be eliminated. Deep soil borings contained TCE, possibly indicative of historic dumping. The TAA landfill appears to have had the potential to contribute TCE to local groundwater.

9. Burr-Brown Research Corporation is a highly probable source of local groundwater contamination located to the east of the main plume. This conclusion is based on documented TCE use, poor disposal practices and the reports of witnesses indicating the presence of an abandoned well on-site and the possibility of disposal there. More monitor wells are needed in the area to define Burr-Brown's contribution and differentiate it from possible contributions from its neighbor to the south, West-Cap Arizona.

10. West-Cap Arizona is a possible source of local groundwater contamination located to the east of the main plume. This conclusion is based on documented TCE use and the high probability of longterm inadequate disposal practices. A monitor well, SF-3, located downgradient of part of the facility, may not be situated properly to monitor contamination from all portions of the plant.

More on-site investigation and additional monitor wells are needed to more completely assess West-Cap's pollution potential.

11. The Arizona Air National Guard facility located at the northern edge of the airport is a probable source of local groundwater pollution east of the main plume. This conclusion is based on circumstantial evidence, largely the Guard's location relative to the known extent of contamination, the documentation of at least some TCE use, and the presence of possible pollution sources at the oil-water separators. It is not yet clear how activities at the Guard facility specifically relate to observed contamination. An ongoing Installation Restoration Program study of hazardous waste generated at the facility should allow better understanding of this relationship.

12. The abandoned fire-drill areas located near runway 3 were in use from 1964 until sometime in the 1970's. While these areas received primarily JP-4 jet fuel, they also received waste materials, possibly including TCE, from the Arizona Air National Guard. Intermediate-depth soil sampling performed by EPA at these sites failed to confirm vadose zone contamination emanating from them. The fire-drill areas currently in use are located in the southeastern portion of the airport north of Runway 29. Shallow soil sampling here revealed high concentrations of a range of contaminants, including TCE. Deep soil borings contained traces of TCE and higher levels of toluene and benzene, indicating that downward migration of contaminants from this source has taken

place. The fire-drill areas currently in use are a potential source of groundwater contamination. No local wells exist to determine the extent of this contamination, however.

13. The possibility that surreptitious dumping of TCE or chromium at as yet undiscovered locations near the airport contributed to groundwater pollution was not addressed in this investigation. The location and amounts of contaminants in the local groundwater system appear to be explainable on the basis of the activities previously discussed.

To summarize, there appear to have been two important sources of groundwater pollution which contributed to the main contaminant plume near the Tucson International Airport. Air Force Plant #44 appears to have been the more significant of these, while the activities of the Grand Central Aircraft Company appear to have been less important. The Burr-Brown Corporation, West-Cap Arizona, and the Arizona Air National Guard are probably responsible for two smaller contaminant plumes located east of the main plume. Other potential sources were considered to be less significant, if indeed they were sources at all, or could not be fully evaluated on the basis of available data.

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NOTES

1. U.S. Environmental Protection Agency. 1980. Ambient water quality criteria for trichloroethylene. EPA 44015-80-077. Office of Water Regulations and Standards, Washington, D.C. 58 p.

2. "Action limits" are concentrations of contaminants in drinking water above which the Arizona Department of Health Services will recommend that the contamination be removed from public drinking water supplies. Compliance with action limits is voluntary.

3. Arizona Department of Health Services. 1984. Workplan for Phase I of the Remedial Investigation for the Tucson Airport. Draft submitted to USEPA Region IX. Water Quality Management Section, Phoenix. 12 p.

4. Schmidt, K.D. 1985. Results of the Remedial Investigation for the Tucson Airport area. Draft report submitted to the Arizona Department of Health Services, Phoenix. 108 p.

5. Eberhardt, S.E. 1983. Possible sources of groundwater contamination in the Tucson International Airport area. Arizona Department of Health Services, Phoenix. 26 p.

6. Hargis and Montgomery, Inc. 1982. Interim report, digital simulation of contaminant transport in the regional aquifer system, U.S. Air Force Plant #44, Tucson, Arizona. Hargis and Montgomery, Inc. Tucson. 45 p.

7. Hargis and Montgomery, Inc. 1983. Evaluation of data collected by the Tucson Groundwater Contamination Study Task Force in the vicinity of the U.S. Air Force Plant #44, Tucson, Arizona. Hargis and Montgomery, Inc. Tucson. 47 p.

8. USEPA Region IX. 1983. Aerial photographic analysis of a hazardous waste site study area, Tucson, Arizona. Environmental Monitoring Systems Laboratory, Las Vegas, Nevada. 58 p. inc. 45 plates.

9. USEPA Region IX. Date and title unknown. Bound volume of aerial photography of Air Force Plant #44, with accompanying interpretation. Environmental Monitoring Systems Laboratory. Las Vegas, Nevada. 26 p. inc. 15 plates.

10. For example, unintentional loss of TCA from a virgin storage tank may have contributed to contamination at the 52nd Street McDowell Road Superfund site in Phoenix. See: Motorola, Inc. 1984. Remedial Investigation/Feasibility Study Work Plan. Submitted to Arizona Department of Health services, Phoenix, and others.

11. Wilson, J. T., and others. 1981. Transport and fate of selected organic pollutants in a sandy soil. Jour. Environ. Qual. 10:4,501-506.

12. Parsons, F., P. R. Wood, and J. DeMarco. 1984. Transformations of tetrachloroethylene and trichloroethylene in microcosms and groundwater. Jour. AWWA. Feb., 56-59.

13. National Research Council. 1977. Drinking water and health. Safe Drinking Water Committee. Washington, D.C. 939 p.

14. U.S. Environmental Protection Agency. 1980. Ambient water quality criteria for dichloroethylenes. EPA 440/5:80-041. Office of Water Regulations and Standards. Washington, D.C. 52 p.

15. Molnar, A. 1982. Site investigation summary, Kingman Industrial Park, Kingman, Arizona. Submitted to U.S. Environmental Protection Agency, Region 9, San Francisco. 15 p.

16. U.S. Environmental Protection Agency. 1980. Ambient water quality criteria for chromium. EPA 440/5-80-35. Office of Water Regulations and Standards. Washington, D.C. 105 p.

17. U.S. Environmental Protection Agency. 1980. Ambient water quality criteria for chloroform. EPA 440/5-80-35. Office of Water Regulations and Standards. Washington, D.C. 105 p.

18. Callahan, M.A., and others. 1979. Water-related environmental fate of 129 priority pollutants. Versar, Inc., Springfield, VA. National Technical Information System No. PB80-204373.

19. "Douglas firm to be 3rd to use headquarters" Arizona Daily Star, Tucson. May 21, 1954.

20. Urban Research Associates. 1984. A survey of Arizona's small quantity hazardous waste generators. Prepared for Arizona Department of Health Services, Phoenix. 112 p.

21. Ecology and Environment, Inc. 1982. Tucson International Airport groundwater contamination study soils boring sample documentation report. Prepared for USEPA Region IX, San Francisco. 15 p.

22. Lemmon, J.J. 1982. In search of TCE, a soil sampling program in the Tucson Airport area. Draft report prepared for Arizona Department of Health Services, Phoenix. 15 p.

23. Ecology and Environment, Inc. 1983. Site inspection report, Gates-Learjet Corporation, Tucson, Arizona. Submitted to USEPA Region IX, San Francisco. 6 p.

24. Ecology and Environment, Inc. 1983. Site inspection report, West-Cap Arizona. Submitted to USEPA, Region IX, San Francisco. 6 p.

25. Ecology and Environment, Inc. 1983. Site inspection report. Arizona Air National Guard, Tucson, Arizona. Submitted to USEPA, Region IX, San Francisco. 7 p.

26. Hargis and Montgomery, Inc. 1982. Phase I investigation of subsurface conditions in the vicinity of abandoned waste disposal sites, Hughes Aircraft Company manufacturing facility, Tucson, Arizona. Hargis and Montgomery, Inc., Tucson. 39 p., 3 volumes inc. appendices.

27. Hargis and Montgomery, Inc. 1982. Phase II investigation of subsurface conditions in the vicinity of abandoned waste disposal sites, Hughes Aircraft Company manufacturing facility, Tucson, Arizona. Hargis and Montgomery, Inc., Tucson. 29 p., 3 volumes inc. appendices.

28. Memorandum from the Office of the Civil Engineer, Wright-Patterson Air Force base, dated 11-24-59, regarding industrial waste treatment at Air Force Plant #44. From ADHS archives.

29. Memorandum by Bureau of Sanitation, ASDH, dated 10-4-52. From ADHS archives.

30. Memorandum by Bureau of Sanitation, ASDH, dated 10-4-52. From ADHS archives.

31. Letter from Geo. W. Marx, ASDH, to J. E. Locke, Hughes Aircraft Company, dated 7-12-57. From ADHS archives.

32. Letter from J. E. Locke, Hughes Aircraft Company, to Geo. W. Marx, Director, Bureau of Sanitation, ASDH, dated 7-17-57. From ADHS archives.

33. Memorandum to Geo. W. Marx, ASDH, from Gary Bujewski; ASDH, dated 7-5-57, regarding inspection of Hughes Aircraft Company wastewater disposal. From ADHS archives.

34. Letter from Phil J. Martin, Water System Manager, City of Tucson, to Geo. W. Marx, ASDH, dated 6-7-57. From ADHS archives.

35. Letter from Harry W. Gilmore, Sup't., Papago Indian Agency, Office of Indian Affairs, Sells, Arizona, to Geo. W. Marx, ASDH, dated 7-10-57. From ADHS archives.

36. Letter from Phil J. Martin, City of Tucson, to Geo. W. Marx, ASDH, dated 4-11-58. Includes copies and summaries of water quality analyses performed by Smith-Emery Company, Los Angeles, California. From ADHS archives.

37. Letter from E. E. Turner, Plant Engineer, Hughes Aircraft Co., to Harry W. Gilmore, Office of Indian Affairs, dated 10-23-59. From ADHS archives.

38. Gilkey, M. M., and R. T. Beckman. 1963. Water requirements and uses in Arizona mineral industries. U.S. Bureau of Mines Information Circular 8162. U.S. Government Printing Office, Washington, D.C. 97 p.

39. Description of chemical analysis procedures in Hughes Aircraft Co. report on industrial wastewaters, approximate date 1957, author unknown. From ADHS archives.

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41. Hughes Aircraft Company. 1984. Industrial waste treatment facilities EPA part "B" permit application Title 40 CFR Part 264. Submitted to USEPA Region 9, San Francisco, Hughes Aircraft Company, Tucson, Arizona; U.S. Air Force Plant No. 44.

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FINAL DRAFT
B12GRNDWTR

RESULTS OF THE TUCSON AIRPORT AREA

REMEDIAL INVESTIGATION, PHASE I

VOLUME III

AN EVALUATION OF THE

POTENTIAL SOURCES OF GROUNDWATER CONTAMINATION

NEAR THE TUCSON INTERNATIONAL AIRPORT

TUCSON, ARIZONA

APPENDIX A
RESPONSES TO USEPA
§ 3007-§ 104(e) LETTERS

Prepared by:
John J. Rampe
Office of Emergency Response and Environmental Analysis
Division of Environmental Health Services
ARIZONA DEPARTMENT OF HEALTH SERVICES
Phoenix, Arizona

November, 1985

APPENDIX A
RESPONSES TO USEPA
§ 3007-§ 104(e) LETTERS

This section contains a sample § 3007-§ 104 (e) letter and responses to such letters received by USEPA from the following companies:

- Arizona Air National Guard
- Burr-Brown Research Corp.
- Durodyne
- General Electric
- Hamilton Aviation
- Hudgin Air Service
- Hughes Aircraft Company
- IBM
- Industrial Tool, Die, and Engineering
- Keystone Helicopter
- Leb's Aircraft Maintenance
- McDonnell-Douglas Corp.
- Micro Accurate Corp.
- Mobat-Anderson Tire Co.
- Newbery Industrial
- Paul's Aircraft
- Pacific Motor Trucking Co.
- Perfection Machine and Tool
- Samsonite
- Tucson Aviation Center
- Turco Products
- Warner Propeller and Governor
- West-Cap Arizona

Business confidentiality was claimed by the following companies as applying to all or part of their responses:

- Gates-Learjet,
- Poly Pore
- Lambda Electronics
- Turco Products

These claims were honored by EPA and these responses do not appear herein.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
215 Fremont Street
San Francisco, Ca. 94105

CERTIFIED MAIL NO. P216990462
RETURN RECEIPT REQUESTED

4 MAY 1984

In Reply
Refer To: T-4-1

Mr. Sanford McDonnell
Chief Executive Officer
McDonnell Douglas Corp.
P.O. Box 516
St. Louis, MO 63166

Dear Mr. McDonnell:

The Environmental Protection Agency (EPA), the Arizona Department of Health Services, and the City of Tucson are jointly conducting an investigation of groundwater contamination in the vicinity of the Tucson International Airport. The purpose of the investigation is to determine the nature, cause, and extent of contamination in the area and to assess the effects of the contamination on drinking water and the public health.

As part of this investigation the EPA is in critical need of historical and current information which has been generated or obtained by a variety of parties in the Tucson Basin. The EPA has reason to believe that your company may be in possession of critical information and, for that reason, I make the following request for information pursuant to §3007(a) of the Resource Conservation and Recovery Act (RCRA) and Section 104(e) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA):

1. The exact dates of tenancy of Douglas Aircraft on Tucson Airport Authority (TAA) property.

2. Legal descriptions of the extent of the property leased by Douglas.

3. Description of the purpose and operations of Douglas, including a detailed description of any hazardous waste storage, treatment, or disposal operations at your TAA facility.

4. A detailed description of the usage of chlorinated solvents and chromium containing materials at Douglas' TAA facility, including, but not limited to 1,1 dichloroethylene, 1,1,2 trichloroethylene, 1,1,1 trichloroethane, chloroform and other solvent materials used by Douglas under brand name whose exact composition may have been unknown.

5. A complete inventory of all wastes that have been generated by your TAA facility, including, but not limited to, chlorinated solvents and chromium containing materials. Include dates of generation, type and chemical composition, and the quantities generated.

6. A complete inventory of all wastes disposed of at the Douglas facility, including, but not limited to, chlorinated solvents and chromium containing compounds. Include dates, type and chemical composition of waste disposal quantities, and methods of disposal.

7. If disposal of waste was conducted off-site, name of transporter(s) and locations of off-site disposal.

8. Locations and detailed descriptions of all monitoring wells, supply wells, and injection wells at the Douglas facility.

9. All analyses from sampling of monitoring and supply wells at the Douglas facility.

10. Any information regarding the use and disposal of chlorinated solvents or chromium containing compounds by any person or business in the vicinity of Tucson International Airport.

11. The nature of the contractual agreement between Douglas Aircraft and the United States Air Force as it generally or specifically relates to the items listed above.

Each response should include all activities of Douglas since commencement of operations. The scope of this request extends to all data independently developed or obtained by research on the part of your company, its attorneys, consultants, or employees.

Under the provisions of Section 3007(a) of RCRA [42 USC §6927], the Administrator of EPA may require persons subject to RCRA to furnish information necessary for EPA to administer the Act. Similarly, under Section 104(e) of CERCLA [42 USC §9504(e)], the Administrator of EPA may require persons subject to CERCLA to furnish information necessary for EPA to administer CERCLA.

Furthermore, under Section 3008 of RCRA [42 USC §6928], failure to provide the information requested in this letter may result in an order requiring compliance or a civil action for appropriate relief. This Section further provides for criminal penalties for knowingly making a false statement.

EPA regulations governing confidentiality of business information are set forth in Part 2, Subpart B of Title 40 of the Code of Federal Regulations. For any portion of the informa-

tion submitted which is entitled to confidential treatment, please assert a confidentiality claim in accordance with 40 CFR §2.203(b). If EPA determines that the information so designated meets the criteria set forth in 40 CFR §2.203, the information will be disclosed only to the extent, and by means of the procedures, specified in 40 CFR Part 2, Subpart B. EPA will construe the failure to furnish a confidentiality claim with your response to this letter as a waiver of that claim, and information may be made available to the public by EPA without further notice.

Your response to this request must be by letter, signed by you or a duly authorized official, and submitted to EPA within 30 days of receipt of this letter. If you have any questions concerning this matter, please contact Mr. Donald Harvey at (415) 974-8386 or Mr. John Rothman at (415) 974-7453.

Your cooperation in this matter is appreciated.

Sincerely,

Harry Seraydarian
Director
Toxics and Waste Management Division

cc: Arizona Department of Health Services
Tucson City Attorney's Office

STATE OF ARIZONA
Department Of Emergency And Military Affairs
OFFICE OF THE ADJUTANT GENERAL

DIVISION OF MILITARY AFFAIRS
5636 EAST MCDOWELL ROAD
PHOENIX, ARIZONA 85008

TELEPHONE
602-273-9742
AUTOVON 853-8742

SMP&FO-LWT-pb

16 December 1982

SUBJECT: T-3-1, EPA Groundwater Contamination Investigation in the Tucson Basin

Mr. David S. Mowday, Acting Director
Toxics and Waste Management Division
United States Environmental Protection Agency
215 Fremont Street
San Francisco, California 94105

Dear Mr. Mowday:

The attached inclosure, pages 1-4 and 9 attachments, has been prepared in response to your letter dated 18 October 1982. Also inclosed is a copy of the telephone conversation and letter extending the suspense date to 20 Dec 1982.

All numbered paragraphs of your letter have been answered as exact and in-depth as possible. The data concerning chromium containing compounds is addressed in paragraph 2d of this inclosure, and is estimated to be available by 31 January 1983. This data will be provided to you as soon as it becomes available.

This information should be of assistance in your investigation of this matter. If you have any questions concerning this inclosure, point of contact is LTC Guy Gillespie at (602) 573-2249.

Sincerely,

J. G. SMITH, JR.
Major General, AZ ARNG
The Adjutant General

2 Inclosures
1. Pages 1-4 & 9 attachments
2. Copy of telephone conversation

CF: COL Thomas L. Kincaid, Jr.
LTC Guy M. Gillespie

1. The mission of the 162nd Tactical Fighter Group is to produce combat-ready aircrews for the ANG and USAF and to provide specialized training support to other ANG units. The unit has approximately 38 A-7 fighter aircraft and one C-131 support aircraft.

a. A Temporary Storage and Disposal Permit application (EPA ID NO. AZ9673124055) was submitted 18 Nov 80 and was rescinded by EPA Region IX (see Attachment 1) 23 Apr 82. We now have a Small Generator Exclusion since we generate or accumulate less than 1000 kilograms of hazardous waste per calendar month.

b. We have three water oil separators. One is tied into the Aircraft Wash Rack and Maintenance Hangar. A second water oil separator services the Motor Pool Vehicle Maintenance Shop, the Jet Engine Shop and the Non-Destructive Inspection Laboratory/Shop. The third water oil separator is at the Aerospace Ground Equipment Shop. Spent solvents that are not evaporated during metal surface cleaning operations are recovered and returned to 55 gallon drums and turned into the Defense Property Disposal Office (DPDO) at Davis-Monthan Air Force Base, Tucson, Arizona. DPDO also contracts for disposal of the water oil separators' contents on an as-needed basis.

2. A detailed description of all past useage of chlorinated solvents and chromium containing materials is not available. The Base Supply System became computerized in 1971. Transaction registers (requisitions and issues) are maintained for one calendar year and then destroyed. Using agencies, primarily aircraft maintenance shops, were not required to record types and quantities of solvents used. Original guidelines on solvents were vague and personnel used almost anything that would do the job without degrading the aircraft or its components. Disposal of spent solvents was not tracked or controlled. Personnel were briefed to pour spent solvents into the main water oil separator at Bldg 21, or the contaminated aviation fuel tank for utilization in practice fires for crash rescue firefighter training.

a. A brief synopsis of disposal of water oil separator contents is as follows:

(1) 1958 - 1965 (approximate dates): ANG used "volatile" liquids to settle dust and control weeds on unpaved parking lots and fence lines.

(2) 1965 - 1974 (approximate dates): Local septic tank cleaning companies cleaned "sludge" from water oil separator and dumped it into the city sanitary sewer on West Valencia Road.

(3) 1974 - 1979: ANG pumped solids and volatile liquids from water oil separator and disposed into Tucson Airport Authority fire burn practice area.

(4) 1979 - 1980: ANG hired commercial septic tank cleaning company to pump out water oil separators and haul sludge and volatile liquids to the Tucson Airport Authority fire burn practice area. In November of 1980, the Tucson Airport Authority limited the fire burn practice area to "ignitable wastes", such as jet fuel and other aviation fuels along with some limited quantities of methyl ethyl ketone (see Attachment 2).

(5) 1981: Water oil separator contents (liquid and sludge) were pumped out on 30 Mar 81 (Attachment 3) and 22 Oct 81 (Attachment 4) and shipped to West Covina, CA, by an EPA licensed transporter.

(6) 1982: Water oil separators pumped out by contract administered by DPDO, DMAFB, Arizona, on 22 Sep 82 (Attachment 5) and transported to West Covina, CA, by an EPA licensed transporter.

b. The last issue of trichlorethylene (2 gallons) from the Base Supply warehouse was in October 80. This was issued to the Aircraft Environmental Shop and was used to clean parts, hoses and connectors in the aircraft life support system. Waste TCE was evaporated into the atmosphere. During the periods that F-100 aircraft were flown by the 162 TFTG (1958-1965, 1969-1978), TCE was also used as a degreaser to clean gun parts and polish jet engine air intakes. Quantities used were not documented, but we estimate 40 gallons per year were used in cleaning operations which consisted of a scrubbing operation using cloths dipped in TCE. Parts and jet engine intake surfaces were evaporated dry. TCE was also used in the Non-Destructive Inspection Laboratory/Shop to degrease parts prior to SOAP tests. Parts were evaporated dry prior to inspection. Approximately twelve gallons per year were used in the NDI operation during the early 1970s. Methyl ethyl ketone, toluene, carbon tetrachloride and acetone were also used as degreasing agents for parts and aircraft surface preparation prior to repainting operations. Primary method of disposal was by evaporation. Liquid waste accumulations, if any, were collected and added to contaminated JP-4 aviation fuel and burned for crash rescue firefighter training drills at the Tucson Airport Authority fire burn practice area (prior to November 80).

c. The solvents/hazardous compounds in use at this time are as shown in Table 1, page 3 of this report.

d. A complete survey of past and present useage of chromium containing materials has not been completed as of this date. A preliminary information package has been received from the Air National Guard Support Center Environmental Protection Branch (ANGSC/DEV), Andrews Air Force Base, MD; however, the preliminary data research, Base Supply computer inquiries, using agency/shop interviews, etc. have not been completed yet. Estimated completion date is 31 Jan 83.

3. There are no records of turn-ins/disposal of wastes prior to 30 Mar 81, when the initial shipment of water oil separator contents were shipped to West Covina, CA (Attachment 3). Subsequent shipments were made 22 Oct 81 (Attachment 4) and 22 Sep 82 (Attachment 5). Analyses conducted by OEHL, Brooks AFB, TX, and Arizona Testing Laboratories indicate that shipments to West Covina, CA, Disposal Site were probably not necessary since analysis reports indicate that contents were not hazardous or toxic by RCRA or TOSCA standards. (Attachment 6, chronological laboratory analysis reports).

4. As previously stated in para. 2, records were not kept of disposal actions prior to 30 Mar 81. Para 2a contains all known disposal actions

NIOSH	NOMENCLATURE	NSN	USE	ANNUAL QUANTITY	DISPOSAL
A13150000	Acetone	6810-00-184-4796	Jet engine parts	24.48 gal	Evaporated.
SE74490000	Calibrating fluid	6850-00-264-5771	Engine Shop & NDI	108.84 gal	Recovered and reused. Spent waste recovered, barreled, turned into DPDO.
XS5250000	Toluene	6810-00-281-2002	Aircraft surface preparation, parts cleaning	29.52 gal	Evaporated.
PA8050000 NT8050000 XS5250000 B09625000 GB2955000	Paint Remover	8010-00-515-2258	Aircraft surface preparation	115.56 gal	Partial evaporation, remainder into water oil separator.
PS8050000 G05950000 100003750 1000000WA	Carbon removing compound	6850-00-543-7801	Gun parts and weapons parts cleaning	21.12 gal	Some evaporation, spent waste turned into DPDO.
KJ2975000	Tri-ethane 1,1,1-Trichloro-ethane	6810-00-664-0387	SOAP test machine cleaning	25.68 gal	Hot air forced evaporation in SOAP test machine.
KX3850000	TEL (Tetra-chloroethylene	6810-00-819-1128	Jet engine fuel nozzle cleaning	60.0 gal	Some evaporation, reused, turned into DPDO.
N/A	PD 680 Cleaning Solvent	6830-00-637-6135	General purpose solvent & degreaser	2280.0 gal	30% turned into DPDO. Remainder recovered in water oil separators.
EL6470000	Methyl Ethyl Ketone	6810-00-281-2763	Aircraft surface preparation and parts cleaning	1056 gal	Evaporated.

TABLE I SOLVENTS/HAZARDOUS COMPOUNDS CURRENTLY IN USE

from 1958 to 22 Sep 82. The present location of the 162 TFG has remained basically unchanged since 1958. The area was undeveloped desert with uncontrolled access prior to 1958.

5. See Attachments 3, 4 and 5 for off-site disposal, name of transporters, and locations of off-site disposal.

6. There are no monitoring wells or injection wells located on our facility. We have one water supply well, location and description as shown on Attachment 7.

7. Attachment 8 contains all of our water quality analysis reports on file at the State of Arizona, Department of Health Services, State Laboratory, Tucson Office. Attachment 9 is a laboratory analysis of base well water performed by OEHL, Brooks AFB, TX, 26 Jun 81.

8. Prior to 20 Nov 80, dumping of solvents and other ignitable wastes into the Tucson Airport Authority joint use fire practice burn area was not controlled or monitored.

9. Construction of initial ANG facilities at Tucson International Airport began in 1956 and 1957. Prior to that time the area was used as open range desert grazing land.

SPECIMEN SUBMITTING AND REPORTING FORM | 2 | 0 |

State of Arizona
Department of Health Services
Laboratory

Date Rec'd.

MISCELLANEOUS ANALYSIS

SPECIMEN NUMBER 14

NAME OF CLIENT | ID NO. 17 24

ADDRESS

CITY | STATE | ZIPCODE

SAMPLE DATA

DATE COLLECTED

LOCATION - CITY | COUNTY | CODE 15

DESCRIBE SAMPLE

LABORATORY EXAMS REQUESTED

TYPE OF EXAMINATION -
- Industrial Waste ..... 10 ☐
- Food Additive ..... 20 ☐
- Food/Bev. Contamination ... 30 ☐
- Industrial Hygiene ..... 40 ☐
- Other (specify) ..... 50 ☐

LAB PERFORMING TEST -
- Phoenix - 1
- Flagstaff - 2
- Tucson - 3

27

28

DO NOT CHAR

	Specimen Number	REMARKS
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

2. LABORATORY PERFORMING ANALYSIS	3. LAB SAMPLE NUMBER	4. REQUESTOR SAMPLE NUMBER
	25820 00008	81060003 00029

SAMPLE COLLECTION INFORMATION

7. SITE DESCRIPTION	8. DATE RECEIVED BY LAB	9. DATE ANALYSIS COMPLETED
Base Well		26 June 81

ON-SITE ANALYTICAL RESULTS

8. SITE LOCATION NO	9. FLOWRATE AT SITE 00088 GAL/MIN	10. WEATHER 00041	16. WATER TEMP 000 10 °C	17. PH 00400 UNITS	18. DISS O_2 00300 MG/L
11. COLLECTION DATE/PERIOD 81/06/23		12. NAME OF COLLECTOR	19. RESULTS OF OTHER ON-SITE ANALYSES		
13. SAMPLING TECHNIQUE		14. PHONE NUMBER			
15. REASON FOR SAMPLE SUBMISSION NPDES #					

ANALYSES REQUESTED AND RESULTS

A. PRIMARY DRINKING WATER STANDARDS (40CFR 141) (Preservation Group H)

PARAMETER	TOTAL	µG/L	MAX LEV ALLWD	PARAMETER	TOTAL	µG/L	MAX LEV ALLWD
ENDRIN	39390		0.2 µG/L	2, 4-D	39730		100 µ G/L
LINDANE	39782		4 µG/L	2,4, 5-TP SILVEX	39760		10 µ G/L
METHOXYCHLOR	39480		100 µ G/L				
TOXAPHENE	39400		5 µ G/L				
TCE		A. TR<1.0		B TR<1.0			

TRACE Present but less than the quantitative limit.

B. NON-POTABLE WATER ANALYSIS FOR PESTICIDES (Preservation Group H)

PARAMETER	TOTAL	µG/L	PARAMETER	TOTAL	µG/L	PARAMETERS (SPECIFY)	µG/L
ALDRIN	39330		METHOXYCHLOR	39480			
CHLORDANE	39350		TOXAPHENE	39400			
DDT ISOMERS	39370		2,4-D	39730			
DIELDRIN	39380		2,4,5-TP SILVEX	39760			
ENDRIN	39390						
HEPTACHLOR	39410						
HEPTACHLOR EPOXIDE	39420						
LINDANE	39782						

Mercury found

1. ORGANIZATION REQUESTING ANALYSIS	CHEMIST
162nd TFG Ang Tucson, AZ	Timothy W Ryb
	REVIEWED BY
	APPROVED BY

SPECIMEN SUBMITTING AND REPORTING FORM | 1 | 7 | (25, 26)

State of Arizona
Department of Health Services
State Laboratory

Date Rec'd. OCT J.M. COUNTS, Dr.P.H., C

WATER QUALITY ANALYSIS - Chemical

SPECIMEN UNSATISFACTORY
Reason: _____

SPECIMEN NUMBER: 17 18 | SYSTEM NUMBER: 20413

NAME OF CLIENT: ARIZONA AIR NATIONAL GUARD | IDENTIFICATION NUMBER

ADDRESS: 1500 EAST VALENCIA ROAD

CITY	STATE	ZIP CODE	COUNTY	CODE
TUCSON	ARIZ	85706	PIMA	

LAB USE ONLY
Lab Performing Test: Phoenix - 1, Flagstaff - 2, Tucson - 3 (27)
DO NOT CHARGE (28)

MAILING ADDRESS OF REPORT: ARIZONA AIR NATIONAL GUARD CLINIC
ADDRESS: P.O. BOX 11037

CITY	STATE	ZIP CODE
TUCSON	ARIZONA	85734

SYSTEM OR SOURCE NAME	CITY	WELL NUMBER
AZ. A.N.G. 162nd CEF	TUCSON	

LOCATION OF SAMPLING POINT: Well Site | WELL NAME: AZ ANG 162nd CEF

COUNTY	TOWNSHIP	RANGE	SECTION	COLLECTED BY
Pima	T-15-S	14-E	18	Richardson

LATITUDE	LONGITUDE	STATION NUMBER	DATE COLLECTED	HOUR
32°07'50"	W110°57'00"	NA	30 Oct	0530

STORET NUMBER	CONTROL NUMBER	PRESERVATIVE ADDED?
		2 ☒ YES, 1 ☐ NO

SOURCE TYPE (check one)
☒ Well ☐ Surface ☐ Sewage ☐ Industrial ☐ Seepage

SOURCE DATA (check each applicable box)
☐ Public System ☐ Treated ☐ Routine Sam
☐ Individual System ☐ Untreated ☐ Re-Sample
☐ Special
☐ Grab Sample ☐ New Source
☐ Composite Sample ☐ Existing Source

FIELD DATA -
Conductivity NA. Mhos D.O. NA pH NA
Air Temp. ____ °C. Water Temp. ____
Well Depth 130' Static Water Level 130'
Gage Height ____ Discharge ____
Depth to Surface ____

SAMPLE APPEARANCE -
☒ Clear ☐ Turbid ☐ Silty ☐ Floating ☐ Other

WEATHER -
☒ Clear ☐ Cloudy ☐ Rain ☐ Snow ☐ Other

SAMPLER'S COMMENTS: _____

☐ ROUTINE WATER CHEMISTRY

		Mg/L
11 ☐ Specific Resistance (OHMS)	1.50	
12 ☐ pH	7.1	
29 ☐ Solids		
30 ☐ Residue		471
31 ☐ T.D.S. Calc.		
32 ☐ Hardness (CaCO3)		200
33 ☐ Total S.S.		
34 ☐ V.S.S.		
35 ☐ Surfactants		
36 ☐ B.O.D.		
37 ☐ C.O.D.		
39 ☐ Kjeldahl Nitrogen Total		
40 ☐ Others		

13 ☐ CATIONS	D	T	ME/L	Mg/L
14 ☐ Calcium				26
15 ☐ Magnesium				1.2
16 ☐ Sodium				43
17 ☐ Iron (0.3)				X/.11
18 ☐ Copper (1.0)				<.05
19 ☐ Manganese (0.05)				<.05
20 ☐ Zinc (5.0)				<.05
21 ☐ ANIONS				
22 ☐ Alk P (CaCO3)				0
23 ☐ Alk MP (CaCO3)				142
24 ☐ Chloride (250)				47
25 ☐ Nitrate (45)				2
26 ☐ Sulfate (250)				8
27 ☐ Total PO4				
☐ Fluorides				1
16 ☐ Nitrite				

D - Dissolved T - Total

41 ☐ TRACE METALS (Mg/l)	D	T	Mg/L
42 ☐ Arsenic (.01) (.05)			<.01
43 ☐ Silver (.05)			<.01
44 ☐ Chromium (0.05)			<.01
45 ☐ Cadmium (0.01)			<.01
46 ☐ Lead (0.05)			<.01
47 ☐ Selenium (0.01)			<.01
48 ☐ Mercury (.005)			<.001
50 ☐ SPECIAL			
49 ☐ Boron			
51 ☐ Radiological			
52 ☐ Petroleum Res.			
53 ☐ C.C.E. (0.2)			
54 ☐ Phenols (0.001)			
55 ☐ Pesticides			
56 ☐ PHYSICAL			
☐ Color			—
☐ Taste			—
☐ Odor			—
☐ Turbidity			—

☒ Acceptable for Public Usage
☐ Provisionally Accepted for Public Usage*
☐ Rejected for Public Usage*
☐ Based on Parameters Run
*See attached for interpretation

Evaluated by [signature]
Bureau of Water Quality Control
Date 11/11/80

COMMENTS _____

SPECIMEN SUBMITTING & REPORT FORM

STATE OF ARIZONA
DEPARTMENT OF HEALTH SERVICES
STATE LABORATORY

DATE RECEIVED

POTABLE WATER ANALYSIS
FLUORIDE

SPECIMEN NO.	IDENTIFICATION NO.	SYSTEM NO.	COLLECTED BY	DATE COLLECTED
		2-413	CKJ	4/11/96

SYSTEM NAME	CITY
[illegible] Guard	Tucson

LOCATION OF SAMPLE INLETS	COUNTY	CODE
NE [illegible] Rd	Pima	

WELL NO.	WELL NAME

TOWNSHIP	RANGE	SECTION	LATITUDE	LONGITUDE

MAILING ADDRESS OF REPORT

ADDRESS

CITY	STATE	ZIP CODE
Tucson	AZ	

LAB PERFORMING TEST:
Phoenix - 1
Flagstaff - 2
Tucson - 3

DO NOT CHARGE - 1

FIELD DATA:
Well Depth 340' Ft.
Static Water Level [illegible] Ft.
Capacity _____ GPM
☐ Treated ☐ Not Treated
Well Connected -
☐ To distribution system
☐ To reservoir or tank

28 Fluorides 0.31 mg/l
Optimum Fluoride Level _____ mg/l
Comments: _____

Analyst [illegible] Date Reported 7-3

SPECIMEN SUBMITTING AND REPORTING FORM | 1 | 7 | (25 26)

State of Arizona
Department of Health Services
State Laboratory

Date Rec'd. (3)

J. M. COUNTS, Dr.P.H., Ch

WATER QUALITY ANALYSIS - Chemical

SPECIMEN UNSATISFACTORY
Reason: _____

SPECIMEN NUMBER	SYSTEM NUMBER
73 52	20416

NAME OF CLIENT: 162nd CEF ARIZONA ANG
IDENTIFICATION NUMBER:
ADDRESS: P.O. BOX 11037

CITY	STATE	ZIP CODE	COUNTY	CODE
Tucson	AZ	85734	PIMA	

LAB USE ONLY
Lab Performing Test: Phoenix - 1, Flagstaff - 2, Tucson - 3 (27)
DO NOT CHARGE (28) ☒

MAILING ADDRESS OF REPORT: Arizona Air National Guard: 162nd CEF
ADDRESS: P.O. BOX 11037

CITY	STATE	ZIP CODE
Tucson	AZ	85734

SYSTEM OR SOURCE NAME	CITY	WELL NUMBER
162nd TFTG: AZ ANG	TUCSON	20416

LOCATION OF SAMPLING POINT: Well House
WELL NAME: 162nd TFTG: Az ANG

COUNTY	TOWNSHIP	RANGE	SECTION	COLLECTED BY
PIMA	T-15-S	14-E	18	Richardson

LATITUDE	LONGITUDE	STATION NUMBER	DATE COLLECTED	HOUR
N32°17'22"	W110°57'00" NA		31 Oct.	0830

STORET NUMBER: | CONTROL NUMBER: | PRESERVATIVE ADDED? ☐ YES ☒ NO

SOURCE TYPE (check one)
☒ Well ☐ Surface ☐ Sewage ☐ Industrial ☐ Seepage

SOURCE DATA (check each applicable box)
☐ Public System ☐ Treated ☐ Routine Sam
☒ Individual System ☒ Untreated ☐ Re-Sample
☐ Special
☒ Grab Sample ☐ New Source
☐ Composite Sample ☒ Existing Source

FIELD DATA -
Conductivity NA Mhos D.O. NA pH NA
Air Temp. 45 °F °C. Water Temp. 35 °F
Well Depth 130 Static Water Level 110
Gage Height NA Discharge
Depth to Surface NA 400 G

SAMPLE APPEARANCE -
☒ Clear ☐ Turbid ☐ Silty ☐ Floating ☐ Other

WEATHER -
☒ Clear ☐ Cloudy ☐ Rain ☐ Snow ☐ Other

SAMPLER'S COMMENTS: Please test for traces of organic solvents and jet fuels.

☐ ROUTINE WATER CHEMISTRY

11	☐ Specific Resistance (OHMS)				
12	☐ pH				
13	☐ CATIONS	D	T	ME/L	Mg/L
14	☐ Calcium				
15	☐ Magnesium				
16	☐ Sodium				
17	☐ Iron (0.3)				
18	☐ Copper (1.0)				
19	☐ Manganese (0.05)				
20	☐ Zinc (5.0)				
21	☐ ANIONS				
22	☐ Alk P (CaCO3)				
23	☐ Alk MP (CaCO3)				
24	☐ Chloride (250)				
25	☐ Nitrate (45)				
26	☐ Sulfate (250)				
	☐ Total PO4				
	☐ Fluorides				
	☐ Nitrite				

D - Dissolved T - Total

		Mg/L
29	☐ Solids	
30	☐ Residue	
31	☐ T.D.S. Calc.	
32	☐ Hardness (CaCO3)	
33	☐ Total S.S.	
34	☐ V.S.S.	
35	☐ Surfactants	
36	☐ B.O.D.	
37	☐ C.O.D.	
39	☐ Kjeldahl Nitrogen Total	
40	☐ Others	

		D	T	Mg/L
41	☐ TRACE METALS (Mg/l)			
42	☐ Arsenic (.01) (.05)			
43	☐ Silver (.05)			
44	☐ Chromium (0.05)			
45	☐ Cadmium (0.01)			
46	☐ Lead (0.05)			
47	☐ Selenium (0.01)			
48	☐ Mercury (.005)			
50	☐ SPECIAL			
49	☐ Boron			
51	☐ Radiological			
52	☒ Petroleum Res.	none detected		
53	☐ C.C.E. (0.2)			
54	☐ Phenols (0.001)			
55	☐ Pesticides			
56	☐ PHYSICAL			
	☐ Color			
	☐ Taste			
	☐ Odor			
	☐ Turbidity			

☒ Acceptable for Public Usage
☒ Provisionally Accepted for Public Usage*
☐ Rejected for Public Usage*
☒ Based on Parameters Run
*See attached for interpretation
Evaluated by [signature]
Bureau of Water Quality Control
Date 11-16-79

COMMENTS _____

SPECIMEN SUBMITTING AND REPORTING FORM 1 Z

State of Arizona
Department of Health Services
State Laboratory

Date Rec'd.

J. M. COUNTS, Dr.P.H., C

WATER QUALITY ANALYSIS - Chemical

SPECIMEN UNSATISFACTORY
Reason:

SPECIMEN NUMBER | SYSTEM NUMBER

NAME OF CLIENT | IDENTIFICATION NUMBER

ADDRESS

CITY | STATE | ZIP CODE | COUNTY | CODE

LAB USE ONLY
Lab Performing Test
Phoenix - 1
Flagstaff - 2
Tucson - 3
DO NOT CHARGE

MAILING ADDRESS OF REPORT

ADDRESS

CITY | STATE | ZIP CODE

SYSTEM OR SOURCE NAME | CITY | WELL NUMBER

LOCATION OF SAMPLING POINT | WELL NAME

COUNTY | TOWNSHIP | RANGE | SECTION | COLLECTED BY

LATITUDE | LONGITUDE | STATION NUMBER | DATE COLLECTED | HOUR

STORET NUMBER | CONTROL NUMBER | PRESERVATIVE ADDED ☐ YES ☐ NO

SOURCE TYPE (check one)
☒ Well ☐ Surface ☐ Sewage ☐ Industrial ☐ Seepage

SOURCE DATA (check each applicable box)
☒ Public System ☐ Individual System
☒ Treated ☐ Untreated
☒ Routine Sam ☐ Re-Sample ☐ Special
☒ Grab Sample ☐ Composite Sample
☐ New Source ☒ Existing Source

FIELD DATA -
Conductivity _____ Mhos D.O. _____ pH
Air Temp. 77 °C. Water Temp.
Well Depth Static Water Level
Gage Height Discharge
Depth to Surface

SAMPLE APPEARANCE -
☒ Clear ☐ Turbid ☐ Silty ☐ Floating ☐ Other

WEATHER -
☒ Clear ☐ Cloudy ☐ Rain ☐ Snow ☐ Other

SAMPLER'S COMMENTS:

☒ ROUTINE WATER CHEMISTRY

1 ☐ Specific Resistance (OHMS)	1750			29 ☐ Solids				41 ☐ TRACE METALS (Mg/l)	D	T	Mg/L
2 ☐ pH	7.7			30 ☐ Residue	455			42 ☐ Arsenic (.01) (.05)			<.02
12 ☐ CATIONS	D	T	ME/L	Mg/L	31 ☐ T.D.S. Calc.			43 ☐ Silver (.05)			<.05
14 ☐ Calcium				24	32 ☐ Hardness (CaCO3)	210		44 ☐ Chromium (0.05)			Tr
15 ☐ Magnesium				12.5	33 ☐ Total S.S.			45 ☐ Cadmium (0.01)			<.01
16 ☐ Sodium				50	34 ☐ V.S.S.			46 ☐ Lead (0.05)			<.02
17 ☐ Iron (0.3)				<.03	35 ☐ Surfactants			47 ☐ Selenium (0.01)			<.005
18 ☐ Copper (1.0)				<.03	36 ☐ B.O.D.			48 ☐ Mercury (.005)			<.0010
19 ☐ Manganese (0.05)				.01	37 ☐ C.O.D.			50 ☐ SPECIAL			
20 ☐ Zinc (5.0)				.06	39 ☐ Kjeldahl Nitrogen Total			49 ☐ Boron			
21 ☐ ANIONS					40 ☒ Others			51 ☐ Radiological			
22 ☐ Alk P (CaCO3)								52 ☐ Petroleum Res.			
23 ☐ Alk MP (CaCO3)								53 ☐ C.C.E. (0.2)			
24 ☐ Chloride (250)								54 ☐ Phenols (0.001)			
25 ☐ Nitrate (45)				.5				55 ☐ Pesticides			
26 ☐ Sulfate (250)				14.7				56 ☐ PHYSICAL			
27 ☐ Total PO4								☐ Color			
☐ Fluorides				0.9				☐ Taste			
3 ☐ Nitrite								☐ Odor			

D - Dissolved T - Total

☐ Acceptable for Public Usage
☐ Provisionally Accepted for Public Usage*
☐ Rejected for Public Usage*
☐ Based on Parameters Run
*See enclosed for interpretation

Evaluated by
Bureau of Water Quality Control
Date

COMMENTS

JUN 88 RECEIVED ENVIRONMENTAL HEALTH

REPORTING FORM

State of Arizona
Department of Health Services
State Laboratory

Rec'd.

WATER QUALITY ANALYSIS - Chemical

NAME OF CLIENT: ARIZONA AIR NATIONAL GUARD
ADDRESS: CLINIC — P.O. BOX 11037
CITY: TUCSON | STATE: AZ | ZIPCODE: 85706

COLLECTED BY: F. EAGLE
DATE COLLECTED: 8-30-76 | HOUR: 0800 (A.M.)

☐ Routine Sample ☐ Routine Potable Sample
☐ Re-Sample ☐ Routine Surface Surveillance
☐ Special ☐ Individual System

☐ Public Water System ☐ Treated
☐ Semi-Public System ☐ Untreated
☐ Individual System

☐ New Source
☐ Existing Source

SOURCE OR WELL NAME: ING WELL - 1500 EVANCIA
LOCATION OF SOURCE - CITY: TUCSON | COUNTY: PIMA | CODE

TOWNSHIP	RANGE	SECTION	LATITUDE	LONGITUDE	STATION OR SYSTEM NO.	STORET NO.	CONTROL NO.
					20418		

LAB PERFORMING TEST: Phoenix - 1, Flagstaff - 2, Tucson - 3

☐ Well ☐ Surface
☐ Spring ☐ Seepage
☐ Sewage ☐ Industrial

Well Depth ____ Depth to Surface ____
Static Water Level ____ Discharge ____ GPM
Gage Height ____ GPM

☐ NO CHARGE - 1

SPECIMEN UNSATISFACTORY
Reason: ____ CODE

ROUTINE WATER CHEMISTRY

		MG/L	MG/L
11	Specific Resistance		
	pH		
12	CATIONS		
	Calcium		
13	Magnesium		
	Sodium		
17	Iron (0.3)		
	Copper (1.0)		
19	Manganese (0.05)		
	Zinc (5.0)		
	ANIONS		
22	Alk P ($CaCO_3$)		
	Alk MP ($CaCO_3$)		
24	Chloride (250)		
	Nitrate (45)		
26	Sulfate (250)		
	Total PO_4		
	Fluorides		

		MG/L
29	Solids	
30	Residue	
31	T.D.S. Calc.	
32	Hardness ($CaCO_3$)	
33	Total S.S.	
34	V.S.S.	
35	Surfactants	
36	B.O.D.	
37	C.O.D.	
38	Nitrite	
39	Kjeldahl Nitrogen Total	
40	Others	

☒ Acceptable for Public Usage
☐ Rejected for Public Usage
☐ Provisionally Accepted for Pub. Usage
☐ See attached for interpretation

42 ☒ TRACE METALS (Mg/l)

43	☒ Arsenic	
43	☒ Silver (.05)	
44	☒ Chromium (.01)	
45	☒ Cadmium (.01)	
46	☒ Lead (.05)	
47	☒ Selenium (.01)	
48	☒ Mercury (.005)	
49	☐ Boron	
50	☐ SPECIAL	
51	☐ Radiological	
52	☐ Petroleum Res.	
53	☐ C.C.E. (0.2)	
54	☐ Phenols (0.001)	
55	☐ Pesticides	
56	☐ PHYSICAL	
	☐ Color	
	☐ Taste	
	☐ Odor	
	☐ Turbidity	

FIELD DATA -
Conductivity ____ Mhos D.O. ____ pH ____
Air Temp. ____ °C. Water Temp. ____ °C.

SAMPLE APPEARANCE - ☐ Clear ☐ Turbid ☐ Silty ☐ Floating ☐ Other
WEATHER - ☐ Clear ☐ Cloudy ☐ Snow ☐ Other
TYPE OF SAMPLE - ☐ Grab Sample ☐ Composite Sample

Reported ____ Analyst W D Tetlow 10-21-

SPECIMEN SUBMITTING AND REPORTING FORM | 2 | 0 |

State of Arizona
Department of Health Services
Laboratory

Date Rec'd. MAY 27 11 26 AM '82

MISCELLANEOUS ANALYSIS

SPECIMEN NUMBER

NAME OF CLIENT: BWQC-SRO

ID NO.

ADDRESS: 1740 W. 7th

CITY: Tucson | STATE: AZ | ZIPCODE: 85701

SAMPLE DATA

DATE COLLECTED: 5-27-82

LOCATION - CITY: Tucson | COUNTY: Pima | CODE

DESCRIBE SAMPLE: Copy to [illegible]

LABORATORY EXAMS REQUESTED: TCE

TYPE OF EXAMINATION:
- Industrial Waste ..... 10 ☐
- Food Additive ..... 20 ☐
- Food/Bev. Contamination ... 30 ☐
- Industrial Hygiene ..... 40 ☐
- Other (specify) ..... 50 ☒ TCE

LAB PERFORMING TEST:
- Phoenix - 1
- Flagstaff - 2
- Tucson - 3

☐ 27 ☐ 28 DO NOT CHARGE

	Specimen Number		REMARKS	TCE
1	41264	National Guard D15-14-KAB2		2.9
	41265	Main D15-14-17 DCD		<2.3
3	41266	Swain D15-14-[illegible]		<2.3
4	41267	Ajemian D15-14-5 CCD		<2.3
5	41268	Christian D15-14-17-ACC		<2.3
6	41269	Morgan D15-13-12-ACA	5717 S Calle	15.1
7	41270	McClay D15-13-14-DDB		<2.3
8	41271	Nelson Lincoln D15-13-21 BDB		<2.3
9	41272	[illegible] D15-13-21-DCC		<2.3
10	42462	[illegible]		<2.3
11				
12				
13				
14				

Date Reported _____ Analyst _____

SPECIMEN SUBMITTING AND REPORTING FORM | 2 | 0 |

State of Arizona
Department of Health Services
Laboratory

Date Rec'd. [illegible]

MISCELLANEOUS ANALYSIS

SPECIMEN NUMBER

NAME OF CLIENT: BWQC - SRO

ID NO.

ADDRESS: 402 W Congress Rm 214

CITY: Tucson | STATE: Az | ZIPCODE: 85701

SAMPLE DATA

DATE COLLECTED: 11-2-81

LOCATION - CITY: Tucson | COUNTY: Pima | CODE

DESCRIBE SAMPLE

LABORATORY EXAMS REQUESTED: TCE

TYPE OF EXAMINATION -
- Industrial Waste ..... 10 ☐
- Food Additive ..... 20 ☐
- Food/Bev. Contamination ... 30 ☐
- Industrial Hygiene ..... 40 ☐
- Other (specify) ..... 50 ☑ TCE

LAB PERFORMING TEST -
- Phoenix - 1
- Flagstaff - 2
- Tucson - 3

DO NOT CHAR

ug/l TCE

	Specimen Number		REMARKS
1		Manzanita Res	0.5
2		SC-7	122
3		C-62	60.2
4		C-64	8.9
5		B-87	6.2
6		[illegible]	<0.3
7		F-85	6.6
8		SC-19	<0.3
9		[illegible]	<0.3
10		YUCA COT-51	2.9
11		Nat'l Guard	0.7
12			
13			
14			

[illegible] TESTS

SPECIMEN SUBMITTING AND REPORTING FORM

State of Arizona
Department of Health Services
Laboratory

Date Rec'd.

CELLANEOUS ANALYSIS

NAME OF CLIENT: [illegible]

ADDRESS: [illegible]

CITY: Tucson | STATE: AZ | ZIPCODE: 85701

SAMPLE DATA

DATE COLLECTED: 9-7-91

LOCATION - CITY: [illegible] | COUNTY: Pima | CODE

DESCRIBE SAMPLE: [illegible]

LABORATORY EXAMS REQUESTED: TCE

TYPE OF EXAMINATION -
- Industrial Waste ..... 10 ☐
- Food Additive ..... 20 ☐
- Food/Bev. Contamination ..... 30 ☐
- Industrial Hygiene ..... 40 ☐
- Other (specify) ..... 50 ☒

LAB PERFORMING TEST -
- Phoenix - 1
- Flagstaff - 2
- Tucson - 3

☒ 27 ☐ 28 DO NOT CHARG

	Specimen Number	REMARKS
		[illegible]
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		

State of Arizona Public Health Laboratory

Table 1

RESULTS OF ANALYSIS OF ARIZONA WATER
FOR TRICHLOROETHYLENE (TCE)

Sample Identification	Conc (Micrograms per liter)
Martin Res	<0.3
Sunnyside	<0.3
C-66	<0.3
Plant 1	<0.3
C-69	<0.3
SC-6	<0.3
SC-11	<0.3
SC-18	<0.3
Harrison Standpipe	<0.3
Danforth Res	<0.3
Kolb Res	<0.3
22nd Res	<0.3
Rauscher Res	<0.3
SC-10	<0.3
Organic Free Blank	<0.3
Devine Res	2.0
1 BST	<0.3
[illegible]	2.3
B101	28.5 *
Emery MHP	<0.3
Elm St. Res	0.5
Park Manor	<0.3
Akra Res	<0.3
Gibbon Tank	1.2
Air Guard	2.1

Sta of Arizona

DEPARTMENT OF WATER RESOURCES

99 E. Virginia Avenue, Phoenix, Arizona 85004

BRUCE BABBITT, Governor
WESLEY E. STEINER, Director

January 4, 1982

Dear Well Owner:

Arizona's new Groundwater Management Act requires that all existing wells, regardless of size, be registered with the Department of Water Resources by June 14, 1982. An existing well is one that was drilled prior to June 12, 1980, and which has not been abandoned or sealed. Included are wells which were not completed by June 12, 1980, even though a Notice of Intent to Drill was filed with the Department.

For your convenience, enclosed are the registration forms and the information from your well file. If the information is still correct, simply transfer it to the new form. If the information needs to be updated, please do so on these forms. Be sure to file all forms in duplicate so we can return one copy to you.

There is no fee to register "exempt" wells with a pump capacity not exceeding 35 gallons per minute. "Non-exempt" wells, those with a pump capacity greater than 35 gallons per minute, cost $10 each to register.

If you own additional wells for which we did not provide data, we probably do not have those wells in our records, or they are filed under another name. In the event you no longer own the well, please forward this information to the new owner.

If you have any questions about well registration, feel free to call us at 255-1546. The toll free number in Arizona is 1-800-352-5464.

Thank you for your cooperation.

Sincerely,

W. Don Maughan

W. Don Maughan
Deputy Director

WDM/CLL/
Enclosure

AIR FORCE
11937
ON AZ 85734

-2 FILE NUMBER: D15014029BBBGS1 CONTROL NUMBER: 76279

3 NW 1/4 NW 1/4 NW 1/4 SECTION 29
TOWNSHIP 15.0S RANGE 14.0E
COUNTY: PIMA

4. USE: DOMESTIC

7 WELL DATA

A. DEPTH OF WELL: 600
B. CASE DIAMETER: 16
C. DEPTH OF CASING: 600
D. TYPE OF CASING: PERFORATED OR SLOTTED STEEL CASING
E. MAX PUMP CAPACITY: REGISTRANT TO FURNISH
F. DEPTH TO WATER: 160
G. DATE COMPLETED: / /1979

LABORATORY ANA' IS REPORT AND RECORD *(General)*

DATE June 7, 1982

TO: Brooks AFB

FROM: Biospherics Incorporated

SAMPLE IDENTITY: Waste Solvents

DATE RECEIVED: 4/6/82

SAMPLE FROM: Azang, TIA, Tucson Arizonia

LAB CONTROL NO:

TEST FOR: Bulk Identification

Sample ID Client	Bios #	Ignitibility at 60°C	Bulk Components	Bulk Concentration
13084 (AGE separator with heat treatment)	4189	Yes	Aliphatic Hydrocarbons MEK, Toluene PCBs Transparent liquid. Amber in color. The aliphatics were identified as PD-680 by G.C.	≈100 none detected <5 ppm
13085 (AGE separator)	4190	Yes	Aliphatic Hydrocarbons MEK, Toluene PCBs Transparent liquid. Amber in color. The aliphatics were identified as PD-680 by G.C.	85 none detected <5 ppm
13086 (motor pool separator)	4191	No	Aliphatic Hydrocarbons MEK, Toluene PCBs Transparent liquid. Amber in color. 40% of the aliphatics were identified as PD-680.	≈100 none detected <5 ppm

OEHL FORM DEC 78 7 PREVIOUS EDITION WILL BE USED

QUESTION 4 (cont.)

(ALL QUANTITIES ARE IN KILOGRAMS)

** T.C.E. was used in Wafer Processing and various cleaning jobs associated with manufacturing. These operations included boiling it in a beaker and the vapors used for cleaning during Wafer Processing (100% evaporated). Other uses included cleaning benches and tables, cleaning machinery, rinsing parts in open pans, general process cleaning in the machine, fabrication and facility maintenance shops. We estimate 85% evaporated, or was discarded in dirty cleaning rags.

*** Before 1974 T.C.E. was discharged into the sanitary sewer and used for weed and dust control around BBRC parking lots and fences. For a number of years after 1974 T.C.E. waste was accumulated and made available at no cost to outside individuals who picked it up for salvage or recycle. A disposal company (Southwest Solvents) picked up an approximate 2 year accumulation of combined waste solvents, T.C.E. and Xylene in 1980. Starting in 1980 all wastes were picked up by disposal companies as indicated in response to Question 1.

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
T.C.E.-A (1,1,1 Trichloroethane) Waste*	-	-	-	-	-	-	-	777	441	378	-	-	-

* We estimate that before 1980 32% of the amount used was left as waste. This material was accumulated in drums and made available at no cost to individuals for salvage or recycle in 1977, 1978.

** Disposal companies handled this material starting in 1980, including material accumulated in previous years.

	1971	1972	1973	1974
Chromium Trioxide*	11	9	59.1	0

* Material was used to determine silicon wafer crystal structure. Material was then disposed of by discharge to the sanitary sewer.

LABORATORY AI YSIS REPORT AND RECORD (General)	DATE 1 April 1982
TO:	FROM: USAF OEHL/SA Brooks AFB TX 78235
SAMPLE IDENTITY Effluent	DATE RECEIVED 26 March 1982
SAMPLE FROM Water/Oil Separator (C.E, WASH RACK, Hanger)	LAB CONTROL NR 13087
TEST FOR Possible Hazardous Contaminants	

BASE NO: 820004

This sample was mainly water (99.93%), with a trace of Oils and Grease (0.07%, 700 mg/l). Analysis for heavy metals in the water showed:

Lead - 0.13 mg/l

Cadmium - 0.08 mg/l

Chromium - 0.89 mg/l

Nickel - 0.05 mg/l

This solution is not considered hazardous. Additional results to follow at a later date.

THOMAS C. THOMAS, GS-13
Chief, Environmental Chemistry Branch

REQUESTING AGENCY (Mailing Address)
162th Tactical Clinic
P.O. Box 11037
Tucson, Arizona 85734

OEHL FORM 7 DEC 78 PREVIOUS EDITION WILL BE USED

Arizona Testing Laboratories

817 West Madison Street □ Phoenix, Arizona 85007 □ 602/254-6181

For: Arizona Air National Guard
Post Office Box 11037
Tucson, Arizona 85734

Date: March 15, 1982

Lab. No.: 5726

Sample: Fuel

Marked: Your Purchase Order DANA02-82-24

Received: 3-15-82

Submitted by: same

REPORT OF LABORATORY TESTS

ASTM D-93-72

Samples Marked	Flash Point, Pensky-Martens, °F
Age Separator Storage Tank CE-82-3	142
E.E. Oil Separator Storage Tank CE-82-2	142
Motor Pool Separator Storage Tank CE-82-4	177

4-5-82:
cc: Civil Engineering
Attn: Guy Gillespie
162d TFG, AZANG
1500 E. Valencia
Tucson, Arizona 85706

Respectfully submitted,

ARIZONA TESTING LABORATORIES

Claude E. McLean, Jr.

Claude E. McLean, Jr.

4 G/L = 10 grams / liter = 1 milligram

2. LABORATORY PERFORMING ANALYSIS	3. LAB SAMPLE NUMBER	4. REQUESTOR SAMPLE NUMBER
	25820 00006	81060003 00029

SAMPLE COLLECTION INFORMATION	5. DATE RECEIVED BY LAB	6. DATE ANALYSIS COMPLETED
7. SITE DESCRIPTION: Base Well		26 June 81

ON-SITE ANALYTICAL RESULTS

8. SITE LOCATION NO	9. FLOWRATE AT SITE 00089 GAL/MIN	10. WEATHER 00041	16. WATER TEMP 00010 °C	17. PH 00400 UNITS	18. DISS O2 00300 MG/L
11. COLLECTION DATE/PERIOD: 81/06/23		12. NAME OF COLLECTOR	19. RESULTS OF OTHER ON-SITE ANALYSES		
13. SAMPLING TECHNIQUE		14. PHONE NUMBER			
15. REASON FOR SAMPLE SUBMISSION: NPDES #					

ANALYSES REQUESTED AND RESULTS

A. PRIMARY DRINKING WATER STANDARDS (40CFR 141) (Preservation Group H)

PARAMETER	TOTAL	µG/L	MAX LEV ALLWD	PARAMETER	TOTAL	µG/L	MAX LEV ALLWD
ENDRIN	39390		0.2 µG/L	2,4-D	39730		100 µG/L
LINDANE	39782		4 µG/L	2,4,5-TP SILVEX	39760		10 µG/L
METHOXYCHLOR	39480		100 µG/L				
TOXAPHENE	39400		5 µG/L				
TCE		A. TR<1.0		B. TR<1.0			

TRACE - Present but less than the quantitative limit.

B. NON-POTABLE WATER ANALYSIS FOR PESTICIDES (Preservation Group H)

PARAMETER	TOTAL	µG/L	PARAMETER	TOTAL	µG/L	PARAMETERS (SPECIFY)	µG/L
ALDRIN	39330		METHOXYCHLOR	39480			
CHLORDANE	39350		TOXAPHENE	39400			
DDT ISOMERS	39370		2,4-D	39730			
DIELDRIN	39380		2,4,5-TP SILVEX	39760			
ENDRIN	39390						
HEPTACHLOR	39410						
HEPTACHLOR EPOXIDE	39420						
LINDANE	39782						

1. ORGANIZATION REQUESTING ANALYSIS	CHEMIST
162nd TFG AZ Ang Tucson, AZ	Timothy W Ryf
	REVIEWED BY
	APPROVED BY

LABORATORY ANALYSIS REPORT AND RECORD (General)	DATE 22 Sep 81
TO:	FROM: USAF OEHL/SA Brooks AFB TX 78235
SAMPLE IDENTITY SOIL	DATE RECEIVED 10 Sep 81
SAMPLE FROM	LAB CONTROL NR 37093
TEST FOR TRICHLOROETHYLENE	

OEHL NO	BASE NO	MILLIGRAMS PER KILOGRAM
37093	81-08-0004	ND<0.04

ND=None Detected less than the detection limit

LEOPOLDO L. RODRIGUEZ, GS12
Trace Organics Analysis Function
Environmental Chemistry Branch

REQUESTING AGENCY (Mailing Address)

162 TFG Tucson
AZANG IAP AZ 85706

OEHL FORM DEC 78 7 PREVIOUS EDITION WILL BE USED

SB

LABORATORY PERFORMING ANALYSIS	2. LAB SAMPLE NUMBER	4. REQUESTOR SAMPLE NO
	37092 00006	81080004 00020

SAMPLE COLLECTION INFORMATION

SITE DESCRIPTION				5. DATE RECEIVED BY LAB: 10 Sept. 81	6. DATE ANALYSIS COMPLETED: 16 Sept. 81
SITE LOCATION NO	8. FLOWRATE AT SITE 00058 GAL/MIN	10. WEATHER 00041		ON-SITE ANALYTICAL RESULTS	
				11. WATER TEMP 00010 °C	12. PH 00400 UNITS
					13. DISS O2 00300 MG/L
11. COLLECTION DATE/PERIOD		12. COLLECTOR'S NAME		15. RESULTS OF OTHER ON-SITE ANALYSES	
SAMPLING TECHNIQUE		14. PHONE NUMBER			
16. REASON FOR SAMPLE SUBMISSION					

ANALYSES REQUESTED AND RESULTS

PRESERVATION GROUP A

PARAMETER	TOTAL	MG/L
Chemical Oxygen Demand	00340	
Total Organic CARBON as C	00680	

PRESERVATION GROUP B (2.5)

PARAMETER	TOTAL	MG/L
OIL & GREASE FREON-IR Method	00560	35.4

PRESERVATION GROUP C

PARAMETER	TOTAL	MG/L
AMMONIA as N	00610	
NITRATE as N Cd Reduct. Method	00620	
NITRITE as N	00615	
TOTAL KJELDAHL NITROGEN as N	00625	
PHOSPHORUS ortho PO4 as P	70507	
PHOSPHORUS P	00665	

PRESERVATION GROUP D

PARAMETER	TOTAL	MG/L
CYANIDE	00720	
CYANIDE Free, amenable to Cl_2	00722	

PRESERVATION GROUP E

PARAMETER	TOTAL	µG/L
PHENOLS	32730	

PRESERVATION GROUP F

PARAMETER	0133	TOTAL	µG/L
ARSENIC	01000	01002	
BARIUM	01005	01007	
CADMIUM	01025	01027	
CHROMIUM	01030	01034	
CHROMIUM Hexavalent		01032	
COPPER	01040	01042	
IRON	01046	01045	
LEAD	01049	01051	
MANGANESE	01056	01059	
MERCURY	71890	71900	
NICKEL	01065	01067	
SELENIUM	01145	01147	
SILVER	01075	01077	
ZINC	01090	01092	
CALCIUM as Ca	00915	00916	mg/l
MAGNESIUM as Mg	00925	00927	mg/l
POTASSIUM	00935	00937	mg/l
SODIUM	00930	00929	mg/l

PRESERVATION GROUP G

PARAMETER	TOTAL	MG/L
BORON	01022	µg/l
BORON, Dissolved	01020	µg/l
CHLORIDE	00940	
COLOR	00080	Units
FLUORIDE	00951	
Residue Filterable (TDS)	00515	
Residue Non Filt (SS)	00530	
Residue	00500	
Residue Volatile	00505	
Specific Conductance	00095	µmhos
SULFATE as SO_4	00945	
SURFACTANTS MBAS as LAS	38260	
TURBIDITY	00070	Units

PRESERVATION GROUP J

PARAMETER		

TCC RESULT TO Follow at later date.

ORGANIZATION REQUESTING ANALYSIS

162 TFG
Tucson ANG, Arizona 85706

CHEMIST: REZ DSD

REVIEWED BY:

APPROVED BY: [signature]

BKK CORPORATION
CORPORATE OFFICES
2550 237th STREET
TORRANCE, CALIF. 90505
(213) 539-7150 (213) 775-3603
EPA# CAD048498463
HAZ. WASTE# 009
ICC# MC-143336
CAL# T-127441

SERVICE ORDER NO. 2- 49047

- BKK LANDFILLS
- RESOURCES II
- FALCON DISPOSAL SERVICE
- CHANCELLOR & OGDEN
- BKK CO. OF NEVADA, INC.
- EL SEGUNDO SOLID WASTE CO., INC.

— 24 HR. SERVICE —
WILMINGTON (213) 432-8461
SAN DIEGO (714) 278-3600

Date 9 22 92

*Customer (Generator) [illegible] Cust. No. ____ Purchase Order No. ____ Job No. ____

Billing Address ____ Job Location [illegible]

** Customer's name & address is different from Generator's name & address, please indicate.

SERVICES PERFORMED [illegible] THE [illegible] TO WEST [illegible] [illegible] AND DUMPED [illegible]

NO. OF LOADS 1 T.S.D. FACILITY [illegible] MANIFEST NO. [illegible]

IF HAZARDOUS MATERIAL, DESCRIBE ____

TRUCK/TRAILER [illegible] / [illegible] SIZE CAPACITY 130 EQUIP. TYPE [illegible]

START ____ am pm STOP ____ am pm GROSS TIME ____ HRS

MEALS FROM ____ am pm TO ____ am pm LESS ____ HRS

OTHER TIME ____ LESS ____ HRS

DRIVER (PRINT) [illegible] EMP. NO. [illegible] NET TIME ____ HRS

HELPER (PRINT) ____ EMP. NO. ____ RATE PER HR ____

[illegible] GENERATOR'S SIGNATURE [illegible] DRIVER'S SIGNATURE

COMMENTS ____

FOR OFFICE USE ONLY

TRANSPORTATION		TREATMENT-STORAGE-DISPOSAL			
RATE PER HR		FEE		H.W.T.	
RATE PER LOAD		FEE		WASH OUT	
RATE PER OTHER		FEE		SURCHARGE	
		FEE		OTHER	

No. [illegible]

From [illegible] TUCSON To BKK [illegible]

Load of WASTE OIL

TJ 120 Gross

Tare

Driver On / Off

Fees ____ Date [illegible] 197 [illegible]

____ Net [illegible] Weigher

BKK CORPORATION
CORPORATE OFFICES
2550 237th STREET
TORRANCE, CALIF. 90505
(213) 539-7150 (213) 775-3606

EPA# CAD048498483
HAZ. WASTE# 009
ICC# MC-143936
CAL# T-127141

SERVICE ORDER

NO. 2- 49046

- BKK LANDFILLS
- RESOURCES II
- FALCON DISPOSAL SERVICE
- CHANCELLOR & OGDEN
- BKK CO. OF NEVADA, INC.
- EL SEGUNDO SOLID WASTE CO., INC.

— 24 HR. SERVICE —
WILMINGTON (213) 432-8481
SAN DIEGO (714) 278-3600

Date 9-21-82

*Customer (Generator) [illegible] Cust. No. _____ Purchase Order No. _____ Job No. _____

Billing Address _____ Job Location [illegible]

* If Customer's name & address is different from Generator's name & address, please indicate.

SERVICES PERFORMED Drove empty [illegible] to Tucson base and [illegible] as directed

NO. OF LOADS 1 T.S.D. FACILITY BKK MANIFEST NO. [illegible]

IF HAZARDOUS MATERIAL, DESCRIBE J-P [illegible]

TRUCK/TRAILER [illegible] SIZE CAPACITY 150 EQUIP. TYPE [illegible]

START [illegible] am pm STOP [illegible] am pm GROSS TIME 15 HRS

MEALS FROM _____ am pm TO _____ am pm LESS _____ HRS

OTHER TIME _____ LESS _____ HRS

DRIVER (PRINT) [illegible] EMP. NO. [illegible] NET TIME [illegible] HRS

HELPER (PRINT) _____ EMP. NO. _____ RATE PER HR _____

[illegible] GENERATOR'S SIGNATURE

[illegible] DRIVER'S SIGNATURE

COMMENTS _____

FOR OFFICE USE ONLY

TRANSPORTATION		TREATMENT-STORAGE-DISPOSAL			
RATE PER HR		FEE		H.W.T.	
RATE PER LOAD		FEE		WASH OUT	
RATE PER OTHER		FEE		SURCHARGE	
		FEE		OTHER	

See reverse for instructions.
Please type or print clearly. Press Hard.

HAZARDOUS MATERIALS MANAGEMENT SECTION
744 P St., Sacramento, CA 95814

(1) Test Number 1009-[illegible]

GENERATOR (Generator Must Complete)

(2) Name Arizona Air National Guard
EPA NO. A 2 9 5 7 3 1 2 4 0 5 5
Address 1500 E Valencia Rd Phone No. 602-573-2114
City, State, Zip Tucson AZ 05734
Order Placed By _____ ORDER DATE _____
P.O./CONTRACT NO. _____

(3) DESIGNATED TSD FACILITY (AUTHORIZED TO OPERATE UNDER AN APPROVED STATE OR FEDERAL PROGRAM)
Name BKK LANDFILL
EPA NO. C A D 0 6 7 7 8 6 7 4 9
Address 2210 S. Azusa Ave.
City, State, Zip W. Covina, California 91722
Phone No. (213) 965-0911

(4) ALTERNATE TSD FACILITY
Name Carmalia Disposal
EPA NO. C A D 0 2 0 7 4 0 1 2
Address 539 San Yaldro Road
City, State, Zip Carmalia CA 93100
Phone No. 805-937-8449

(5) U.S. DOT PROPER SHIPPING NAME	U.S. DOT HAZARD CLASS	UN/NA ID NO.	WEIGHT OR VOLUME	UNITS
WASTE Petroleum Distillates	Flammable	1268	7,000	Gals
WASTE				

CONTAINERS: NUMBER 1
TYPE: ☐ DRUMS ☐ BAGS ☐ CARTONS ☒ TANK TRUCK ☐ DUMP TRUCK ☐ OTHER

WASTE CATEGORY 47,40,49 (7) EX. HAZ. WASTE PERMIT NO. na (8) GENERATING PROCESS Aircraft cleaning and Maint.

(9) LIST COMPONENTS:

		CONC. RANGE UPPER	CONC. RANGE LOWER	UNITS
A.	ar	60	50	☒ % ☐ ppm.
B.	phatic Hydrocarbons	20	15	☒ % ☐ ppm.
C.	te Oilds	20	15	☒ % ☐ ppm.
D.	ogenated Hydrocarbons	5	0	☐ % ☒ ppm.
E.				☐ % ☐ ppm
F.				☐ % ☐ ppm
G.				☐ % ☐ ppm

Non Hazardous Material _____ %

(10) WASTE PROPERTIES: pH _____ ☐ Toxic ☒ Flammable ☐ Corrosive/Irritant ☐ Reactive ☐ Sensitizer ☐ Carcinogen/Mutagen

(11) PHYSICAL STATE: ☐ Solid ☒ Liquid ☒ Sludge ☐ Slurry ☐ Gas ☐ Other _____

(12) SPECIAL HANDLING INSTRUCTIONS: ☒ Gloves ☐ Goggles ☐ Respirator ☐ Other _____

GENERATOR CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked, labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation and EPA.

IN THE EVENT OF A SPILL, CONTACT THE NATIONAL RESPONSE CENTER, U.S. COAST GUARD 1-800-424-8802

(13) [illegible] Signature of Authorized Agent and Title — Date Shipped [illegible]

TRANSPORTER (HAULER MUST COMPLETE)

(14) NAME CHANCELLOR & OGDEN
EPA NO. C A D 0 4 8 4 9 8 4 6 3
ADDRESS 3031 East "I" Street PHONE NO. (213) 432-8461
CITY, STATE, ZIP Wilmington, California 90744

JOB NO. _____
UNIT NO. _____

(15) PICK-UP DATE _____
TIME _____ ☐ AM ☐ PM

(16) _____ Signature of Authorized Agent and Title — Date

TSD FACILITY (FACILITY OPERATOR MUST COMPLETE)

(17) NAME BKK LANDFILL
EPA NO. C A D 0 6 7 7 8 6 7 4 9
PHONE NO. (213) 965-0911

NAME _____
EPA NO. _____
PHONE NO. _____

(18) QUANTITY (If Measured) _____
(19) STATE FEE (If Any) $ _____
(21) HANDLING OR DISPOSAL METHOD:
☐ Surface Impoundment ☐ Landfill
☐ Injection Well ☐ Land Treatment
☐ Treatment (Specify) _____
☐ Recovery or Reuse ☐ Storage/Transfer

(20) INDICATE ANY SIGNIFICANT DISCREPANCIES BETWEEN MANIFEST AND SHIPMENT: _____

IF WASTE IS HELD FOR DELIVERY ELSEWHERE, SPECIFY THE DESIGNATED TSD FACILITY:

(22) NAME _____
EPA NO _____

(21) _____ Signature of Authorized Agent and Title — Date Accepted

MATERIAL INSPECTION AND RECEIVING REPORT

1. PROC. INSTRUMENT IDEN (CONTRACT) | (ORDER) NO. | 6. INVOICE NO. DATE | 7. PAGE 1 OF 1 | 8. ACCEPTANCE POINT

2. SHIPMENT NO. | 3. DATE SHIPPED: 9-22-82 | 4. B/L TCN: DLA-200-82-M-0027 | 5. DISCOUNT TERMS

9. PRIME CONTRACTOR CODE

SKX LANDFILL
2210 S.AZUSA AVE.
W.COVINA, CALIF. 91722
EPA No.CAD067736749

10. ADMINISTERED BY CODE

DEFENSE PROPERTY DISPOSAL TUCSON
P.O.BOX15011
TUCSON, AZ. 85708

SHIPPED FROM (If other than 9). FOB:

ARIZONA AIR NATIONAL GUARD
1500 E. VALENCIA RD.
TUCSON, AZ. 85734
EPA No. AZD573124055

12. PAYMENT WILL BE MADE BY CODE

DEFENSE PROPERTY DISPOSAL SVC
DPDS-CFE, FEDERAL CENTER
BATTLE CREEK, MI. 49016

SHIPPED TO CODE

SKX LANDFILL
2210 S. AZUSA AVE.
W. COVINA, CALIF. 91722

14. MARKED FOR CODE

ITEM NO	16. STOCK/PART NO DESCRIPTION (Indicate number of shipping containers - type of container - container number.)	17. QUANTITY SHIP'D / REC'D	18. UNIT	19. UNIT PRICE	20. AMOUNT
11	2 Each Truck Trailer				
	Truck No. 227 Trailer No. 210A	7000	Gal.		
	Truck No. 230 Trailer No. 211A	5000	Gal.		

21. PROCUREMENT QUALITY ASSURANCE

A. ORIGIN

☐ PQA ☐ Acceptance of listed items has been made by me or under my supervision and they conform to contract except as noted herein or on supporting documents.

DATE | SIGNATURE OF AUTH. GOVT. REP

TYPED NAME AND OFFICE

B. DEST NATION

☐ PQA ☐ Acceptance of listed items has been made by me or under my supervision and they conform to contract, except as noted herein or on supporting documents.

DATE | SIGNATURE OF AUTH. GOVT. REP

TYPED NAME AND OFFICE

22. RECEIVER'S USE

Quantities shown in column 17 were received in apparent good condition except as noted.

DATE RECEIVED | SIGNATURE OF AUTH. GOVT. REP

TYPED NAME AND OFFICE

*If quantity received by carrier agrees with the same as quantity shipped, indicate by "✓" in column 17; otherwise, enter actual quantity received in the appropriate column 17 and explain.

23. CONTRACTOR USE ONLY

. CORPORATION

CORPORATE OFFICES

2550 237th STREET
TORRANCE, CALIF. 90505

(213) 539-7150
(213) 775-3608

BKK
CHANCELLOR & OGDEN

•CHANCELLOR & OGDEN•

SERVICE ORDER

NO. 2-40007

EPA I.D. CAD048498463
ICC MC-143836
CAL T-127441

24 HOUR SERVICE — WILMINGTON (213) 432-8461
SAN DIEGO (714) 278-3600

DATE 10-23-91

GENERATOR [illegible] PURCHASE ORDER NO. _____ JOB NO. DA4402-83-M-2242

ADDRESS [illegible] JOB LOCATION [illegible]

SERVICES [illegible]

TRUCK / TRAILER 2211 / 204
SIZE
CAPACITY 100
EQUIP. TYPE [illegible]
NO. OF LOADS [illegible]
MATERIAL [illegible]

START TIME 7 M STOP TIME _____ M GROSS TIME _____ HRS
MEALS FROM _____ M TO _____ M LESS _____ HRS
OTHER TIME OUT [illegible] LESS _____ HRS
DRIVER [illegible] EMP. NO. 21009 NET TIME _____ HRS
HELPER [illegible] EMP. NO. _____ RATE PER HR. _____

GENERATORS AUTHORIZED SIGNATURE [illegible]

T.S.D. FACILITY [illegible]

COMMENT _____

MANIFEST NO. 103579

—FOR OFFICE USE ONLY—

TRANSPORATION CHARGE

RATE PER HR. _____
RATE PER LOAD _____

—3100

TREATMENT—STORAGE—DISPOSAL CHARGES

DISP. FEE _____

—3200

H.W.T. _____
WASH OUT _____
SUR. CHG. _____

—3200

K CORPORATION

CORPORATE OFFICES

C 37th STREET
RRANCE, CALIF. 90505

39-7150
75-3608

BKK
CHANCELLOR & OGDEN

•CHANCELLOR & OGDEN•

SERVICE ORDER

NO. 2-40006

EPA I.D. CAD048498463
ICC MC-143838
CAL T-127441

24 HOUR SERVICE — WILMINGTON (213) 432-8461
SAN DIEGO (714) 278-3600

T 10-23-91

K Air Water Guard

ESS 500 E. Alameda

Reg.

PURCHASE ORDER NO. DAHA03-83-M-3342

JOB NO.

JOB LOCATION Tucson Airport

H Airport to Tucson and Airport area

Airport

START TIME 1:30 M STOP TIME 1:30 M GROSS TIME 1 1/2 HRS

MEALS FROM M TO M LESS HRS

OTHER TIME OUT LESS HRS

DRIVER EMP. NO. 2009 NET TIME 1 1/2 HRS

HELPER EMP. NO. RATE PER HR.

GENERATORS AUTHORIZED SIGNATURE

COMMENT

—FOR OFFICE USE ONLY—

TRANSPORATION CHARGE

RATE PER HR.

RATE PER LOAD

TREATMENT—STORAGE—DISPOSAL CHARGES

DISP FEE

H.W.T. WASH OUT SUR. CHG.

BKK CORPORATION

CORPORATE OFFICES

2550 237th STREET
TORRANCE, CALIF. 90505

(213) 539-7150
(213) 775-3606

•CHANCELLOR & OGDEN•

SERVICE ORDER

NO. 2-42096

EPA I.D. CAD048498483
ICC MC-143838
CAL T-127441

24 HOUR SERVICE — WILMINGTON (213) 432-8461
SAN DIEGO (714) 278-3600

DATE 10-22-81

GENERATOR [illegible]
ADDRESS

PURCHASE ORDER NO. [illegible] JOB NO.
JOB LOCATION Tucson Ariz

SERVICES Removal working out Baghouse slag
[illegible] and hold to [illegible] to be
unloaded [illegible] at BKK [illegible]

TRUCK
TRAILER 237 / [illegible]
SIZE
CAPACITY 130
EQUIP. TYPE [illegible]
NO. OF LOADS 1

MATERIAL Baghouse Slag

START TIME [illegible] M
MEALS FROM M TO M
OTHER TIME OUT
DRIVER [illegible] EMP. NO. [illegible]
HELPER EMP. NO.

STOP TIME M
GROSS TIME HRS
LESS HRS
LESS HRS
NET TIME HRS
RATE PER HR.

GENERATORS AUTHORIZED SIGNATURE [illegible]

T.S.D. FACILITY [illegible]

COMMENT

MANIFEST
[illegible]

—FOR OFFICE USE ONLY—

TRANSPORATION CHARGE
RATE PER HR.
RATE PER LOAD

TREATMENT—STORAGE—DISPOSAL CHARGES
DISP FEE
H.W.T WASH OUT
SUR CHG.

—3100 —3200 —3300

BKK CORPORATION

CORPORATE OFFICES

2550 237th STREET
TORRANCE, CALIF. 90505

(213) 539-7150
(213) 775-3606

BKK CHANCELLOR & OGDEN

•CHANCELLOR & OGDEN•

SERVICE ORDER

NO. 2-42095

EPA I.D. CAD048498463
ICC MC-143836
CAL T-127441

24 HOUR SERVICE — WILMINGTON (213) 432-8461
SAN DIEGO (714) 278-3600

DATE 10-31-21

GENERATOR [illegible] TOR [illegible]

ADDRESS

PURCHASE ORDER NO. [illegible] JOB NO.

JOB LOCATION [illegible]

SERVICES [illegible]

TRUCK
TRAILER 237 / 2264
SIZE
CAPACITY 130
EQUIP. TYPE [illegible]
NO. OF LOADS

MATERIAL

S.D. FACILITY

COST

START TIME [illegible] M
MEALS FROM M TO M
OTHER TIME OUT

STOP TIME [illegible] M

GROSS TIME [illegible] HRS
LESS HRS
LESS HRS
NET TIME [illegible] HRS
RATE PER HR.

DRIVER [illegible]
EMP. NO [illegible]
HELPER
EMP. NO.

GENERATORS AUTHORIZED SIGNATURE [illegible]

COMMENT

—FOR OFFICE USE ONLY—

TRANSPORATION CHARGE

RATE PER HR.
RATE PER LOAD

TREATMENT—STORAGE—DISPOSAL CHARGES

DISP. FEE

H.W.T
WASH OUT
SUR. CHG.

CALIFORNIA HAZARDOUS WASTE MANIFEST

State Department of Health Services
HAZARDOUS MATERIALS MANAGEMENT SECTION
744 P Street, Sacramento, CA 95814

(1) Manifest Number 009- 103578

...verse side for Instructions.
...type or print clearly. Press Hard.

GENERATOR (Generator Must Complete)

(2) Name ARIZ AIR NAT GUARD
EPA NO. AZ9572124055
Address 1500 VALENCIA Phone No. 602 741 3125
City, State, Zip TUCSON AZ 85734
Order Placed By _____ Order Date _____
Contract No. _____

(3) **DESIGNATED TSD FACILITY** (AUTHORIZED TO OPERATE UNDER AN APPROVED STATE OR FEDERAL PROGRAM)

Name BKK LANDFILL
EPA NO. CAD067786749
Address 2210 S. Azusa Ave.
City, State, Zip W. Covina, California 91722
Phone No. (213) 965-0911

(4) **ALTERNATE TSD FACILITY**

Name CHSMALIA DISPOSAL
EPA NO. CAD027481125
Address 539 SAN YSIDRO RD
City, State, Zip SASMALIA 93108
Phone No. 805 937 8449

(5) U.S. DOT PROPER SHIPPING NAME	U.S. DOT HAZARD CLASS	UN/NA ID NO.	WEIGHT OR VOLUME	UNITS
WASTE PETROLEUM DISTILLATE	FLAMMABLE	1268	200	GALS
WASTE				

CONTAINERS: NUMBER 1
TYPE: ☐ DRUMS ☐ BAGS ☐ CARTONS ☒ TANK TRUCK ☐ DUMP TRUCK ☐ OTHER _____

(6) WASTE CATEGORY 47,49,66 (7) EX. HAZ. WASTE PERMIT NO. _____ (8) GENERATING PROCESS _____

LIST COMPONENTS:	CONC. RANGE UPPER	LOWER	UNITS		CONC. RANGE UPPER	LOWER	UNITS
A. WASTE OILS	30	10	☒ % ☐ ppm.	E.			☐ % ☐ ppm.
B. PAINT STRIPPING RESIDUES	30	10	☒ % ☐ ppm.	F.			☐ % ☐ ppm.
C. MINER SOLVENT	40	20	☒ % ☐ ppm.	G.			☐ % ☐ ppm.
D.			☐ % ☐ ppm.	Non Hazardous Material		%	

(9) WASTE PROPERTIES: pH _____ ☐ Toxic ☐ Flammable ☐ Corrosive/Irritant ☐ Reactive ☐ Sensitizer ☐ Carcinogen/Mutagen

(10) PHYSICAL STATE: ☐ Solid ☒ Liquid ☒ Sludge ☐ Slurry ☐ Gas ☐ Other _____

(11) SPECIAL HANDLING INSTRUCTIONS: ☒ Gloves ☐ Goggles ☐ Respirator ☐ Other _____

(12) GENERATOR CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked, labeled, and are in proper condition for transportation according to ...applicable regulations of the Department of Transportation and EPA.

IN THE EVENT OF A SPILL, CONTACT THE NATIONAL RESPONSE CENTER, U.S. COAST GUARD 1-800 424 8802

(13) [illegible] Signature of Authorized Agent and Title — 22 Oct 91 Date Shipped

TRANSPORTER (HAULER MUST COMPLETE)

(14) NAME CHANCELLOR & OGDEN
EPA NO. CAD048498463
ADDRESS 3031 East "I" Street Phone No. (213) 432-8461
CITY STATE, ZIP Wilmington, California 90744

JOB NO. [illegible]
UNIT NO. [illegible]

(15) PICK-UP DATE [illegible]
TIME [illegible] ☐ AM ☐ PM

(16) [illegible] Signature of Authorized Agent and Title — [illegible] Date

TSD FACILITY (FACILITY OPERATOR MUST COMPLETE)

(17) NAME BKK LANDFILL
EPA NO. CAD067786749
PHONE NO. (213) 965-0911

NAME _____
EPA NO. _____
PHONE NO. _____

(18) QUANTITY (If Measured) _____
(19) STATE FEE (If Any) $ _____
(21) HANDLING OR DISPOSAL METHOD:
☐ Surface Impoundment ☐ Landfill
☐ Injection Well ☐ Land Treatment
☐ Treatment (Specify) _____
☐ Recovery or Reuse ☐ Storage/Transfer

(20) INDICATE ANY SIGNIFICANT DISCREPANCIES BETWEEN MANIFEST AND SHIPMENT: _____

IF WASTE IS HELD FOR DELIVERY ELSEWHERE, SPECIFY THE DESIGNATED TSD FACILITY:

NAME _____

CALIFORNIA HAZARDOUS WASTE MANIFEST

State Department of Health Services
HAZARDOUS MATERIALS MANAGEMENT SECTION
744 P Street, Sacramento, CA 95814

See reverse side for Instructions.
Please type or print clearly. Press Hard.

(1) Manifest Number 009-103579

GENERATOR (Generator Must Complete)

(2) Name ARIZ AIR NATL GUARD
EPA NO. A2457312455
Address 1500 E VALENCIA Phone No. 602-744-5258
City, State, Zip TUCSON AZ 85734
Order Placed By _____ ORDER DATE _____
P.O./CONTRACT NO. _____

(3) **DESIGNATED TSD FACILITY**
Name BKK LANDFILL
EPA NO. CAD067786749
Address 2210 S. Azusa Ave.
City, State, Zip W. Covina, California 91722
Phone No. (213) 965-0911

(4) **ALTERNATE TSD FACILITY** (AUTHORIZED TO OPERATE UNDER AN APPROVED STATE OR FEDERAL PROGRAM)
Name CASMALIA DISPOSAL
EPA NO. CAD020748112
Address 539 SAN YSIDRO RD
City, State, Zip CASMALIA 93108
Phone No. 805-937-8449

(5) U.S. DOT PROPER SHIPPING NAME	U.S. DOT HAZARD CLASS	UN/NA ID NO.	WEIGHT OR VOLUME	UNITS
WASTE PETROLEUM DISTILLATES	FLAMMABLE	1268	5,000	GALS
WASTE				

CONTAINERS: NUMBER 1
TYPE: ☐ DRUMS ☐ BAGS ☐ CARTONS ☒ TANK TRUCK ☐ DUMP TRUCK ☐ OTHER _____

(6) WASTE CATEGORY 47, 44 & 66 (7) EX. HAZ. WASTE PERMIT NO. _____ (8) GENERATING PROCESS _____

LIST COMPONENTS:	CONC. RANGE UPPER	LOWER	UNITS		CONC. RANGE UPPER	LOWER	UNITS
(9) A. WASTE OIL	30	10	☒ % ☐ ppm.	E.			☐ % ☐ ppm.
B. PAINT STRIPPING RESINS	30	10	☒ % ☐ ppm.	F.			☐ % ☐ ppm.
C. MIXED SOLVENT	40	20	☒ % ☐ ppm.	G.			☐ % ☐ ppm.
D.			☐ % ☐ ppm.	Non Hazardous Material	%		

(10) WASTE PROPERTIES: pH _____ ☐ Toxic ☒ Flammable ☐ Corrosive/Irritant ☐ Reactive ☐ Sensitizer ☐ Carcinogen/Mutagen
(11) PHYSICAL STATE: ☐ Solid ☒ Liquid ☒ Sludge ☐ Slurry ☐ Gas ☐ Other _____
(12) SPECIAL HANDLING INSTRUCTIONS: ☒ Gloves ☐ Goggles ☐ Respirator ☐ Other _____

GENERATOR CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked, labeled, and are in proper condition for transportation according the applicable regulations of the Department of Transportation and EPA.

IN THE EVENT OF A SPILL, CONTACT THE NATIONAL RESPONSE CENTER, U.S. COAST GUARD 1-800-424-8802

(13) [signature] 11-22-81
Signature of Authorized Agent and Title — Date Shipped

TRANSPORTER (HAULER MUST COMPLETE)

(14) NAME CHANCELLOR & OGDEN
EPA NO. CAD048498463
ADDRESS 3031 East "I" Street PHONE NO. (213) 432-8461
CITY, STATE, ZIP Wilmington, California 90744

JOB NO. F40007
UNIT NO. 330-7314
(15) PICK-UP DATE 11-22-81
TIME _____ ☒ AM ☐ PM
(16) [signature] 11-22-81
Signature of Authorized Agent and Title — Date

TSD FACILITY (FACILITY OPERATOR MUST COMPLETE)

(17) NAME BKK LANDFILL
EPA NO. CAD067786749
PHONE NO. (213) 965-0911

NAME _____
EPA NO. _____
PHONE NO. _____

(18) QUANTITY (If Measured) _____
(19) STATE FEE (If Any) $ _____
(21) HANDLING OR DISPOSAL METHOD:
☐ Surface Impoundment ☐ Landfill
☐ Injection Well ☐ Land Treatment
☐ Treatment (Specify) _____
☐ Recovery or Reuse ☐ Storage/Transfer

(20) INDICATE ANY SIGNIFICANT DISCREPANCIES BETWEEN MANIFEST AND SHIPMENT: _____

IF WASTE IS HELD FOR DELIVERY ELSEWHERE, SPECIFY THE DESIGNATED TSD FACILITY:

(22) NAME _____
EPA NO. _____

(23) _____

SERVICE ORDER

NO. 2- 24845

BKK CORPORATION
CORPORATE OFFICES
3131 EAST "I" STREET
WILMINGTON, CALIF. 90744
(213) 775-3607

- BKK LANDFILLS
- RESOURCES II
- FALCON DISPOSAL
- CHANCELLOR & OGDEN
- BKK CO. OF NEVADA INC.

24 HR. SERVICE
(213) 432-8461

DATE MARCH 30, 1981 TOC. NO. 1433236 HO = DANA 82-31-M-2296 Rep. FB6022-C-31-01

CUSTOMER AZ. AIR NAT'L GUARD NO. ____ ORDER NO. FB6022-C-31-01

BILLING ADDRESS 1500-E VALENCIA RD JOB LOCATION TUCSON, AZ.

BILLING TO: AZ. AIR NAT'L GUARD
ACCTS + FIN OFFICE
WILLIAMS AFB AZ. 85224

COMMODITY OILY SLUDGE (D.O.T. NAME) ____

ORIGIN TUCSON, AZ DESTINATION W. COVINA, CA.

SERVICES PERFORMED Transport Fuston cyl

NO. OF LOADS ____ WHERE DISPOSED ____ WASTE HAULERS NO. 007-59978

TRUCK/TRAILER NO. 237 / 24 CAPACITY 30 BBL TYPE EQUIP. VAC, TK

START 12:00 M. STOP 9:15 M. GROSS TIME 9.31 HOURS

TRALS — M. TO — M. ____ HOURS

TIME DEDUCTIONS ____ ____ HOURS

DRIVER [illegible] NO. 91007 ____ HOURS

HELPER ____ NO. ____ NET TIME 9.31 HOURS

RECEIVED BY [signature]

OFFICE USE ONLY

TRANS. RATE ____ DUMP PRICE ____ H.W.T. ____

RATE PER HOUR ____ ____ WASHOUT ____

RATE PER LOAD ____ ____ SUR. CHR. ____

SERVICE ORDER

NO. 2- 24846

3 K CORPORATION
CORPORATE OFFICES
1 EAST "I" STREET
WILMINGTON, CALIF. 90744
3) 775-3607

BKK CHANCELLOR & OGDEN

- BKK LANDFILLS
- RESOURCES II
- FALCON DISPOSAL
- CHANCELLOR & OGDEN
- BKK CO. OF NEVADA INC.

24 HR. SERVICE
(213) 432-8461

DATE MARCH 31, 1981 — ICC MC 1433836 — P/O # DAHA 02-81-M-2296

CUSTOMER AZ. AIR NATL GUARD — NO. — ORDER NO. F26022-CI-81-2

BILLING ADDRESS 1500 E VALENCIA RD. — JOB LOCATION TUCSON, AZ

BILLING TO: AZ. AIR NATL GUARD
ACCTG - FIN OFFICE WILLIAMS AFB, AZ. 85224

COMMODITY CITY SLUDGE (D.O.T. NAME)

ORIGIN TUCSON, AZ. — DESTINATION MT. COUNTRY CA.

SERVICES PERFORMED Pump out & wash pits and haul to BKK Watsonville
[illegible]

NO. OF LOADS 1 — WHERE DISPOSED BKK — WASTE HAULERS NO. 509-046976

TRUCK/TRAILER NO. 237 / 24 — CAPACITY 1300 BBL — TYPE EQUIP. VAC. TR.

START 8:00 A.M. — STOP — M. — GROSS TIME — HOURS

LUNCH — M. TO — M. — HOURS

TIME DEDUCTIONS — HOURS

DRIVER [illegible] — NO. [illegible] — HOURS

HELPER — NO. — NET TIME — HOURS

RECEIVED BY [illegible]

OFFICE USE ONLY

TRANS. RATE) — DUMP PRICE — H.W.T.

RATE PER HOUR — WASHOUT

RATE PER LOAD — SUR. CHR.

SERVICE ORDER

NO. 2-31811

BKK CORPORATION
CORPORATE OFFICES
31 EAST "I" STREET
WILMINGTON, CALIF. 90744
(213) 775-3607

- BKK LANDFILLS
- RESOURCES II
- FALCON DISPOSAL
- CHANCELLOR & OGDEN
- BKK CO. OF NEVADA INC.

24 HR. SERVICE
(213) 432-8461

DATE 4-1-87

CUSTOMER AZ AIR NAT'L GUARD NO. ORDER NO.

BILLING ADDRESS 1500 E ALESSANDRO JOB LOCATION
[illegible] AIR NAT'L GUARD
[illegible]
[illegible] AZ 85224

COMMODITY OILY SLUDGE (D.O.T. NAME)

ORIGIN [illegible] DESTINATION [illegible]

SERVICES PERFORMED TOOK LOADED TRUCK TO BKK FOR DISPOSAL. WAIT FOR SAMPLE BURN & WAIT TO CLEAN OUT & RETURN TO YARD

NO. OF LOADS 1 WHERE DISPOSED [illegible] WASTE HAULERS NO. [illegible]

TRUCK TRAILER NO. [illegible] CAPACITY [illegible] TYPE EQUIP. [illegible]

START 10:00 A.M. STOP 1:30 P.M. GROSS TIME 3½ HOURS

LUNCHES M. TO M. HOURS

TIME DEDUCTIONS — HOURS

DRIVER [illegible] NO. [illegible] HOURS

HELPER NO. NET TIME 3½ HOURS

RECEIVED BY

OFFICE USE ONLY

TRANS. RATE DUMP PRICE H.W.T.

RATE PER HOUR WASHOUT

RATE PER LOAD SUR. CHR.

C[illegible] FO[illegible]A [illegible]AF[illegible]US [illegible]AS[illegible] MA[illegible]ES

HAZARD[illegible] Department of Health Services
MATERIALS MANAGEMENT SECTION
[illegible] P Street, Sacramento, CA 95814

(1) Manifest Number 00[illegible] - 096976

[illegible] for Instructions.
[illegible] clearly. Press Hard.
See reverse side [illegible]
Please type or pr[illegible]

(Generator Must Complete)

GENERATOR: Air Nat Guard

(2) No. X A 2 6 5 7 1 2 4 6 5 5

Address 1300 E. Valencia Rd Phone No. 602-214-0182

City, State, Zip Tucson Ariz 85734

Order Placed By: _____ ORDER DATE _____

P.O./CONTRACT NO. _____

(3) DESIGNATED TSD FACILITY

(AUTHORIZED TO OPERATE UNDER AN APPROVED STATE OR FEDERAL PROGRAM)

Name BKK LANDFILL

EPA NO. C A D 0 6 7 7 8 6 7 4 9

Address 2210 S. Azusa Ave.

City, State, Zip W. Covina, California 91722

Phone No. (213) 965-0911

(4) ALTERNATE TSD FACILITY

Name CASMALIA DISPOSAL

EPA NO. C A D 0 2 0 7 1 1 8

Address 539 SAN YSIDRO RD

City, State, Zip CASMALIA 93108

Phone No. 805-937 8449

(5) U.S. DOT PROPER SHIPPING NAME	U.S. DOT HAZARD CLASS	UN/NA ID NO.	WEIGHT OR VOLUME	UNITS
WASTE Petroleum Distillates	Flammable	1268	130	4 [illegible] Gal
WASTE				

CONTAINERS: NUMBER _____

TYPE: ☐ DRUMS ☐ BAGS ☐ CARTONS ☒ TANK TRUCK ☐ DUMP TRUCK ☐ OTHER _____

(6) WASTE CATEGORY 77 (7) EX. HAZ. WASTE PERMIT NO. _____ (8) GENERATING PROCESS _____

(9) LIST COMPONENTS:	CONC. RANGE UPPER	CONC. RANGE LOWER	UNITS		CONC. RANGE UPPER	CONC. RANGE LOWER	UNITS
A. WASTE OILS	90	75	☒ % ☐ ppm.	E.			☐ %
B. PAINT STRIPPING RESIDUES	10	5	☒ % ☐ ppm.	F.			☐ %
C.			☐ % ☐ ppm.	G.			☐ %
D.			☐ % ☐ ppm.	Non Hazardous Material			%

(10) WASTE PROPERTIES: pH _____ ☐ Toxic ☐ Flammable ☐ Corrosive/Irritant ☐ Reactive ☐ Sensitizer ☐ Carcinogen/Mutagen

(11) PHYSICAL STATE: ☐ Solid ☒ Liquid ☒ Sludge ☐ Slurry ☐ Gas ☐ Other _____

(12) SPECIAL HANDLING INSTRUCTIONS: ☒ Gloves ☐ Goggles ☐ Respirator ☐ Other _____

GENERATOR CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked, labeled, and are in proper condition for transportation acc the applicable regulations of the Department of Transportation and EPA.

IN THE EVENT OF A SPILL, CONTACT THE NATIONAL RESPONSE CENTER, U.S. COAST GUARD 1-800-424-8802

(13) [illegible] Contract Officer — Signature of Authorized Agent and Title — 31 MAR 81 Date Shipped

TRANSPORTER (HAULER MUST COMPLETE) ICC MC 1433836

(14) NAME CHANCELLOR & OGDEN

EPA NO. C A D 0 4 8 4 9 8 4 6 3

ADDRESS 3031 East "I" Street PHONE NO. (213) 432-8461

CITY, STATE, ZIP Wilmington, California 90744

JOB NO. [illegible]

UNIT NO. [illegible]

(15) PICK-UP DATE [illegible]

TIME [illegible] ☐ AM ☐ PM

(16) [illegible] — Signature of Authorized Agent and Title — 4-1-81 Date

TSD FACILITY (FACILITY OPERATOR MUST COMPLETE)

(17) NAME BKK LANDFILL

EPA NO. C A D 0 6 7 7 8 6 7 4 9

PHONE NO. (213) 965-0911

NAME _____

EPA NO. _____

PHONE NO. _____

(18) QUANTITY (If Measured) 20.46

(19) STATE FEE (If Any) $20.46

(21) HANDLING OR DISPOSAL METHOD:

☐ Surface Impoundment ☒ Landfill

☐ Injection Well ☐ Land Treatment

☐ Treatment (Specify) _____

☒ Recovery or Reuse ☐ Storage/Transfer

(20) INDICATE ANY SIGNIFICANT DISCREPANCIES BETWEEN MANIFEST AND SHIPMENT: _____

IF WASTE IS HELD FOR DELIVERY ELSEWHERE, SPECIFY THE DESIGNATED TSD FACILITY:

(22) NAME _____

EPA NO. _____

(23) R. Sager 60 — 4-1-81

Tucson Airport Authority

November 20, 1980

Col. James Krauth
Arizona Air National Guard
P.O. Box 11037
Tucson, Az. 85734

Dear Col. Krauth:

We have received notification from the attorneys of the Environmental Protection Agency's regional office in San Francisco on our successful application for an exemption from the Federal Hazardous Waste Regulations in regard to our Fire Department training activities. This exemption was granted on the basis of the burning of "ignitable wastes" such as jet fuel and other aviation fuels along with some limited quantities of methyl ethyl ketone.

As the fire drill area and facilities are on the properties of the Tucson Airport Authority and our exemption specifically indicates that the activities in that area are now legally our responsibility as far as what pertains to the EPA regulations, I see no difficulty whatsoever in encompassing the activities of both the Tucson Airport Authority Fire Department and the Air National Guard Fire Department under the umbrella of this exemption. We have always used these areas as joint use training facilities as well as individual use training facilities and as long as the activities fall within the parameters of the exemption, they should continue unabated and without restriction. There are, however, several guidelines which we all must continue to follow, none of which are at much of a variance to what is being conducted currently.

1. Continued notification to Pima County Pollution Control in regards to the time of the burn and following their guidelines as far as inversion layers and other pollution abatement procedures that may come into effect.

2. Our exemption is based on ignitable wastes of aviation fuels with very limited quantities of methyl ethyl ketone. Other cleaning solvents and large amounts of MEK and other materials that may fall under the Federal Hazardous

Materials Act would have to be excluded from the drill field for any burning activities not directly related to Fire Department training functions. The only potential problem may be with the products in your waste accumulator/ separator pit from your aircraft maintenance operations.

3. Additionally, notification calls for fire drill activities to the Tucson Control Tower, the Air National Guard Fire Department and Tucson Airport Authority Fire Department, Pima County Sheriff's Department and Tucson Communications Center (for City of Tucson Police and Fire notification purposes) must be continued.

4. Additional improvements to the drill grounds to preclude contamination of the ground water supply system will need to be forthcoming. We have budgeted some funds already for improvement of the facilities and hopefully, through the resources of both of our organizations, we will be able to fully realize this goal in the immediate future.

5. If any of your personnel have questions regarding the substances that can be burned for training purposes, please have them contact our Fire Chief, Mr. John Rooney.

6. A State of Arizona exemption has also been applied for and is a necessary requirement. Should this exemption involve any change in procedures not delineated, I will subsequently advise you.

I appreciate your continued support and cooperation for our joint efforts and if you have any questions or need any clarification on the exemption guidelines we have received, please do not hesitate to contact me.

Respectfully,

David A. Enz
Manager of Operations

DAE/nan

cc Marc Simon
Bilby, Shoenhair, Warnock & Dolph

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
215 Fremont Street
San Francisco, Ca. 94105

April 23, 1982

Colonel John M. Hartnett
Commander
162nd Tactical Fighter Group
P.O. Box 11037
Tucson, AZ 85734

Re: Arizona Air National Guard (EPA ID No. AZ9573124055)

Dear Colonel Hartnett:

Discussions with your representatives on April 7, 1982, along with the information presented in your letter of March 26, 1982, have persuaded me that the wastes being treated in your oil/water separators are not hazardous wastes. This being the case, no permit is required pursuant to Section 3005 of the Resource Conservation and Recovery Act. In accordance with your request, we are returning the documents which you submitted to us.

Should it be necessary for you to reapply for a hazardous waste facility permit, you should contact us for the procedures to be followed.

I appreciate the time and concern which you have demonstrated in following through on the requirements of the hazardous waste program.

Sincerely yours,

William D. Wilson, Chief
Technical Assessment Section
Toxics and Waste Programs Branch

Enclosure

cc: Norman Gumenik, Arizona Department of Health Services
Harold E. Lindenhofen Air National Guard Support Center

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 162ND TACTICAL FIGHTER GROUP (ANG) (TAC)
P.O. BOX 11037, TUCSON, ARIZONA 85734

26 MAR 1982

Reply to Attn. of: DE

SUBJECT: Cancellation of a Hazardous Waste Permit Application for 162nd TFG AZ ANG, Tucson, AZ

TO: NGB/DE
US EPA Region IX
San Francisco, CA 94105
IN TURN

1. We are requesting that the TSD permit application submitted by the 162nd TFG, AZ ANG, on 19 Nov 1980 be cancelled. The permit EPA ID# is AZ 9573124055. The ANG has conducted a detailed inventory of hazardous materials that are dispensed from the supply system and has determined that the quantities of items that have the potential to become a Hazardous Waste are less than 1000 Kgs/mo (Atch 1). Therefore, this installation should be categorized as a small generator. We believe that there was some misunderstanding of the regulations when the first permit submittal was prepared. This was most probably due to the scope and complexity of the RCRA Hazardous Waste regulations.

2. On August 1981, the state of Arizona Dept of Health inspected the facility and found the facility to be in noncompliance with certain portions of 40CFR 262 thru 265. Noncompliance was based upon defining oil/water separators as Hazardous Waste treatment facilities and thus, must be permitted. We met with state personnel on 19 February 1982, in an effort to resolve this issue. A memo (Atch 3), prepared by Mr. Norm Gumenik, State of Arizona Dept of Health Services, gives the salient points discussed at the meeting. He pointed out that although the facility may be a small generator it still must treat the wastes in a permitted facility. We agree that the regulations require treatment in a permitted facility but believe that the inflow is not a hazardous waste, hence, an oil/water separator should not be considered a treatment facility. There are three oil/water separators at this facility. The purpose of an oil/water separator is to treat runoff from aircraft maintenance areas and to separate POL residues from water that is entering the regional waste water treatment system. The types of materials entering the stream would be jet fuel, hydrocarbon solvents, hydraulic fluids and engine oils. These items inadvertently enter the system from ongoing operation and maintenance at the aircraft ramp and hangar areas. They enter the oil/water separator system due to hangar/ramp washdown or runoff due to rain. Hence, they are diluted with large amounts of water when entering the sewer stream. The waste stream could not meet the igniteability characteristic of a Hazardous Waste since a flash point could not be run on an aqueous solution. Hence, the entering stream is not a Hazardous Waste. It follows then that the oil/water separator is not a treatment facility. Additionally on 17 Nov 1980, the EPA amended their regulations to state that no permits were required for operators of waste water treatment units tied into a NPDES permitted system. The oil/water separators are in fact connected to a Regional Waste water treatment system.

3. Attachment 2 contains results of Pensky-Martens Closed Cup Tests performed by AZ Testing Labs on materials removed by our water/oil separators. The lowest flashpoint is 142°F.

4. We request that the TSD permit application for this facility be cancelled. Questions concerning this correspondence should be addressed to Major Guy M. Gillespie, 162 TFG Unit Enviornmental Coordinator, (602) 748-5258.

Signed

JOHN M. HARTNETT, Col, AZANG
Commander

3 Atch
1. Hazardous Material/Waste Inventory
2. AZ Testing Lab Status
3. AZ Dept of Health Svc ltr

Cys to:
OTAG-AZ
AZ Dept of Health Svcs
Attn: N. Gumenik

Period From ____ To ____
Method Used ____

HAZARDOUS MATERIAL/WASTE INVENTORY

(Installation Name)

Common/Chemical Name (A1)	NSN/FSC (A2)	Fire Class(A3)	Hazard Class (A4)	Special Handling(A5)	Monthly Qty Gener. (B1)	Type Cont(B2)	Qty Stored
ACETONE	6810-00-184-4796	IB	Flammable Liquid	Extremely	*2.04	5 Gal Cn	
NIOSH NO				Flammable, keep away from heat, sparks			
A13150000 ACETONE	100%			fire. Do not leave container open.			
				with adequate ventilation. Avoid prolo			
				or repeated contact.			
CALIBRATING FLUID, A/C	6850-00-264-5771	IB	Flammable Liquid	Keep away	9.07 Gal	DR	
NOISH NO				from heat, sparks, open flame. Use wi			
SE 7449000 Petroleum Distillates	100%			adequate ventilation. Avoid prolonged			
				tact with skin. Eye protection and pr			
				tive gloves required. Thermal decompo			
				may yield carbon monoxide.			
TOLUENE, TECHNICAL	6810-00-281-2002	IB	Flammable liquid	40°F Flash-	*2.46 gal	1 Gal Cn	
NIOSH NO.				point. Avoid heat, sparks, open flames			
XS5250000 Toluene				keep container closed.			

*ACETONE is used in aircraft surface preparation for painting. Waste generated evaporates into atmosphere. 6.1 gallons per quarter.

*TOLUENE is used for aircraft surface preparation for painting. Waste generated is evaporated into atmosphere. 7.5gal/qu

Period Used _____ to _____

Method Used _____

HAZARDOUS MATERIAL/WASTE INVENTORY

(Installation Name)

Common/Chemical Name (A1)	NSN/FSC (A2)	Fire Class(A3)	Hazard Class (A4)	Special Handling(A5)	Monthly Qty Gener. (B1)	Type Cont(B2)	Qty Sto
METHYL ETHYL KETONE	6810-00-281-2763	IB	Flammable liquid	Unusual	**88.0 gal	55 gal dr	
NIOSH NO				fire/explosive hazards, low flashpoint			
EL6470000 Methly Ethyl Ketone 99%				high volatility and heavy vapor. Keep a			
				from heat, sparks, open flame. Avoid c			
				explosives, organic peroxides, radioac			
				materials, avoid prolonged breathing o			
				Avoid skin contact, avoid copper. Stor			
				cool place, ventilated.			
REMOVER, PAINT	8010-00-515-2258	IB	Flammable liquid	Strong oxi-	9.63 gal	5 GalCn	
NIOSH NO				dizers, decomposition may yield toxic			
PA8050000 Methylene Chloride 40%				of chlorine. Store and transportation			
NT8050000 Isopropyl Alcohol 20%				closed containers between 40° and 90°F			
XS5 250000 Toluene 15%				away from heat and open flame. Do not			
BQ96250000 Ammonium Hydroxide 10%				under direct sunlight. Use solvent res			
GB29550000 Sodium Chromate 5%				gloves and apron, face shield.			

** METHYL ETHYL KETONE is used for aircraft surface preparation for painting. Waste generated is evaporated into atmosphere. 264 gal/qtr.

HAZARDOUS MATER WASTE INVENTORY

Period Covered to

Method Used

(Installation Name)

Common/Chemical Name (A1)	NSN/FSC (A2)	Fire Class(A3)	Hazard Class (A4)	Special Handling(A5)	Monthly Qty Gener. (B1)	Type Cont(B2)	D S
CARBON REMOVING COMPOUND	6850-00-543-7801	II	Flammable liquid	C-1 High	1.76 Gal	5Gal Cn	
NIOSH NO				temp can generate hydrogen chloride			
PA 8050000 Methylene Chloride	55%			phosgen. Open container carefully to			
30 5950000 Cresylic Acid	15%			release pressure. Mask for ammonia a			
100003750 Soap	10%			methylene and chloride. Use eye prote			
1000000 WA Water	19%			goggles, rubber protective gloves			
TRI-ETHANE	6810-00-664-0387		ORM-A	Fresh air	*2.14 Gal	5Gal Cn	
NIOSH NO				masks, glasses or goggles, neoprene			
KJ 2975000 1,1,1-TRICHLOROETHANE	100%	IIIA	Chlorinated Hydrocarbon	neoprene or viton gloves		Avoid bre	
				vapors.			
TEL	6810-00-819-1128						
NIOSH NO							
X3850000 TETRA CHLORETHYLENE		II	ORM-A	Store in	**0.66 Gal	5 Gal Cn	
			Chlorinated Solvent	cool dry place - safety goggles, apro			
				lab coat, rubber gloves.			
SOLVENT DRY CLEANING	6850-00-637-6135	IIIA	Combustible liq.	None known	190 Gal	Dr	
				Flashpoint varies from 138°-144°F. Not			
				listed in DOD Hazardous Materials Inve			
				Information System (HMIIS)			

*TRI-ETHANE used to clean rollers in SOAP Lab Test machine. Hot air force evnporation. No liquid waste generated.

TELEPHONE OR VERBAL CONVERSATION RECORD

For use of this form, see AR 340-15; the proponent agency is The Adjutant General's Office.

DATE: 17 Mar 82

SUBJECT OF CONVERSATION

Status of Pensky-Martens Flashpoint Tests

INCOMING CALL		
PERSON CALLING	ADDRESS	PHONE NUMBER AND EXTENSION
PERSON CALLED	OFFICE	PHONE NUMBER AND EXTENSION

OUTGOING CALL		
PERSON CALLING	OFFICE	PHONE NUMBER AND EXTENSION
Maj Gillespie	162CEF	
PERSON CALLED	ADDRESS	PHONE NUMBER AND EXTENSION
Steve - AZ Testing Lab	Phoenix, AZ	254-6181

SUMMARY OF CONVERSATION

1. Status of samples for base water oil seperators, Pensky Martens closed cup flash point tests. Results as follows:

82-3	142° F	(A/C WASHRACK SEPARATOR)
82-2	142° F	(AGE SEPARATOR)
82-4	177° F	(motor pool SEPARATOR)

2. Paperwork will be mailed as soon as possible.

Bob

Harry - this will be replaced with Report from Az. Testing Lab
Bob

Attachment 2

DA FORM 1 APR 66 751 REPLACES EDITION OF 1 FEB 54 WHICH WILL BE USED

Arizona Testing Laboratories

817 West Madison Street ☐ Phoenix, Arizona 85007 ☐ 602/254-6181

For: Arizona Air National Guard
Post Office Box 11037
Tucson, Arizona 85734

Date: March 15, 1982

Lab. No.: 5726

Sample: Fuel

Marked: Your Purchase Order DANA02-82-24

Received: 3-15-82

Submitted by: same

REPORT OF LABORATORY TESTS

ASTM D-93-72

Samples Marked	Flash Point, Pensky-Martens, °F
Age Separator Storage Tank CE-82-3	142
E.E. Oil Separator Storage Tank CE-82-2	142
Motor Pool Separator Storage Tank CE-82-4	177

4-5-82:
cc: Civil Engineering
Attn: Guy Gillespie
162d TFG, AZANG
1500 E. Valencia
Tucson, Arizona 85706

Respectfully submitted,

ARIZONA TESTING LABORATORIES

Claude E. McLean, Jr.

Claude E. McLean, Jr.

ARIZONA DEPARTMENT OF HEALTH SERVICES

Division of Environmental Health Services
REF: HW 0911

BRUCE BABBITT, Governor
JAMES E. SARN, M.D., M.P.H., Director

January 27, 1982

CERTIFIED MAIL

Lt. Col. James Krauth
Base Civil Engineer
Air National Guard/162 TAC FTR GP
1500 E. Valencia Road
Tucson, Arizona 85706

Dear Lt. Col. Krauth:

This is to remind you that the Arizona Department of Health Services, Bureau of Waste Control (Bureau) has not received a response to the hazardous waste compliance letter addressed to your facility. The letter was issued on August 3, 1981 and requested a response by September 11, 1981 (thirty-five days after the receipt of the letter).

Subsequent contact was made with Major Gillespie on September 16, 1981 and January 13, 1982 regarding the failure to respond to the compliance letter. On September 16th, after being informed that the facility had experienced staffing problems and would soon respond, I requested a projected compliance schedule. The schedule was never received by the Bureau. On January 13th, after contacting Major Gillespie, I was informed that the facility had not yet developed the requested data. At that time Major Gillespie indicated that he and others at the facility were of the opinion that the oil/water separator and holding tank were exempt from permit requirements under provisions outlined in 40 CFR 261.4(c) (Federal Register-October 30, 1980). My impression from the conversation was that the facility was awaiting EPA clarification on the issue prior to responding to the State compliance letter.

In the interest of facilitating a timely response the following information is presented. The referenced regulatory exclusion is applicable only to "hazardous wastes which are generated in a product or raw material storage tank, a product or raw material transport vehicle or vessel, a product or raw material pipeline, or in a manufacturing process unit or an associated non-waste-treatment-manufacturing unit....". The existing oil/water separator operation does not fall into any of the above mentioned categories and thus is subject to full regulation.

If you continue to maintain the posiiton that the facility is entitled to the referenced exemption or you wish to modify the existing Part A permit application, please contact this office to arrange for a meeting with the Technical Support Section (Permits) on February 19, 1982. This date has been selected to provide for coordination with your scheduled meeting with environmental engineer AGSC/DEV Lindenhofen.

Attachment 3

The Department of Health Services is An Equal Opportunity Affirmative Action Employer. All qualified men and women, including the handicapped, are encouraged to participate.

A thirty-five day response to this letter is requested (assuming you do not meet with the Bureau on February 19th). Evidence of compliance must be submitted at that time. Please refer to the attached copy of the August 3, 1981 letter (REF: HW 0767) for details. If the requested compliance items or time frame are unsatisfactory to you, please contact this office to arrange for a meeting prior to the requested response date.

This letter is being sent to you as the contact person identified on the facility hazardous waste Part A permit application (Major Gillespie had been established as the temporary contact person during the facility inspection). As contact person you must have the authority to implement activities necessary to correct noted deficiencies. If another person should be receiving this letter or you wish additional copies forwarded to specific individuals, please notify me.

If you have any questions or I may be of assistance, please contact me at 255-1160 or the above address.

Sincerely,

Norm Gumenik

Norm Gumenik
Environmental Health Specialist
Hazardous Waste Section
Bureau of Waste Control

NG:mc
Enclosure

cc: Dale Anderson, Technical Support Section
EPA
Major Gillespie

BURR-BROWN

U.S.E.P.A.
REGION 9

INTERNATIONAL AIRPORT INDUSTRIAL PARK / P.O. BOX 11400 / TUCSON, ARIZONA 85734 / TELEPHONE: 602-746-1111 / TELEX NO: 66-6491 / TWX: 910-952-1111

SEP 7 11 01 AM '82

September 1, 1982

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. David S. Mowday
Acting Director
Toxics & Waste Management Division
United States Environmental Protection Agency
Region IX
215 Fremont Street
San Francisco, CA 94105

Your Reference: T-3-1

Dear Mr. Mowday:

In response to your letter of July 29, 1982, we have prepared and attach serial answers to the questions contained therein.

If you require any additional information or clarification, please let us know.

Sincerely,

BURR-BROWN RESEARCH CORPORATION

E. C. Hagen
Vice President/Corporate Resources

ECH/jp
Att.

cc: Arizona Department of Health Services

QUEST 1 1

PURPOSE OF BURR-BROWN:

Burr-Brown is a manufacturer and supplier of microelectronic devices and microcomputer-based systems for use in data acquisition, signal conditioning, and industrial control. Our product line includes operational amplifiers, instrumentation amplifiers, isolation amplifiers, analog computational functions, analog-to-digital converters, digital-to-analog converters, and micro data acquisition systems.

The company commenced operations in 1956 but did not operate at the Industrial Airport site until 1965.

Records of chemical usage were not retained for the years prior to 1970. We have prepared a separate analysis of estimated purchases and waste generated for period 1965 through 1969. This analysis is attached as a supplementary answer to Questions 2, 3, and 4.

With the advent of the manifest system on November 19, 1980 BBRC has intercepted potentially hazardous material at the point of generation, transferring them to 55 gallon drums and disposing of them within the 90 day period as required. The drums of flammable materials are kept in the BBRC Chemical Warehouse. Non-flammable materials are kept on the Chemical Warehouse dock.

BBRC filed a notification of hazardous waste activity in compliance with Section 3010 of the Resources Conservation and Recovery Act (RCRA) and received an EPA identification number AZD008394454 (copy attached).

BBRC does not operate a treatment or disposal facility for hazardous wastes.

The wastes described below are neutralized in a continuous flow neutralizer tank.

Composition and Amount of Materials

		Kg/Month
Acetic Acid	CH_3COOH	159
Hydroflouric Acid	HF	692
Hydrochloric Acid	HCL	49.4
Nitric Acid	HNO_3	455
Sulfuric Acid	H_2SO_4	2082
Phosphoric Acid	H_3PO_4	191
	Total	2774.4 Kg/Month
Ammonium Hydroxide	NH_4OH	83
AZ Developer	KOH (5%)	164
Hydrogen Perioxide	H_2O_2 (30%)	124
	Total	371 Kg/Month

QUESTION 1 (cont.)

These are drained into a continuous flow-through neutralizer tank. The neutralizer tank has three compartments: 1) one for incoming effluent and mixing; 2) one for mixing; and 3) one for outgoing effluent. Effluent entering the first compartment is mixed with caustic soda from a nearby caustic soda storage tank as the first step in bringing the pH within acceptable limits. The effluent continues on into the second compartment, the pH controller takes another reading and if the effluent is in need of further neutralizing, additional caustic soda is added and mixed. The final pH reading is taken and continuously recorded to insure that the effluent is within the required range of 6.0-9.0 pH as required by the Tucson Industrial Waste Ordinance and the proposed Pima County ordinance relating to sewerage and sewerage disposal. The effluent is then discharged into the City Sewer system.

..EN,
FYI
ORIGINAL ON FILE
Peter Johnson

EPA

ACKNOWLEDGEMENT OF NOTIFICATION OF HAZARDOUS WASTE ACTIVITY

This is to acknowledge that you have filed a Notification of Hazardous Waste Activity for the installation located at the address shown in the box below to comply with Section 3010 of the Resource Conservation and Recovery Act *(RCRA)*. Your EPA Identification Number for that installation appears in the box below. The EPA Identification Number must be included on all shipping manifests for transporting hazardous wastes; on all Annual Reports that generators of hazardous waste, and owners and operators of hazardous waste treatment, storage and disposal facilities must file with EPA; on all applications for a Federal Hazardous Waste Permit; and other hazardous waste management reports and documents required under Subtitle C of RCRA.

EPA I.D. NUMBER ▶ AZD000394450

DUDA-PROVA RESEARCH CORP
PO BOX 11900
TUCSON AZ 85730

INSTALLATION ADDRESS ▶ 6710 S TUCSON BLVD
TUCSON AZ 85730

EPA Form 8700-12A (4-00)

QUESTION 2

Based on our purchase records, BBRC has used the following chlorinated solvents in processes for cleaning integrated circuit chips, and in manufacturing support functions such as the Machine Shop, Facility Maintenance Department, Test Equipment and Metal Fabrication Departments.

ALL USAGE IS STATED IN KG

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
Trichloroethylene	6043	8762	10272	9970	8460	906*	264	264	242	264	3096	1182**	0
1,1,1-Trichloroethane	0	0	0	0	0	0	0	2427	1888	1618	1888	782	701

In addition, the following chromium containing materials have been used in the integrated circuit manufacturing processes.

	1972	1973	1974	1975	1976	1977	1978***
Allied Stripping Solution RT-1 (Mixture of Chromic, Sulfuric & Nitric Acids)	16.3	147	750	491	982	1260	327

	1978****	1979	1980	1981	1982
Allied Stripping Solution #4 (Mixture of Chromic Acid, Sulfuric Acid)	505	2764	4041	1767	589

	1971	1972	1973	1974
Chromium Trioxide-CRO_3*****	11	9	59.1	0

Nichrome******

1970-1979	Actual Purchase Records		
Estimated usage 1.0 to 2Kg per year	1980	1981	1982
	1.7	2.5	3.7

* Freon was used as a substantial replacement for TCE in major processes.
** Trichloroethylene usage was discontinued in August of 1981.
*** Discontinued usage in 1979.
**** No usage prior to 1978.
***** 6.8 Kg still in stock. CRO_3 is mixed with HF and used as a silicon wafer etchant for determining crystal structure.
****** Deposited as metal on integrated circuits 100% consumption.

SUPPLEMENTARY ANSWER TO QUESTION 2, 3, AND 4

The chlorinated solvent, T.C.E., was used prior to 1970. Our records for the period before 1970 were not retained. We have estimated the use of T.C.E. for the years 1965 through 1969 based on sales volume for those years as a percentage of the 1970 and 1971 average sales volume and 1970 and 1971 average T.C.E. waste.

	1965	1966	1967	1968	1969
Sales Volume (% of 1970-71)	34%	50%	57%	67%	84%
Estimated T.C.E. Purchases	2517 KG	3701 KG	4219 KG	4960 KG	6318 KG
Estimated T.C.E. Waste	280 KG	411 KG	469 KG	551 KG	691 KG

QUESTION 3

(ALL QUANTITIES ARE IN KILOGRAMS UNLESS OTHERWISE NOTED)

The following waste chemicals listed on the RCRA and CERCLA Hazardous Waste Listings have been generated by Burr-Brown.

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	(thru 1982
Methanol Alcohol	-	-	-	-	-	-	67	200	233	494	453	1056	1207
Acetone	128	460	1433	1283	1620	-	885	1239	3628	2020	5365	4471	2682
Freons	29.6	59.3	29.6	6.0	12.1	608	475	623	1565	4747	16958	13865	7130
Xylene	18	18	36	207	220	27	117	117	252	243	2716	4170	1969
Photo Resist Shippley AZ 1350 (Xylene 15%, Cellosolve Acetate 60%, N-Butyl Acetate 5%)	-	-	-	-	-	-	3.36	27	450	598	653	289	36
Stripper RT-1 Allied (Chromic Acid Sulfuric Acid, Nitric Acid)*	-	-	16.3	147	752	490	980	1260	327	-	-	-	-
Stripper #4 (Chromic Acid, Sulfuric Acid)**	-	-	-	-	-	-	-	-	505	2764	4041	1767	589
Burmar 712 (Phenol Sulfonic Acid Chlorobenzene, Aromatic Solvents)	-	-	-	-	-	-	-	-	-	-	-	4598	2386
Batco Stripper (Methylene Chloride)	-	-	-	-	-	-	-	-	156	1117	807	468	996
Trichloroethylene	619	1026	1253	1208	981	137	40	40	36	40	467	176	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	777	441	378	1226	245	490
Chromium Trioxide	-	11	9	59.1	-	-	-	-	-	-	-	-	-

* Contains 7/10 of 1% chromic acid, 92% sulfuric acid, 1% nitric acid, remainder is water.

** Contains 7/10 of 1% chromic acid, 92% sulfuric acid, balance is water.

9/1/82

QUESTION 3 (cont.)

The following materials which appear on the RCRA and CERCLA Hazardous Waste listings are currently in the BBRC Chemistry Laboratory. These materials are purchased through an open account from a laboratory supply firm.

Because of the minimal usage, we have not estimated the quantities of wastes. The disposal method of each material has been explained in the footnotes.

MATERIAL	QUANTITY ON HAND	USAGE
Acetone*	5 gal.	2.5 gal./mo.
Antimony Trixode, Technical*****	8 pts.	1 pt./yr.
Barium Chloride**	4 lab.	1 lb./yr.
Benzene*	1 pt.	1 pt./yr.
Chlorobenzene*	1 pt.	1 oz./yr.
Chromium Trioxide***	21 lb.	100 g/yr.
p-Cresol*	100 g	10 g/yr.
Cuprous Cyanide***	50 g	10 g/yr.
Dichloromethane*	1 gal.	1 pt./yr.
3 3 Dimethoxybenzidine**	100 g	10 g/yr.
Dimethylglyoxime*	1 lb.	1 oz./yr.
2 3 Dimethylphenol**	100 g	100 g/yr.
Formaldehyde**	1 gal.	1 pt./yr.
Hydrazine****	100 g	10 g/yr.
Lead Nitrate**	2 lb.	1 lb./yr.
Mercury Iodide**	1 oz.	1 oz./yr.
Methanol, Absolute*	1 gal.	1 gal./mo.
Methyl Ethyl Ketone*	8 pt.	1 pt./yr.
Nichrome******	100 g	10 g/yr.
Nickel Carbonate*****	3 lb.	3 lb./yr.
Nickel Cyanide******	1 lb.	10 g/yr.
Nickelous Ammonium Sulfate*****	1 lb.	1 lb./yr.
Potassium Ferricyanide******	1 lb.	1 lb./yr.
Silver Cyanide******	1 oz.	1 oz./yr.
Sodium Cyanide******	2 lb.	5 lb./mo.
Sodium Thiocyanate*****	1 lb.	100 g/yr.
Thioacetamide*****	25 g	25 g/yr.
Thiourea*****	1 lb.	1 lb./yr.
Toluene*	1 gal.	1 pt./yr.
Trichlorotrifluoroethane*	10 lb.	1 lb./yr.
Xylenes*	1 pt.	1 pt./yr.

QUESTION 3 (cont.)

* Collected and disposed of through BBRC hazardous waste system.
** Disposed of according to procedures in Aldrich Catalog.
*** Disposed of according to Toxic and Hazardous Industrial Chemicals Safety Manual.
**** Acid neutralized and put through the BBRC neutralizing tank.
***** Disposed of according to MCB Reagents Catalog.
****** Sent to outside vendor for reclaim of available metals.

QUESTION 4

(ALL QUANTITIES ARE IN KILOGRAMS)

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
Methanol Alcohol Waste *	-	-	-	-	-	-	67	200	233	494	-**	-	-

* Due to the very high evaporation rate of alcohol little waste was accumulated. Prior to 1980 this material was given to individuals for salvage or recycle.

** Beginning in 1980 this waste was picked up by disposal companies.

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
Acetone Waste*	128	460	1433	1283	1620	0	885	1239	3628	2020	-**	-	-

* Prior to 1980 we have no records of acetone waste quantities. We estimated 1970 through 1979 waste based on our recent experience of collecting 54% of the amount purchased.
Before 1978 some of this waste was discharged into the sanitary sewer and some was accumulated in drums and given at no charge to individuals for salvage or reclaim. BBRC began accumulating these drums for future disposal in 1978.

** Beginning in 1980 this material was picked up by disposal companies.

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
Freon Waste*	29.6	59.3	29.6	6.0	12.1	608	475	623	1565	-	-	-	-

* Prior to approximately March, 1979, BBRC recycled freon by distillation. After this date freon was accumulated in drums for future disposal. Disposal companies bought this waste beginning in 1979. The figures shown above for 1970-1978 were the estimated waste sludge left after distillation. The above quantities are based on the estimate of 5% of sludge which was generated per week. Approximately 25% was resin flux, oils and dirt.

This waste was given at no charge to individuals for salvage or recycle and some was used for weed and dust control on the BBRC parking lot, and the balance is believed to have been deposited in the Los Reales Landfill with trash pickups.

QUESTION 4 (cont.)

(ALL QUANTITIES ARE IN KILOGRAMS)

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
Xylene Waste*	18	18	36	207	220	27	117	117	252	243	-**	-	-

* In the early 1970's Xylene was used for cleaning product in the manufacturing process and we estimate that 50% was consumed in this process. Xylene waste was combined with T.C.E. in waste drums in the late 1970's. This material was made available at no cost to outside individuals for salvage or recycle. Prior to that time the waste was either disposed of in trash receptacles or discharged into the sanitary sewer.

** Beginning in 1980 this accumulated material was picked up by the EPA licensed disposal companies.

	1976	1977	1978	1979	1980	1981	1982
Photo resist shippley AZ 1350 (Xylene 15%, Cellosolve Acetate 60%, N-Butyl Acetate 5%) Waste*	3.36	27	450	598	653	289	36

* Not used prior to 1976. We estimate that 60% of the amount used was available as waste. This material was collected and was included in the acetone waste drums.

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
Stripper RT-1 (Allied Chemical) Chromic, Sulfuric and Nitric Acids Waste*	-	-	16	147	752	490	980	1260	327	-	-	-	-

* This material was discharged into the sanitary sewer through the BBRC acid neutralizing tank. Contains 7/10 of 1% chromic acid, 92% sulfuric acid, 1% nitric acid, balance is water.

QUESTION 4 (cont.)

(ALL QUANTITIES ARE IN KILOGRAMS)

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
Stripper #4 (Allied Chemical) Chromic, Sulfuric Acid Waste*	-	-	-	-	-	-	-	-	505	2763	4042	1767	589

* This material was discharged into the sanitary sewer through the BBRC acid neutralizing tank. Contains 7/10 of 1% chromic acid, 92% sulfuric acid, balance is water.

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
Batco Stripper (Methylene Chloride) Waste*	-	-	-	-	-	-	-	-	156	1117	807	-**	-

* Based on our current improved methods of salvage we estimate that 60% of this material is available for recovery. Prior to 1981 we estimate that approximately 40% of the material purchased resulted in waste and was probably discharged into the sanitary sewer.

** Disposal companies began picking this waste up in 1981.

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
T.C.E. Waste Generated In Degreaser*	350	350	350	350	350	-	-	-	-	-	-	-	-
Generated in Other Processes**	269	676	903	858	631	137	40	40	36	40	-	-	-
Total***	619	1026	1253	1208	981	137	40	40	36	40	-	-	-

* An average of 2745 Kg per year was the amount loaded into the 10 gallon degreaser (10 gallons once per week). We estimate 700 Kg of waste sludge was produced. Approximately 350 Kg of this waste was resin flux, oils and dirt. This use of T.C.E. was discontinued in 1974.

QUESTION 5

Disposal of waste materials has all been conducted off site as follows:

	1979 KG	Disposed of through:
Freon Waste	4747	Rinchem Co./Other Sources 2402 South 15th Ave. Phoenix, AZ 85307

	1980 KG	1981 KG	Disposed of through:
Acetone	5365	3875	Southwest Solvents 6760 W. Allison Road Chandler, AZ 85224
Batco Stripper (Methylene Chloride)	-	468	EPA #AZD009015389
Freons	16958	11488	
Methanol	453	905	
1,1,1, Trichloroethane	1226	245	
Xylene/TCE	2716	3678	

	1981 KG	Disposed of through:
Burmar 712 Stripper (Phenol, Sulfonic Acid, Chloro-Benzene, Aromatic Solvents)	4121	Overly's, Inc. 650 Southern Ave. Mesa, AZ 85202 EPA #AZD069011474

Final disposition of waste materials from Overly's Inc. was disposed of a

Casmalia Disposal
Santa Barbara, CA 93108

EPA #CAD020748125

QUESTION 6

NONE

QUESTION 7

NONE

QUESTION 8

NONE

QUESTION 9

BBRC constructed its first building on the property in 1965. We have no information concerning the activities of former occupants except that the site was non-industrial.

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

In Reply
Refer to: T-3-1

JUL 29 1982

Thomas R. Brown
Chief Executive Officer
Burr-Brown Research Corporation
6730 South Tucson Boulevard
Tucson, AZ 85706

Dear Mr. Brown:

The Environmental Protection Agency (EPA), the Arizona Department of Health Services, and the City of Tucson are jointly conducting an investigation of groundwater contamination in the vicinity of Tucson International Airport. The purpose of the investigation is to determine the nature, cause and extent of contamination in the area and to assess the effects of the contamination on drinking water and the public health.

As part of this investigation the EPA is in critical need of historical and current information which has been generated or obtained by a variety of parties in the Tucson Basin. The EPA has reason to believe that your company may be in possession of critical information and, for that reason, I make the following request for information pursuant to §3007(a) of the Resource Conservation and Recovery Act (RCRA) and Section 104(e) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA):

1. Description of the purpose and operations of your company, including a detailed description of any hazardous waste storage, treatment, or disposal operations at your facility.

2. A detailed description of all past and present usage of chlorinated solvents and chromium containing materials at your facility, including, but not limited to, 1,1 Dichloroethylene, 1,1,2 Trichloroethylene, and 1,1,1 Trichloroethane.

3. A complete inventory of all wastes that have been generated by your facility, including, but not limited to, chlorinated solvents. Include dates, types of wastes or chemical composition, and quantities.

4. A complete inventory of all wastes disposed of at or near your facility, including, but not limited to, chlorinated solvents. Include dates, types of wastes or chemical composition, quantities, and disposal practices of past occupants of your present location.

5. If disposal of waste has been conducted off-site, name of transporter(s) and locations of off-site disposal.

6. Locations and detailed descriptions of all monitoring wells, supply wells, and injection wells at your facility.

7. All analyses from sampling of monitoring and supply wells at your facility.

8. Any information regarding the use and disposal of chlorinated solvents by any person or business in the vicinity of Tucson International Airport.

9. Length of time your company has been at the present location and any information regarding former occupants of your present location and their hazardous waste practices.

Each response should include all activities of your company since commencement of operations. The scope of this request extends to all data independently developed or obtained by research on the part of your company, its attorneys, consultants, or any of their agents, consultants, or employees.

Under the provisions of Section 3007(a) of RCRA [42 USC §6927], the Administrator of EPA may require persons subject to RCRA to furnish information necessary for EPA to administer the Act. Similarly, under Section 104(e) of CERCLA [42 USC §9604(e)], the Administrator of EPA may require persons subject to CERCLA to furnish information necessary for EPA to administer CERCLA.

Furthermore, under Section 3008 of RCRA [42 USC §6928], failure to provide the information requested in this letter may result in an order requiring compliance or a civil action for appropriate relief. This Section further provides for criminal penalties for knowingly making a false statement.

EPA regulations governing confidentiality of business information are set forth in Part 2, Subpart B of Title 40 of the Code of Federal Regulations. For any portion of the information submitted which is entitled to confidential treatment, please assert a confidentiality claim in accordance with 40 CFR §2.203(b). If EPA determines that the information so designated meets the criteria set forth in 40 CFR §2.208, the information will be disclosed only to the extent, and by means of the procedures, specified in 40 CFR Part 2, Subpart B.

EPA will construe the failure to furnish a confidentiality claim with your response to this letter as a waiver of that claim, and information may be made available to the public by EPA without further notice.

Your response to this request must be by letter, signed by you or a duly authorized official, and submitted to EPA within 30 days of receipt of this letter. If you have any questions concerning this matter, please contact Mr. Donald Harvey at (415) 974-8386 or Mr. John Rothman at (415) 974-7453.

Your cooperation in this matter is appreciated.

Sincerely yours,

Original Signed by:

David S. Mowday
Acting Director
Toxics & Waste Management Division

cc: Arizona Department of Health Services

bc: T-3-2
T-3-3
ORC

BURR-BROWN

INTERNATIONAL AIRPORT INDUSTRIAL PARK / P.O. BOX 11400 / TUCSON, ARIZONA 85734 / TELEPHONE: 602-746-1111 / TELEX NO: 66-6491 / TWX: 910-952-1111

September 14, 1982

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. David S. Mowday
Acting Director
Toxics & Waste Management Division
United States Environmental Protection Agency
Region IX
215 Fremont Street
San Francisco, CA 94105

Your Reference: T-3-1

Dear Mr. Mowday:

As a supplement to the information which we submitted on September 1, 1982 with reference to the above subject, we are enclosing a copy of the Hazardous Waste Inspection Report as prepared by Alexis I. Strauss, RCRA State Programs Section regarding AZD008394454.

Sincerely,

BURR-BROWN RESEARCH CORPORATION

E. C. Hagen
Vice President Corporate Resources

ECH/jp

cc: Arizona Department of Health Services
Attn: Dr. James Sarn (Director)
1740 W. Adams
Phoenix, AZ 85007

SECTION 5 (cont.)

	1981 KG	1982 KG
Acetone	596	2682
Batco Stripper (Methylene Chloride)	0	996
Freons	2377	7130
Methanol	151	1207
1,1,1 Trichlorethane	0	490
Xylene/TCEA	492	1969
712 Stripper (Phenol, Sulfonic Acid, Chloro-Benzene, Aromatic Solvents)	477	2386

Disposed of through:

Buds Oil Service
1340 W. Lincoln
Phoenix, AZ 85007

EPA #AZD049318009

Final disposition of non-reclaimable materials is disposed of by Buds Oil Service at:

BKK Disposal
3210 S. Azusa Ave.
West Covina, CA

EPA #CAD067786749

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
215 Fremont Street
San Francisco, Ca. 94105

AUG 30 1982

Ms. Carolita Oliveros and Mr. Don Peterson
Burr-Brown Research Corporation
6731 South Tucson Blvd.
Tucson, AZ 85734

RE: AZD008394454

Dear Ms. Oliveros and Mr. Peterson:

A hazardous waste inspection was recently conducted at your facility. During the course of this inspection, information was gathered by an EPA-authorized contractor in accordance with Section 3007 of the Resource Conservation & Recovery Act (RCRA). A copy of the inspection report is enclosed.

EPA recently awarded RCRA Phase I authorization to the State of Arizona, which now operates this part of the hazardous waste program in lieu of the federal program. I have forwarded a copy of the enclosed inspection report to the Bureau of Waste Control, within the Arizona Department of Health Services, which administers the standards for generators, transporters, and hazardous waste facilities.

Please direct any questions, correspondence, and claims of confidentiality to Mr. Bill Williams, at (602)255-1160. Questions or comments regarding this project or the contractor's performance may also be directed to me, at (415)974-8126. Thank you for your cooperation.

Sincerely yours,

Alexis I. Strauss
RCRA State Programs Section

Enclosures

cc: Bureau of Waste Control

RCRA GENERATOR INSPECTION REPORT

INSPECTION OF:	Burr-Brown Research Corporation 6731 South Tucson Boulevard Tucson, Arizona 85734 (602) 746-1111 (EPA ID# AZD008394454)
NATURE OF ACTIVITY:	Integrated circuit production and circuit board assembly
DATE:	June 29, 1982
TIME:	10:00 - 12:30 am
PARTICIPANTS:	Mr. Don Peterson, Administrative Safety and Security Ms. Carolita Oliveros, Counsel Mr. Rich Sanders, Wafer Processing Specialist Mr. Jim Kirkauldy, Shipping Department Ms. Ann Ch. Weaver, EPA Representative, (Del Green Associates, Inc.)

BURR-BROWN RESEARCH CORPORATION

OVERVIEW:

This inspection report describes Burr-Brown's:

- **Facility Activities**
- **Generator Waste Determination**
- **Waste Management During Accumulation**
- **Manifest, Recordkeeping, and Reporting Requirements**

FACILITY ACTIVITIES:

Burr-Brown Research Corporation (BBRC) produces integrated circuits and assembles those circuits onto circuit boards. The process begins with the purchase of silicon wafers (plates) that serve as a base for electrical connections. The plates are cleaned to remove any oil, grease, or particulate contaminants. Typical cleaning solutions include a sulfuric acid/hydrogen peroxide mixture and a dilute hydrochloric acid wash.

After washing, the plates are rinsed with deionized water. Used rinse water is flushed through the facility's neutralization tank and discharged to the sewer. Small quantities of cleaning acids also are sent to the neutralizer for treatment with caustic.

Burr-Brown then applies an organic polymer to the plates. This step begins a photolithographic process which templates a pattern onto the silicon. The resist is applied in conjunction

with N-butyl acetate and xylene. The solvents are drummed when spent and stored for disposal.

Next, a hydrofluoric acid etchant embosses the pattern onto areas of the silicon plates not covered by the resist. When the etchant becomes spent, it is buffered with ammonium fluoride and discharged to the neutralization tank. Etchant adhering to the plates is removed with a mixture of chlorobenzene/sulfuric acid/phenol. Waste chemicals from this step are put in drums for disposal.

After etching, material is cleaned from the wafer face with corrosives. These strippers become spent and are disposed of as hazardous wastes.

After the pattern is formed on the surface of the plates, the wafers are diffused with boron, or antimony. These elements are "sunk" into the crystalline lattice of the silicon molecules. The process is repeated, and is interspersed with the application of patterns, until the elements build up in minute points. The two-step process, templating and diffusion, is repeated up to a dozen times, depending on the type of circuit being processed.

Next, aluminum is applied chemically to finish the points. These protrusions in the lattice structure of the silicon act as sites for electrical connections. Once the aluminum is in place, the wafers are trimmed to their proper sizes and used in circuitry.

GENERATOR WASTE DETERMINATION:

The BBRC facility generates an average of 11-15 drums of hazardous materials each month. Many of these wastes are solvents which include: acetone, xylene, methanol, 1,1,1-trichloroethane, N-butyl acetate and BATCO (methylene chloride). Corrosive solutions also are discarded as a hazardous waste.

In addition, waste silicon oil from the laboratory machinery is discarded when it is spent. However, the oil is not hazardous.

Although Bud's oil, a local transporter/reclaimer, picks up Burr-Brown's wastes, a significant portion of this material is listed in 40 CFR 261 Subpart D. Thus, Burr-Brown must comply with the Section 262 requirements for generators per § 261.6(b).

The attachment presents copies of Burr-Brown's manifests, which identify the facility's wastes. The Company has determined the nature of their wastes primarily from a knowledge of their process and raw materials.

WASTE MANAGEMENT DURING ACCUMULATION:

Marking of Containers:

Burr-Brown marks their drums of waste with the dates of accumulation and applies "Hazardous Waste" labels. The Company's name, EPA identification number, and address, as well as the shipping name of the waste and its destination also are shown. In addition, all drums are marked in accordance with 40 CFR § 262.32(b) and have DOT hazard labels.

Management of Containers

Drums of waste are kept in a storage hut several hundred feet from the facility's main building. The storage area is more than 50 feet from the property line. The hut is equipped with a drain that leads to an underground sump. This spill control measure has not been used to date, since no spills have occurred. The storage enclosure typically is locked and it has signs warning unauthorized personnel against entry. The aisle space in the storage area appears to be adequate.

Burr-Brown puts their spent materials into the original drums for disposal. The drums appear to be in good condition with no leakage or corrosion.

Bud's Oil, a local transporter/reclaimer, generally picks up the accumulated waste every 30 days. At the time of inspection, nine drums of waste were on site.

Generator Preparedness and Prevention

The waste storage area is equipped with a telephone connected to the other facility buildings. Spill control equipment, cleaning equipment, and portable fire extinguishers also are available. The facility reportedly has adequate water to supply hoses, and all equipment is maintained in working order. As an added safety measure, there is rarely one person working alone in the storage area.

Burr-Brown has notified the Tucson Fire Department of the nature and location of their hazardous chemical wastes. The

Company also has informed the local hospital about their wastes, but the facility has not contacted the police department. However, Burr-Brown has not given the fire department or the hospital a copy of their contingency plan.

Facility Contingency Planning

The Company has prepared a contingency plan to describe responses to emergencies. The plan outlines actions for response to fires, explosions, and spills. It also covers the arrangements made with the fire department and identifies several employees who are on 24-hour call. In addition, the document contains a list of the plant's emergency equipment and its location. Evacuation procedures are not described in the plan because the storage area is relatively far from the main building.

Personnel Training

The Company provides on-the-job tranining to instruct their employees in emergency response. Since many of the employees are chemists, they are well aware of how to manage the process chemicals. Burr-Brown's job descriptions provide general information on the duties of each employee.

MANIFEST, RECORDKEEPING, AND REPORTING REQUIREMENTS:

The facility prepares manifests for each shipment of hazardous wastes. These documents provide all of the information required by EPA but do not designate an alternate facility. Burr-Brown retains signed copies of these forms.

EPA REGION IX

FACILITY INVESTIGATION REPORT

Company Name: BURE-BROWN RESEARCH

Street Address: 6730 S. TUCSON BLVD

City/State/Zip: TUCSON AZ 85734

Phone Number: 602 746-1111 ( )

Mailing Address (if different from above):

PO BOX 11400

INTERNAT'L AIRPORT INDUSTRIAL PK

Facility Representative(s) & Titles:

1. MR. DON PETERSON ADMIN. SAFETY/SECURITY
2. MS. CAROLITA OLIVEROS, LEGAL COUNSEL
3.

EPA Investigator(s):

1. ANN CH. WEAVER-DGA
2.

Other Participants/Agencies:

1.
2.
3.

Date(s) of Investigation: JUN 29, 92

Purpose of Investigation: Generator Insp.

Company Name BURR-BROWN Page 2

Person(s) Interviewed/Date: Mr. Don Petersen, Mr. Rich Sanders 29 JUN 82 Mr Jim Kirkaldy

Type of Business: MANUFACTURING OF INTEGRATED CIRCUITS AND ASSEMBLY ONTO CIRCUIT BOARDS

Process Description: THE TEMPLATING, ETCHING, (SUBSEQUENT REMOVAL) OF SILICON CRYSTAL WAFERS FOR THE DEFINI[illegible] OF SITES FOR ATTACHMENT OF ELECTRONIC CIRCUITRY. MECHANICAL PRODUCTION OF CIRCUIT BOARDS.

Process By-Products: FREON, ACETONE, XYLENE, METHYL ALC, ISOPROPYL ALC, 7120 RESIN, CHLOROBENZENE-SULFURIC ACID-PHENOL, N-BUTYL ACETATE METHYLENE CHLORIDE, 1,1,1-TRICHLOROETHANE

Comments: Majority of solvents recycled, and non-reclaimable substances are manifested and shipped appropriately. Small dilute acid fluids (neutralized) are bled out through the same drain of drums separated well. These amounts 10 # [illegible] these amounts, if segregated materials aren't mixed in RCRA's "Pandora" scenario, they are actually rarely made possible [illegible].

Company Name _____ Page ____

GENERATOR WASTE DETERMINATION AND MANIFEST COMPLIANCE CHECKLIST

Type of Waste: mostly waste solvents

Quantity/Time: ~12 drums a month

(262.11) Hazardous Waste Determination: YES NO

How Determined: knowledge of process

(262.40) Has generator retained all records of determination? YES NO

Comment: some analyses on site

(262.12) Generator's EPA Identification Number:

AZD008394451

*** For Off-Site Transport of Hazardous Waste
Complete the next 2 pages of Manifest Requirements

Transporter Name Bud's Oil Service Page ____

river (if any) Don Pruitt

TRANSPORTER CHECKLIST

(263.11) Transporter's EPA ID Number:

AZD049318009

(263.20)	Signed by Generator	YES	NO
	Signed by 1st Transporter	YES	NO
	Signed by TSD or Another Transporter	YES N/A	NO

Generator Requirements:

(262.21)	Use of Manifest:	YES	NO

Comment: Filled out
copies obtained

Manifest Document Number:

- 0004 — 8027

Generator's Name: BURR BROWN	YES	NO
Mailing Address: 6730 S TUCSON	YES	NO
Telephone Number: 746-1111	YES	NO
EPA ID Number: AZD005394454	YES	NO
Transporter's Name(s): BUDS OIL	YES	NO
EPA ID Number: AZD049318009	YES	NO
TSD Facility Name: BUDS OIL	YES	NO
Address: 1340 W LINCOLN	YES	NO
EPA ID Number ABOVE	YES	NO
Alternate Facility Designated?	YES	NO
If "yes" complete below:		
TSD Facility Name:	YES	NO
Address:	YES	NO
EPA ID Number:	YES	NO

Waste Description on Manifest:

PROPER DOT [illegible]

Company Name _____ Page ____

(262.21) Use of Manifest: YES NO

Comment: _____

_____

Manifest Document Number: 6604-6607

See Page 7

Are the following items specified on the Manifest?

Generator's Name:	YES	NO
Mailing Address:	YES	NO
Telephone Number:	YES	NO
EPA ID Number:	YES	NO
Transporter's Name(s):	YES	NO
EPA ID Number:	YES	NO
TSD Facility Name:	YES	NO
Address:	YES	NO
EPA ID Number:	YES	NO
Alternate Facility Designated:	YES	NO

*** If "yes" complete:

Alternate TSD Facility Name:	YES	NO
Address:	YES	NO
EPA ID Number:	YES	NO
Waste Description on Manifest: 712D RESIST BATCO STRIPPER METHANOL,	YES	NO
D.O.T. Shipping Name: AS ABOVE	YES	NO
D.O.T. Hazard Class: CORR/FLAM	YES	NO
Total Quantity: 16 DRUMS (~~[illegible]~~ GAL)	YES	NO
Number of Containers: 16 DRUMS	YES	NO
Signed Certification Statement:	YES	NO

(262.23) Is the Manifest Signed by Generator: YES NO

Is the Manifest Signed by 1st Transporter YES NO

Transporter Name BUD'S OIL SVC Page ____

D.O.T. Shipping Name: WASTE SOLVENT	YES	NO
D.O.T. Hazard Class:	YES	NO
Total Quantity:	YES	NO
Number of Containers:	YES	NO
Signed Certification Statement	YES	NO

Generator Requirements

(262.30) Is waste packaged according to D.O.T. Hazardous Materials Table Column 5(b)? See 49 CFR 172.101. YES NO

Comment: [illegible]

(262.31) Is each container labeled according to D.O.T. Hazardous Materials Table Column 4? See 49 CFR 172.101. YES NO

Comment:

(262.32) Is each container marked according to D.O.T. Hazardous Material Table? See 49 CFR 172.101 YES NO

Proper Shipping Name: WASTE SOLVENT (Hazardous Materials Table Column 2) YES NO

Proper Identification Number: UN1993 (Hazardous Materials Table Column 3A) YES NO

Is each container of CRM - A,B,C,D, or E waste labeled with its CRM designation? YES NO or N/A

Comment:

(262.33) Is the vehicle placarded according to 49 CFR 172.504? ? YES NO

Comment:

Company Name Burn-Brown Page ____

GENERATOR PRE-TRANSPORT COMPLIANCE CHECKLIST

(262.34) Is waste stored on-site for more than 90 days? YES (NO)

*** If "yes", then a generator who accumulates hazardous waste over 90 days is a TSD Facility subject to 40 CFR Part 265.

*** If "no", continue with the following part:

Is waste packaged according to D.O.T. Hazardous Materials Table Column 5(b)? See 49 CFR 172.101. (YES) NO

Comment:

WASTE PACKAGED BACK INTO ORIGINAL DRUMS.

Are containers inspected at least weekly for leaks and corrosion? (265.174) (YES) NO

Comment:

LAB TECHS FILLING CONTAINERS NOTE DRUM CONDITION.

Are containers holding ignitable or reactive waste located at least 50 feet from property line? (265.176) (YES) NO

Comment:

STOREHOUSE SENERAL HUNDRED FEET FROM MAIN FAC BLDES

Company Name _____ Page ____

(262.40) Has generator retained previous manifests: YES NO

(262.42) Has TSD facility copy of manifest been returned within 35 days? YES NO

If "no", has exception report been filed with EPA after 45 days? YES NO

N/A

Comments on Generator Waste Determination and Manifest Requirements:

'Knowledge' of waste (solvents) assumes facility that they deal in haz waste - manifests are filled out & signed by J. Kincaidley, whose JOB it is to oversee waste management. BBRC very careful to follow regs.

Company Name Bun-Brown Page ___

SUBPART C - PREPAREDNESS AND PREVENTION CHECKLIST

(265.32) Is the facility equipped with the following equipment?

- Internal alarm system? YES NO N/A
- Portable fire extinguishers? YES NO N/A
- Spill control equipment? YES NO N/A
- Decontamination equipment? YES NO N/A
- Water at volume to supply hoses, sprinklers, or water spray system? YES NO N/A

Comment: EQP AVAILABLE IN STORAGE AREA

(265.33) Is the above equipment tested and maintained for proper operation? YES NO N/A

Comment: SEVERAL PERSONNEL IN-HOUSED RESPONSIBLE FOR ITS MAINTENANCE

(265.34) Do employees handling hazardous waste have direct access to internal alarm or communication system? YES NO N/A

Is there ever just one employee on premises during operations? YES NO N/A

If "yes" does employee have access to external communication? YES NO N/A

Comment: PHONES INTERCONNECTING FULL FACILITY

Company Name _____ Page ____

(265.35) Is there adequate aisle space for the movement of all equipment? **YES** NO N/A

Comment: NEATLY STACKED BY CATEGORY

(265.37) Have arrangements been made with the local authorities? **YES** NO

With Police? YES NO
Police Dep't: N/A

With Fire Department? **YES** NO
Fire Dep't: INGSON (CITY OF)

Emergency Response Teams? **YES** NO
Response Team: IN HOUSE

Local Hospitals? **YES** NO
Hospital: KING HOSP

Other authorities? YES **NO**
List:

Have local authorities refused to make arrangements? YES **NO**

If "yes", is the refusal documented in operating record? YES NO

Comment: N/A

Company Name _____ Page ____

SUBPART D - CONTINGENCY PLANNING CHECKLIST

(265.51) Is there a contingency plan; SPCC, or other emergency plan amended to include hazardous materials management provisions at the facility? (YES) NO

Date of plan: M80

Comment: COVERS LESSONS ON EMER MANAGEMENT BY CLASS OFFERED J.T. BAKER

(265.52) Does the plan describe actions to respond to:

Fires? (YES) NO
Explosions? (YES) NO
Release of Hazardous Waste? (YES) NO

Does the plan describe all the arrangements made under Subpart C (265.37)? (YES) NO

Comment: AVAILABLE FOR VIEWING

Does the plan list names, addresses, and phone numbers of emergency coordinators? (YES) NO

Comment: SEVERAL B&BC EMPLOYEES

Does the plan list all the equipment under Subpart C (265.32)? (YES) NO

Comment: STATES LOCATION USE

Company Name _____ Page ____

Does the plan describe the location and capabilities of all the equipment? YES NO

Comment: PERSONNEL HAVE BEEN TRAINED ON IT.

Are evacuation procedures described in plan? YES NO

Comment: EMPLOYEES NOT STATIONED FOR WORK IN STORERM — EVACUATN NOT APPLICABLE

Has the plan been submitted to each of the authorities listed under Subpart C (265.37)? YES NO

Comment: NO VERBAL REPOIRE SUFFICIENT BECUZ THEY (FIRE DEPT) MAKES INSPECTIONS ANNUALLY & KNOW BBRC ON TOP OF THINGS.

YES	NO	
		Personnel Training (§265.16; pg. 33235) (Current personnel must successfully complete a program by May 19, 198 new employees, 6 months after employment date.)
✓		Do you have a program of classroom instructions or on-the-job training
✓		Is it directed by a person trained in hazardous waste management?
		Does the program include training in
✓		1. Emergency Response
✓		a. Emergency equipment location
✓		b. Emergency procedures
✓		c. Emergency shutdown
✓		Will your staff be trained within six months after the date of their employment?
		Are the following documents maintained at the facility?
✓		Job title for each hazardous waste position.
✓		Name of person working in this position.
✓		Written job description for each position.
✓		Written description of training for each position.
✓		Records that document completed training.

HAZARDOUS WASTE MANIFEST

ORIGINAL — NOT NEGOTIABLE

0003
MANIFEST DOCUMENT NUMBER

AZD 008394454
SHIPPER NUMBER

BUDS OIL SERVICE
NAME OF CARRIER (SCAC)

AZD 049318009
CARRIER NUMBER

IDENTIFICATION

	12 DIGIT EPA ID #	COMPANY NAME, MAILING ADDRESS, AND TELEPHONE NUMBER	DATE S OR REC
ERATOR PER	AZD 008394454	BIRO BROWN, 6730 S TUCSON, TUCSON, AZ, 746-7271	
ANSPORTER # 1	AZD049318009	BUDS OIL, 1510 W LINCOLN, PHOENIX, AZ, 258-6155	
SPORTER # 2			
TREATMENT RAGE OR DIS AL FACILITY			
OF TREATMENT ORAGE OR DIS AL FACILITY		ALTERNATE	

WASTE INFORMATION

UNITS & TAINER TYPE	HM	EPA HAZ WASTE ID #	DESCRIPTION AND CLASSIFICATION (Proper Shipping Name, Class and Identification Number per 172.101, 172.202, 172.203)	UN # or NA #	EXEMPTION OR NO LABELS REQUIRED	FLASH POINT (IN °C) WHEN REQ'D	UNITS WT/VOL	TOTAL QUANTITY	RATE
DR	8	F009	7/12-D RESIST	9189	CORR		50 GA	100	
DR	8	F009	BATCO STRIPPER	9189	CORR		50 GA	50	
	3	F005	METHANOL	1230	FLAMM		50 GA	50	
DR			SILICONE OIL	9189			50 GA	100	

ECIAL HANDLING INSTRUCTIONS

If an RQ commodity is spilled on a waterway or adjoining land, the ... must be promptly reported to the Federal government at 1-800-424-... from or 202-426-2675 (toll call). If other DOT hazardous materials are disc... creating a serious situation, call shipper's telephone number or Ch... 1-800-424-9300 immediately.

MMENTS

PLACARDS TEND
Yes ☐ No

Collect on Delivery" shipments, the letters "COD" must appear before consignee's name or as otherwise provided in Item 43C, Sec...

...AT
...DELIVER TO:
...DRESS

COD AMT: $

C.O.D. FEE: PREPAID ☐ COLLECT ☐ $

"If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is "carrier's or shipper's weight."

TOTAL CHARGES: $

FREIGHT CHARGES

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the terms and conditions in the governing classification on the date of shipment.

Shipper hereby certifies that he is familiar with all the bill of lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

CERTIFICATION

...hereby certify that the above-named materials are properly ...described, packaged, marked and labeled, and are in ...condition for transportation according to the applicable ...regulations of the Department of Transportation and the U.S. Environmental Protection Agency.

GENERATOR'S SIGNATURE / / DATE

This is to certify acceptance of the hazardous waste shipment.

7-1-82

TRANSPORTER #1 SIGNATURE & DATE

TRANSPORTER #2 SIGNATURE & DATE (if required)

This is to certify acceptance of the hazardous waste for treatment, storage or disposal.

TSDF SIGNATURE

DATE

HAZARDOUS WASTE MANIFEST

ORIGINAL — NOT NEGOTIABLE

0003
MANIFEST DOCUMENT NUMBER

AZD008394454
SHIPPER NUMBER

BUDS OIL SERVICE
NAME OF CARRIER (SCAC)

AZD049318009
CARRIER NUMBER

IDENTIFICATION

	12 DIGIT EPA ID #	COMPANY NAME, MAILING ADDRESS, AND TELEPHONE NUMBER	DATE SHI OR RECE
...RATOR ...A	AZD008394454	BURR BROWN, 6730 S TUCSON, TUCSON AZ 602-746-7271	
...NSPORTER # 1	AZD049318009	BUDS OIL SERVICE, 1340 N LINCOLN, PHOENIX AZ 602-258-6155	
...SPORTER # 2 ...ANY)			
...F TREATMENT ...AGE OR DIS... ...L FACILITY			
...F TREATMENT ...RAGE OR DIS... ...SAL FACILITY		ALTERNATE	

WASTE INFORMATION

...F UNITS & ...AINER ...PE	HM	EPA HAZ WASTE ID #	DESCRIPTION AND CLASSIFICATION (Proper Shipping Name, Class and Identification Number per 172.101, 172.202, 172.203)	UN # or NA #	EXEMPTION OR NO LABELS REQUIRED	FLASH POINT (IN °F) WHEN REQ'D	UNITS WT/VOL	TOTAL QUANTITY	RATE	CH (For Us
DR	3	F003	ACETONE	1090		FLAMM	50 GA	150		
DR	3	F003	XYLENE	1307		FLAMM	50 GA	100		
DR	3	F003	BUTYL ACETATE	1123		FLAMM	50 GA	150		
DR		F001	FLUOROCARBON	1189			50 GA	200		

...CIAL HANDLING INSTRUCTIONS

If an RQ commodity is spilled on a waterway or adjoining land, the inc... must be promptly reported to the Federal government at 1-800-424-8... (from or 202-426-2675 (toll call). If other DOT hazardous materials are involved creating a serious situation, call shipper's telephone number or Chem... 1-800-424-9300 immediately.

...MENTS

PLACARDS TENDE...
Yes ☐ No

"Collect on Delivery" shipments, the letters "COD" must appear before consignee's name or as otherwise provided in Item 450, Sec. 7.

...D. TO:
...NEES

COD AMT: $

C.O.D. FEE:
PREPAID ☐
COLLECT ☐ $

TOTAL CHARGES: $

FREIGHT CHARGES

If the shipment moves between two ports by a carrier by water, the law requires that the Bill of Lading state whether it is "carrier's or shipper's weight."

...

...

...

...

CERTIFICATION

...is to certify that the above-named materials are properly ...ified, described, packaged, marked and labeled, and are in ...condition for transportation according to the applica... ...ules of the Department of Transportation and the U.S. ...Protection Agency.

...

...DELIVERING SIGNATURE DATE

This is to certify acceptance of the hazardous waste shipment.

TRANSPORTER #1 SIGNATURE & DATE

TRANSPORTER #2 SIGNATURE & DATE (if required)

This is to certify acceptance of the hazardous waste for treatment, storage or disposal.

TOUR SIGNATURE DATE

HAZARDOUS WASTE MAN EST

Burr-Brown

ORIGINAL — NOT NEGOTIABLE

0006
MANIFEST DOCUMENT NUMBER

AZD 008394454
SHIPPER NUMBER

BUDS OIL SERVICE
NAME OF CARRIER (SCAC)

AZD 049318009
CARRIER NUMBER

IDENTIFICATION

	12 DIGIT EPA ID #	COMPANY NAME, MAILING ADDRESS, AND TELEPHONE NUMBER	DATE SHIP OR RECEIV
...TRATOR ...ER	008394454	BURR-BROWN RESEARCH, R 80 HAO, 602 746 7221	
...PORTER # 1	049318009	BUDS OIL SERVICE 130 N LINCOLN, PHX AZ	
...PORTER # 2 ...NED			
...TREATMENT ...AGE OR DIS... ... FACILITY	049318009	BUDS OIL SERVICE 602 258 6155	
...TREATMENT ...GE OR DIS... ...L FACILITY		ALTERNATE	

WASTE INFORMATION

...UNITS & ...TAINER ...PE	HM	EPA HAZ. WASTE ID #	DESCRIPTION AND CLASSIFICATION (Proper Shipping Name, Class and Identification Number per 172.101, 172.202, 172.203)	UN # or NA #	EXEMPTION OR NO LABELS REQUIRED	FLASH POINT (IN °C) WHEN REQ'D	UNITS WT/VOL	TOTAL QUANTITY	RATE	CHA (For Use
DM	8	F009	712-D RESIST WASTE	1760	CORR		50	100	-	
DM	3	F005	METHANOL WASTE	1230	FLAM		50	50		
			~~[illegible]~~	~~[illegible]~~			~~[illegible]~~	~~[illegible]~~		

...IAL HANDLING INSTRUCTIONS ----

If an RQ commodity is spilled or a waterway or scheduled land, the incid... must be promptly reported to the Federal Government at 1-800-424-8802 ... free or 202-426-2675 (non call). If other DOT hazardous materials are discha... creating a serious situation, call shipper's telephone number or Chem... 1-800-424-9300 immediately.

...MENTS

PLACARDS TENDE...
Yes ☐ No ☐

...ollect on Delivery" shipments, the letters "COD" must appear before consignee's name or as otherwise provided in Item 430, Sec. 1

...TOTAL ...ESS

COD Amt: $

C.O.D. FEE: PREPAID ☐ COLLECT ☒ $

"If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is "carrier's or shipper's weight."

TOTAL CHARGES: $

FREIGHT CHARGES

...Signature

...RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the governing classification on the date of shipment.

Shipper hereby certifies that he is familiar with all the bill of lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

...CERTIFICATE

...I hereby certify that the above-named materials are properly classified, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation and the U.S. Environmental Protection Agency.

...TRANSPORTER SIGNATURE & DATE

...acceptance of the hazardous waste shipment.

...TRANSPORTER SIGNATURE & DATE (if required)

This is to certify acceptance of the hazardous waste for treatment, storage or disposal.

...TSDF SIGNATURE DATE

...TSDF SIGNATURE DATE

• HAZARDOUS WASTE MANIFEST

ORIGINAL — NOT NEGOTIABLE

0007
MANIFEST DOCUMENT NUMBER

AZD 008394454
SHIPPER NUMBER

BUDS OIL SERVICE
NAME OF CARRIER (SCAC)

AZD 049318009
CARRIER NUMBER

IDENTIFICATION

	12 DIGIT EPA ID #	COMPANY NAME, MAILING ADDRESS, AND TELEPHONE NUMBER	DATE SH OR REC
ERATOR PER	008394454	BILLER BROWN, PO 11400, TUCSON AZ (602) 746-7271	
SPORTER # 1	049318009	BUDS OIL, 1340 W LINCOLN, PHX AZ 85007	
NSPORTER # 2			
TREATMENT AGE OR DIS— AL FACILITY	049318009	BUDS OIL (602) 258-6155	
TREATMENT AGE OR DIS— L FACILITY		ALTERNATE	

WASTE INFORMATION

UNITS & TAINER TYPE	HM	EPA HAZ WASTE ID #	DESCRIPTION AND CLASSIFICATION (Proper Shipping Name, Class and Identification Number per 172.101, 172.202, 172.203)	UN # or NA #	EXEMPTION OR NO LABELS REQUIRED	FLASH POINT (IN °C) WHEN REQ'D	UNITS WT/VOL	TOTAL QUANTITY	RATE	CY (Fo Li
50	3	F003	WASTE ACETONE	1090	FLAMM		SO	100		
●	3	F003	WASTE XYLENE	1307	FLAMM		SO	50		
50	3	F003	WASTE BUTYL ACETATE	1123	FLAMM		SO	50		
50		F001	WASTE FLUOROCARBON	4189			SO	200		

CIAL HANDLING INSTRUCTIONS:

If an RQ commodity is spilled on a waterway or adjoining land, the inc must be promptly reported to the Federal government at 1-800-424-8802 (free) or 202-426-2675 (toll call). If other DOT hazardous materials are discha creating a serious situation, call shipper's telephone number or Che 1-800-424-9300 immediately.

MENTS

PLACARDS TENDE Yes ☐ No

ollect on Delivery" shipments, the letters "COD" must appear before consignee's name or as otherwise provided in Item 430, Sec. 1

T TO:

COD AMT $

C.O.D. FEE: PREPAID ☐ COLLECT ☐ $

TOTAL CHARGES $

"If the shipment makes delivery two points by a carrier by water, the law requires that the bill of lading state clearly and conspicuously the "Carrier's or Shipper's weight."

Shipper's Signature

Carrier's Signature

Consignee's Signature

Check ...

...

...

HAZARDOUS WASTE MANIFEST

0007

MANIFEST DOCUMENT NUMBER
AZD 008394454

SHIPPER NUMBER
AZD 049318009

BUDS OIL SERVICE
NAME OF CARRIER (SCAC)

CARRIER NUMBER

IDENTIFICATION

	12 DIGIT EPA ID #	COMPANY NAME, MAILING ADDRESS, AND TELEPHONE NUMBER	DATE SHI OR REC
ERATOR PER	008394454	BURR BROWN, PO 11400, TUCSON, AZ, 602-746-7271	
ANSPORTER #1	049318009	BUDS OIL, 1340 W LINCOLN, PHX, AZ 85007	
SPORTER #2			
TREATMENT AGE OR DIS- L FACILITY	049318009	BUDS OIL (602) 258-6155	
OF TREATMENT ORAGE OR DIS- L FACILITY		ALTERNATE	

WASTE INFORMATION

UNITS & TAINER TYPE	HM	EPA HAZ WASTE ID #	DESCRIPTION AND CLASSIFICATION (Proper Shipping Name, Class and Identification Number per 172.101, 172.202, 172.203)	UN # or NA #	EXEMPTION OR NO LABELS REQUIRED	FLASH POINT (IN °C) WHEN REQ'D	UNITS WT/VOL	TOTAL QUANTITY	RATE	CH (Fo Us
1 DZ	3	D005	METHANOL WASTE	1230	FLAM		50	50		
1 DZ	3	D001	WASTE ALPHA FEUT	1219	FLAM		50	50		
DZ	0		~~DIVINYLENE GLYCOL~~	9189			50	50		
			POLYGLYCOL ETHER 6-29-8							

ECIAL HANDLING INSTRUCTIONS:

If an RQ commodity is spilled on a waterway or adjoining land, the inc must be promptly reported to the Federal government at 1-800-424-8802 free or 202-426-2675 (collect). If other DOT Hazardous Materials are discov creating a serious situation, call shipper's telephone number or Chem 1-800-424-9300 immediately.

ATMENTS

PLACARDS TENDE
Yes ☐ No

Collect on Delivery" shipments, the letters "COD" must appear before consignee's name or as otherwise provided in Item 430, Sec 1

TO: CEES

COD Amt: $

COD FEE PREPAID ☐ COLLECT ☐ $

"If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is "carrier's or shipper's weight."

TOTAL CHARGES $

FREE OUT CHARGES

ADDITIONAL DESCRIPTIONS AND LIMITS AS APPEAR ON THE BACK OF THIS FORM

The above-named materials are properly classified, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation and the U.S. Environmental Protection Agency.

5-25-92

TRANSPORTER 1 SIGNATURE & DATE

TRANSPORTER 2 SIGNATURE & DATE

ACCEPTANCE OF THIS HAZARDOUS WASTE BY THE FACILITY

HAZARDOUS WASTE M. .NIFEST

ORIGINAL — NOT NEGOTIABLE

0005
MANIFEST DOCUMENT NUMBER

AZD 008394454
SHIPPER NUMBER

BUDS OIL SERVICE
NAME OF CARRIER (SCAC)

AZD 049318009
CARRIER NUMBER

IDENTIFICATION

	12 DIGIT EPA ID #	COMPANY NAME, MAILING ADDRESS, AND TELEPHONE NUMBER	DATE S OR DE
ENERATOR HIPPER	008394454	BURP BROWN RESEARCH, PO 11400, 602-746-7271	3-3
SPORTER # 1	049318009	BUDS OIL, 1340 W LINCOLN, PHX, 602-258-6155	3-3
NSPORTER # 2			
TREATMENT TORAGE OR DIS- OSAL FACILITY	049318009	Bud's Oil 1340 W Lincoln Phx 602-258-6155	3
TREATMENT AGE OR DIS- OSAL FACILITY		ALTERNATE	

WASTE INFORMATION

OF UNITS & ONTAINER TYPE	HM	EPA HAZ WASTE ID #	DESCRIPTION AND CLASSIFICATION (Proper Shipping Name, Class and Identification Number per 172.101, 172.202, 172.203)	UN # or NA #	EXEMPTION OR NO LABELS REQUIRED	FLASH POINT (IN °C) WHEN REQ'D	UNITS WT/VOL	TOTAL QUANTITY	RATE
DR	3	F005	METHANOL	1230	Flamm		50	50	
DR	8	F009	712-D RESIST	9189	Corr		50	50	

IAL HANDLING INSTRUCTIONS

If an RQ commodity is spilled on a waterway or adjoining land, the must be promptly reported to the Federal government at 1-800-424- less or 202-426-2675 (DC area). If other DOT hazardous materials are dis- creating a serious situation, call shipper's telephone number or C 1-800-424-9300 immediately.

MMENTS

PLACARDS TEN
Yes ☐ N

"Collect on Delivery" shipments, the letters "COD" must appear before consignee's name or as otherwise provided in Item 400, Sec. 1.

IT D. TO: DRESS

COD AMT: $

C.O.D. FEE: PREPAID ☐ COLLECT ☐ $

"If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is "Carrier's or Shipper's weight."

TOTAL CHARGES $

FREIGHT CHARGE

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in effect on the date hereof, if this is a rail or a rail-water shipment, or (2) in the applicable motor carrier classifications or tariffs if this is a motor shipment.

This is to certify that the above-named materials are properly classified, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation and the U.S. Environmental Protection Agency.

This is to certify the acceptance of the hazardous waste for treatment, storage or disposal.

7.29.82

SIGNATURE DATE SIGNATURE DATE

HAZARDOUS WASTE MANIFEST

ORIGINAL — NOT NEGOTIABLE

0005
MANIFEST DOCUMENT NUMBER

AZD 008394454
SHIPPER NUMBER

BUDS OIL SERVICE
NAME OF CARRIER (SCAC)

AZD 049318009
CARRIER NUMBER

IDENTIFICATION

	12 DIGIT EPA ID #	COMPANY NAME, MAILING ADDRESS, AND TELEPHONE NUMBER	DATE S OR RE
GENERATOR SHIPPER	008394454	BURR BROWN RESEARCH, PO 11400, 602-746-7271	3-2
TRANSPORTER # 1	049318009	BUDS OIL, 1340 N LINCOLN, PHX, 602-258-6155	3-2
TRANSPORTER # 2			
IF TREATMENT STORAGE OR DISPOSAL FACILITY	049318009	Buds Oil 1340 W Lincoln Phx 602-258-6155	
IF TREATMENT STORAGE OR DISPOSAL FACILITY		ALTERNATE	

WASTE INFORMATION

# OF UNITS & CONTAINER TYPE	HM	EPA HAZ WASTE ID #	DESCRIPTION AND CLASSIFICATION (Proper Shipping Name, Class and Identification Number per 172.101, 172.202, 172.203)	UN # or NA #	EXEMPTION OR NO LABELS REQUIRED	FLASH POINT (IN °C) WHEN REQ'D	UNITS WT/VOL	TOTAL QUANTITY	RATE
2 DR	3	F003	ACETONE	1090	FLAMM		50	150	
2 DR	3	F003	XYLENE	1307	FLAMM		50	50	
2 DR	3	F003	BUTYL ACETATE	1123	FLAMM		50	100	
2 DR		F001	FLUOROCARBON	4189			50	250	

SPECIAL HANDLING INSTRUCTIONS

If an RQ commodity is spilled or a reasonable of adjoining land the must be promptly reported to the Federal government at 1-800-424-8 from or 202-426-2675 (non call). If other DOT hazardous materials are c creating a serious situation, call shipper's telephone number or C 1-800-424-9300 immediately.

COMMENTS

PLACARDS TEN
Yes ☐ N

On "Collect on Delivery" shipments, the letters "COD" must appear before consignee's name or as otherwise provided in Item 430, Sec. 1

MIT
C.O.D. TO:
FEES

COD AMT: $

C.O.D. FEE:
PREPAID ☐
COLLECT ☒ $

"If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is "carrier's or shipper's weight."

TOTAL CHARGES $

FREIGHT CHARGE

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written, herein contained, including those on the back hereof, which are hereby agreed to by the shipper and accepted for himself and his assigns.

This is to certify that the above named materials are properly classified, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation and the U.S. Environmental Protection Agency.

3-29-92
SIGNATURE / DATE

Transporter acknowledgment of receipt of the hazardous waste for transport.

SIGNATURE DATE

SIGNATURE DATE

HAZARDOUS WASTE MANIFEST

ORIGINAL — NOT NEGOTIABLE

0004
MANIFEST DOCUMENT NUMBER

AZD008394454
SHIPPER NUMBER

AZD049318009
CARRIER NUMBER

BUDS OIL SERVICE
NAME OF CARRIER (SCAC)

IDENTIFICATION

	12 DIGIT EPA ID #	COMPANY NAME, MAILING ADDRESS, AND TELEPHONE NUMBER	DATE SHIP OR REC'D
ATOR PPER	AZD008394454	BUPP BEARD, PO BX 11400, 602-746-7271	
PORTER # 1	AZD049318009	BUDS OIL SERVICE, 1340 LINCOLN, PHX, 258-6155	
NSPORTER # 2			
TREATMENT GE OR DIS- AL FACILITY			
TREATMENT GE OR DIS- FACILITY		ALTERNATE	

WASTE INFORMATION

UNITS & CONTAINER TYPE	HM	EPA HAZ. WASTE ID #	DESCRIPTION AND CLASSIFICATION (Proper Shipping Name, Class and Identification Number per 172.101, 172.202, 172.203)	UN # or NA #	EXEMPTION OR NO LABELS REQUIRED	FLASH POINT ON °C WHEN REQ'D	UNITS WT/VOL	TOTAL QUANTITY	RATE	CH (For Us
DR	3	F003	ACETONE	1090	FLAMM		50	150		
DR	3	F003	XYLENE	1307	FLAMM		50	50		
R	3	F003	BUTYL ACETATE	1123	FLAMM		50	50		
		F001	FLUOROCARBON	4189			50	250		
								COD		

AL HANDLING INSTRUCTIONS

If an RQ commodity is spilled or a waterway or adjoining land, the inc must be promptly reported to the Federal government at 1-800-424-8802 (toll free) or 202-426-2675 (toll call). If other DOT hazardous materials are discha creating a serious situation, call shipper's telephone number or Chem 1-800-424-9300 immediately.

MMENTS

PLACARDS TENDE
Yes ☐ No

Collect on Delivery" shipments, the letters "COD" must appear before consignee's name or as otherwise provided in Item 430, Sec. 1

IT TO:
EPS

COD / Amt: $

C.O.D. FEE:
PREPAID ☐
COLLECT ☒ $

"If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is "carrier's or shipper's weight."

TOTAL CHARGES $

FREIGHT CHARGES

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this

Department of Transportation and the U.S.

S. P. P.

DATE

DATE

HAZARDOUS WASTE M. IFEST

ORIGINAL — NOT NEGOTIABLE

0004
MANIFEST DOCUMENT NUMBER

AZD008394454
SHIPPER NUMBER

Buds Oil Service
NAME OF CARRIER (SCAC)

AZD049312009
CARRIER NUMBER

IDENTIFICATION

	12 DIGIT EPA ID #	COMPANY NAME, MAILING ADDRESS, AND TELEPHONE NUMBER	DATE S OR REC
ENERATOR IPPER	AZD008394454	Buff Brown, PO Bx 1140, 602-746-7171	
PORTER # 1	AZD049312009	Buds Oil Service, 1340 Lincoln, Phx, 258-6155	
ANSPORTER # 2			
F TREATMENT ORAGE OR DIS- SAL FACILITY			
F TREATMENT RAGE OR DIS- SAL FACILITY		ALTERNATE	

WASTE INFORMATION

OF UNITS & NTAINER TYPE	HM	EPA HAZ. WASTE ID #	DESCRIPTION AND CLASSIFICATION (Proper Shipping Name, Class and Identification Number per 172.101, 172.202, 172.203)	UN # or NA #	EXEMPTION OR NO LABELS REQUIRED	FLASH POINT (IN °C) WHEN REQ'D	UNITS WT/VOL	TOTAL QUANTITY	RATE	C (F L
DR	3	F005	METHANOL	1230	FLAMM		50	50		
DR	8	F009	712-D RESIST	9189	CORR		50	50		
L	?		Waste Oil				50	100		

ECIAL HANDLING INSTRUCTIONS

If an RQ commodity is spilled on a waterway or adjoining land, the r must be promptly reported to the Federal government at 1-800-424-8 (from 202-426-2675 (on call) If other DOT hazardous materials are inv creating a serious situation, call shipper's telephone number or Ch 1-800-424-9300 immediately.

MMENTS

PLACARDS TEND
Yes ☐ No

"Collect on Delivery" shipments, the letters "COD" must appear before consignee's name or as otherwise provided in Item 430, Sec. 1

ATT
D. TO:
RESS

COD AMT: $

C.O.D. FEE:
PREPAID ☐
COLLECT ☒ $

"If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is "carrier's or shipper's weight."

TOTAL CHARGES: $

FREIGHT CHARGES

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the terms and conditions in the applicable classification on the date of shipment.

Shipper hereby certifies that he is familiar with all the terms and conditions of the bill of lading, including those on the back hereof, which are hereby incorporated herein and made a part hereof, and the shipper and any party to any bill of lading covering the shipment agree to all the terms and conditions in the bill of lading.

Shipper certifies that the contents of this shipment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Shipper's Signature

Date

Carrier's Signature

Date

HAZARDOUS WASTE MANIFEST

0008
MANIFEST DOCUMENT NUMBER
AZD 000 374454

SHIPPER NUMBER
AZD 049151009

BUDS OIL SERVICE
NAME OF CARRIER (SCAC)

CARRIER NUMBER

IDENTIFICATION

	12 DIGIT EPA ID #	COMPANY NAME, MAILING ADDRESS, AND TELEPHONE NUMBER	DATE SHIPP OR RECEIV
RATOR	000 374454	BURR BROWN 1400 TUC AZ (602) 746-7271	
PORTER # 1	AZD 049151009	BUDS OIL, 1340 W LINCOLN, PHX, AZ (602) 258-6155	
CRTER # 2			
TREATMENT AGE OR DIS- FACILITY	AZD 049151009	BUDS OIL, 1340 W LINCOLN, PHX AZ (602) 258-6155	
TREATMENT AGE OR DIS- L FACILITY		ALTERNATE	

WASTE INFORMATION

UNITS & NUMBER	HM	EPA HAZ WASTE ID #	DESCRIPTION AND CLASSIFICATION (Proper Shipping Name, Class and Identification Number per 172.101, 172.202, 172.203)	UN # or NA #	EXEMPTION OR NO LABELS REQUIRED	FLASH POINT (IN °C) WHEN REQ'D	UNITS WT/VOL	TOTAL QUANTITY	RATE	EPA (For Use
D	3	F003	ACETONE WASTE	UN 1090			50	100		
D	3	F003	XYLENE WASTE	UN 1307			50	100		
	3	F003	WASTE BUTYL ACETATE	UN 1123			50	100		
D		F001	WASTE TRICHLOROETHANE	UN 2831			50	50		
D		F001	WASTE FREON	UN 4189			50	100		

AL HANDLING INSTRUCTIONS

If an RQ commodity is spilled on a waterway or adjoining land, the incid must be promptly reported to the Federal government at 1-800-424-8802 (free or 202-426-2675 (toll call). If other DOT hazardous Materials are discha creating a serious situation, call shipper's telephone number or Chem 1-800-424-9300 immediately

AENTS

PLACARDS TENDE
Yes ☐ No

ollect on Delivery" shipments, the letters "COD" must appear before consignee's name or as otherwise provided in Item 430, Sec. 1

COD Amt: $

C.O.D. FEE: PREPAID ☐ COLLECT ☐ $

"If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is "carrier's or shipper's weight."

TOTAL CHARGES $

FREIGHT CHARGES

Transportation according to the applicable Department of Transportation and the U.S. En-

DATE

ZARDOUS WASTE . . NIFEST

0008

MANIFEST DOCUMENT NUMBER
AZD 007374454

SHIPPER NUMBER
AZD 047318007

BUDS OIL SERVICE
NAME OF CARRIER (SCAC)

CARRIER NUMBER

IDENTIFICATION

	12 DIGIT EPA ID #	COMPANY NAME, MAILING ADDRESS, AND TELEPHONE NUMBER	DATE SHIP OR REC'D
ERATOR/ PER	007394454	BURR ROAD, 10 11400, TUCSON AZ (602) 746-7271	
SPORTER # 1	047318009	BUDS OIL, PAO W LINCOLN PHX AZ (602) 258-6155	
SPORTER # 2			
F TREATMENT AGE OR DIS- AL FACILITY	047318009	BUDS OIL, 1340 W LINCOLN PHX AZ (602) 258-6155	
TREATMENT AGE OR DIS- AL FACILITY		ALTERNATE	

WASTE INFORMATION

F UNITS & TAINER TYPE	HM	EPA HAZ WASTE ID #	DESCRIPTION AND CLASSIFICATION (Proper Shipping name, Class and Identification Number per 172.101, 172.202, 172.203)	UN # or NA #	EXEMPTION OR NO LABELS REQUIRED	FLASH POINT (IN °F) WHEN REQ'D	UNITS WT/VOL	TOTAL QUANTITY	RATE	CH (For Use
DR	3	F005	METHANOL WASTE	UN 1230			50	50		
DR	8	F009	WASTE BATCH STRIPPER	UN 9189			50	50		
DR	8	F009	412-D RESIST WASTE	UN 1760			50	100		

CIAL HANDLING INSTRUCTIONS

If an RQ commodity is spilled on a waterway or adjoining land, the incident must be promptly reported to the Federal government at 1-800-424-8802 from or 202-426-2675 (non call). If other DOT hazardous materials are discharged creating a serious situation, call shipper's telephone number or Chemtrec 1-800-424-9300 immediately.

IMENTS

PLACARDS TENDERED
Yes ☐ No

Collect on Delivery" shipments, the letters "COD" must appear before consignee's name or as otherwise provided in Item 420, Sec. 1

COD AMT: $

C.O.D. FEE: PREPAID ☐ COLLECT ☐ $

TOTAL CHARGES: $

FREIGHT CHARGES

"If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is "carrier's or shipper's weight."

RECEIVED subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written, herein contained, including those on the back hereof.

Department of Transportation and the U.S. Environmental Protection Agency

6-17-82

SIGNATURE DATE

DURODYNE, INC.
P.O. BOX 11740 MISSION STATION
TUCSON, ARIZONA 85734

RECEIVED
REGION IX

May 5, 1982

United States Environmental Protection Agency
Region IX
215 Fremont Street
San Francisco, CA 94105

Reference: T-3-1 dated April 26, 1982

1. Durodyne, Inc. vulcanizes and cures rubber to manufacture hose.
2. No solvents or adhesive liquids are used.
3. No hazardous waste generated or disposed of; none in inventory.
4. No information.
5. None
6. No information.
7. None
8. No information.
9. Present location since September, 1975. No knowledge of previous tenants.

DURODYNE, INC.

Clyde J. Vallery
President

nv

GENERAL ELECTRIC

U.S.E.P.A. REGION 9 COMMERCIAL

WESTERN APPARATUS SERVICE DEPARTMENT

TUCSON APPARATUS SERVICE SHOP

NOV 22 11 50 AM '82

GENERAL ELECTRIC COMPANY, 1401 EAST VALENCIA RD., TUCSON, ARIZONA 85705
Phone (602) 889-3346

November 18, 1982

United States Environmental
Protection Agency
215 Fremont Street
San Francisco, CA 94105

Reference: T-3-1

Attn: David S. Mowday, Acting Director Toxics and Waste Management Division.

Dear Mr. Mowday:

In reply to your October 20, 1982 letter:

1. Our facility at 1401 E. Valencia Rd. in Tucson, Arizona has approximately 37K ft^2 of manufacturing space in which we are engaged in the maintenance and repair of industrial and mining equipment. This facility is classified as a small quantity generator of hazardous waste under RCRA regulations. Cleaning processes are involved in the repair operations. Most of the cleaning is done by steam cleaning. The waste generated by this process is discharged through an oil-water separator into the municipal sewer system. Stoddard solvent is also used for spray cleaning at an average consumption of 200 gal. per month.

2. Our records indicate that chlorinated solvents are used in aerosol cans for localized cleaning. Approximately 2500 cans of this aerosol cleaner are used per year. We can not find any records of purchasing other chlorinated solvents. Limited amounts of chromium containing materials are used in flame spray metalizing operations.

3. This is an estimate of waste disposal:

Waste Type	Yearly Quantity	Freq. of Disposal
Oil & Water Separator Oil and Sludge	9,000 Gal.	3-4 times annually
Trash	5,000 pounds	bi-monthly
Used gear oil	800 Gal.	Twice annually

continued.

November 18, 1982
Ref: T-3-1
Page 2

4. We can find nothing that indicates any waste disposal at or near our facilities.

5. The trash is collected and disposed of by the City of Tucson. The grease separator waste and gear oil is trasported by Pima Sewer and Drain. It was reportedly dumped at Pima Count's Ina Road and Los Reales Dumps.

6. No wells on site.

7. N/A

8. We have no information regarding the use or disposal of chlorinated solvents.

9. General Electric established this facility at this location in 1969 and have occupied it since then.

If you have any questions concerning this information, please contact us.

Very truly yours,

Lorin G. Hewitt
Manager-Tucson Apparatus Service Shop

CC: Barry York
General Electric Company
1 River Rd. Bldg 6-233
Schenectady, New York 12345

Curt L. Lafferty
General Electric Company
4900 Kingston Street
Denver, Colorado 80239

dgs

Hamilton Aviation

P.O. Box 11746
Tucson, Arizona 85734
Phone (602) 294-3481

RECEIVED
U.S. REGION IX
AUG 15 10 03 AM '82

August 11, 1982

United States Environmental Protection Agency
Region IX
215 Fremont Street
San Francisco, CA 94105

ATTENTION: David S. Mowday
Acting Director
Toxics & Waste Management Division

REFERENCE: T-3-1

Gentlemen:

On or about the week of June 30 a woman who presented her credentials from the U. S. Environmental Protection Agency inspected our facility and unfortunately we do not have a record of her name but at the time I spent approximately one hour touring the plant with her, giving her free access to the whole facility.

We showed her what we considered possibly might be contaminants that we might use that might run off and affect the drinking water system in the South Tucson area. Her words at the time of her inspection were that she could not see any possible contaminents that would interest the EPA. I am sure if your company has a log of your employees, you can determine who this was and obtain a report of her inspection.

In referance to your questions as presented in your letter dated August 4,1982:

1. Our company is an aircraft maintenance repair and modification facility.

2. Most chemicals that we use are of a petroleum base used to clean engines and other aircraft parts. We also store used oil in drums and sell to local reclaiming facilities. We also use a soap in our steam cleaner which is made by Omega Products, 2102 N. Forbes, Tucson, Arizona. The material is called Omega Super Concentrate, 99% biodegradable. No special precautions are made when steam cleaning these parts and the waste water drops onto an 8 inch cement apron with no drains or access to underground water. The liquid dries in the sun and to our knowledge there is no run off in this operation. The only chemicals that are used at our facility that might be considered toxic is a paint stripper used by a subcontractor by the name of Earl Page, phone number 964-7852, Mesa, Arizona. We do not know what chemicals he uses to perform occasional aircraft paint stripping on our ramp, but further information may be obtained from Mr. Page.

2. We do not use materials containing chronium nor 1.1 dichloroethylene, 1.1.2 trichloroethylene, and 1.1.1 trichloroethane.

3 & 4. The inventory of any waste we might generate would consist of approxi-

mately 100 gallons of jet fuel or other kerosene type solvent, 10 gallons of M.E.K. and 150 gallons of engine and hydraulic oil.

5. We do not do any off site disposal of waste material except oil which is sold to a local reclaiming agency.

6. We have no monitoring wells, supply wells, or injection wells. Our water is supplied by the Tucson city water system.

7. We are a small company with 9 employees at the present time and if this employment increases we are certainly conscious of the bad publicity that Hughes Aircraft and the U. S. Government (Air Force) has gotten in this area in their operation at the Hughes facility. We certainly would be careful not to put ourselves in a similar position.

8. No information.

9. Our company has been at this facility for 7 years and there were no former occupants prior to building our facility. During the last 7 years our type of work has been only as mentioned before.

There has been no additional data developed by our attornies, consultants, agents or employees.

We trust that the information we have provided is adequate, if not we feel a subsequent inspection will confirm the information in this letter.

Sincerely,

HAMILTON AVIATION

Gordon B. Hamilton
President

GBH:dvh

GIN AIR SERVICE
TUCSON INTERNATIONAL AIRPORT
2 EAST VALENCIA • TUCSON, AZ. 85706
(602) 294-2688

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

United States Environmental
Protection Agency
Region IX
215 Fremont Street
San Francisco, CA 94105

06 April 1982
hh/ir

RE: T-3-1 - 15 Mar 82

Dear Mr. Mowday:

In compliance with your request we furnish the following information:

1. We are a Fixed Base Operator engaged in charter/rental of small aircraft. We operate a FAA approved flight school for the purpose of training new and advanced pilots. We further operate a maintenance and repair facility for aircraft and provide tiedown spaces for privatly owned aircraft. We have two (2) underground gasoline storage tanks, their combined capacity is 24,000 gallons.
   In our capacity as repair and maintenance station we do not work with hazardous waste to the best of our knowledge.

2. We use the following materials:
   Chevron 325 Solvent NON PHOTOCHEMICALLY REACTIVE 102 less than 4%, 102-petroleum naphtha. For purposes of washing aircraft and other washable items we add CHEER Laundry Detergent, a product of Proctor & Gamble, to our wash water.

3. N/A

4. Our waste products consist of old aircraft engine oils. We collect said oils in barrels.
   The disposal practices of the former occupant are not known to us.

5. Our old engine oil is picked up for disposal by the AAA Waste Oil Co., phone (602) 742-1332

HUDGIN AIR SERVICE
TUCSON INTERNATIONAL AIRPORT
1732 EAST VALENCIA • TUCSON, AZ. 85706
(602) 294-2688

U.S. Environmental Protection Agency 06 April 1982

6. Not applicable at this time.
In 1967 when we occupied this site, there was one well supplying this business site and one privately owned house with fresh drinking water. The pressure of the well was too inconsistent, so shortly after we occupied this site, we had the well blocked off. We subsequently were hooked up to the city water and sewer system. The well has not been used since and we are still hooked up to the city services.

7. N/A

8. Information not available to us.

9. Hudgin Air Service is located at this site since 1967. The former occupant was Donald Aircraft. Their disposal practices are not known to us.

All information provided by us is the truth to the best of our knowledge and may be made public at any time.

Hoping to have answered all questions to your satisfaction, we remain

sincerely yours,
HUDGIN AIR SERVICE

Henry B. Hudgin
President

cc: Arizona Dept. of Health Services

(602) 294-5211

HUGHES

HUGHES AIRCRAFT COMPANY
AEROSPACE GROUPS
MISSILE SYSTEMS GROUP
TUCSON MANUFACTURING DIVISION
TUCSON, AZ 85734

10 June 1981

Ref: 45-81-032

Carl C. Kohnert, Jr., Acting Director
Enforcement Division
United States Environmental Protection Agency
Region IX
215 Fremont Street
San Francisco, California 94105

Dear Mr. Kohnert:

In reply to your letter of 5/22/81 requesting disclosure of information pursuant to Section 3007 of RCRA, we wish to offer the following information:

Non-Responsive by Agreement

Exemption 4: CBI

Non-Responsive by Agreement

This disclosure is pursuant to Section 3007 of RCRA, and before this information is provided to others, we request that we be notified and afforded an opportunity to object.

We trust you will find the foregoing satisfactory. If we can be of further assistance, please contact the undersigned at (602) 746 8351.

Very truly yours,

HUGHES AIRCRAFT COMPANY

E. K. Spaulding, Manager
Environmental Health & Safety

EKS:lc
Enclosures

Tucson International Airport:

a) Hangars (i. e., the three large contiguous hangars on the west side of the airport) were built in 1942 and 1943. During the time until 1948, there was a metal cleaning and stripping operation in what is known as Building No. 3, southwest of the large hangars. The waste material was dumped in a surface holding pond located north of the present oil storage area. Grand Central Aircraft Company occupied the hangars starting in 1951, then Douglas Aircraft Company in 1954. Both companies used the waste holding pond. Not known is the amount of oil or various types of materials. During that time, every six months, the pond was flushed with water, and drums and containers removed. Also, acids and various types of solvents were in use. The pond was filled in and covered over in 1958 or 1959. The pond was approximately 250 x 250 feet.

b) With regard to developing some insight of the potential contributions to the underground water quality which may have been made by Consolidated Aircraft, Grand Central Aircraft, and Douglas Aircraft, we have contracted with ---------- to research the media and public library file regarding the recollection of our employees, that sometime in the era of 1950 to 1960 there was a major incident at that site. This incident was precipitated by the occupant, one of the three above mentioned aircraft companies, dumping over an extended period of time, significant quantities of caustic chemicals. Purportedly this resulted in the shutdown of a number of wells in the immediate vicinity of concern, a number of claimed illnesses in the area, and was reported to the City Health Department by the news media.

In conjunction with the same question, we have contacted -------- who was Line Superintendent for the Grand Central Aircraft Company over the period of approximately 1952 to 1954. He has provided the following information:

> The rumored occurrence did in fact happen during the period of his employment with the Grand Central Aircraft Corporation, probably over the 1952 to 1953 period. He further confirms that this incident was reported to the local Health Department and was reported in the news media. His remembrance of this situation is that during a period of '52 through '54, Grand Central Aircraft consumed approximately 200 gallons a day of a concentrated chemical solvent distributed by TURKO, containing high quantities of both arsenic and chrome. This chemical solvent was utilized in the cleaning of cosmoline from the aircraft, previously cocooned at Davis Monthan Air Force Base, and was flushed across the land into the arroyos south of their site.

He has identified one resident of the area who he believes is still living in the same location, Rudy Neye, who would be quite familiar with the incident, and in fact was one of the people who protested the contamination of his water supply at that time. Rudy Neye purportedly still lives in the same location immediately west of the Nogales Highway.

c) Interview with Officer Jim Nierenberg of the Tucson Police Department at St. Mary's Hospital on 5/27/81, relative to his past experience using trichloroethylene in the large hangars at the Tucson Airport:

It should be noted that this interview was the result of Officer Nierenberg's unsolicited telephone call to Hughes Aircraft Company. The call was prompted by Nierenberg's reaction to local press releases in which Hughes was being implicated in a groundwater contamination problem which Nierenberg believed had probably been caused by improper disposal of trichloroethylene by others.

* Officer Nierenberg was in the USAF 1966 through 1970.

* Nierenberg's unit, the 4453rd Combat Crew Training Wing, was temporarily relocated to the subject hangars in 1968 or 1969 for six months while the runway at Davis Monthan Air Force Base was being resurfaced.

* Trichloroethylene was used by his unit at the rate of "hundreds of gallons per week" for cleaning lox carts, jacks, aircraft parts, floors, everything.

* Disposal techniques included dumping random buckets of waste TCE on the ground south of the hangars; larger amounts were placed in carts and also disposed of on the ground south of the hangars.

* Nierenberg stated that south of the present Mobat/Adamson installation was a typical disposal spot.

International Business Machines Corporation

General Products Division
Tucson, Arizona 85744
602/741-5000

Ray Mantooth
741-4433

August 25, 1982

Refer to: T-3-1

David S. Mowday
Acting Director
Toxics & Waste Management Division
United States Environmental Protection Agency
Region IX
215 Fremont Street
San Francisco, California 94105

Dear Mr. Mowday:

The following are the answers to the questions you asked concerning hazardous waste practices at our airport area location (airport site), 6950 South Country Club Road, Tucson, Arizona EPA ID# AZ[illegible]23327.

1. The airport site is involved in development, manufacturing and testing of data processing products. Although the airport site is permitted under Part A (40CFR122.24) as a storage facility (one 5000 gallon underground tank) and currently under Part B (40CFR 122.25) review, the tank has not been placed in service. The building 003A chemical distribution center that was permitted under Part A as a storage facility was closed pursuant to 40CFR265, Subpart G 265.110 through 265.115 on January 11, 1982. All waste container storage is now at our main site, 9000 South Rita Road, Tucson, AZ (EPA ID# AZT000623702).

2. For a complete list of chlorinated solvents and chromium usage at our airport site, see attachment #1. IBM also uses fluorinated solvents.

3. The inventory has been extracted from quarterly reports, see attachment #2. All liquid wastes were disposed of via 55 gallon drums or smaller containers. No report is included for 1982, since the storage facility was not in use.

4. IBM has not disposed of wastes at or near the facility. Prior to October 1981 waste was shipped from the airport site to out of state permitted vendor disposal facilities. Since October 1981 all waste has been shipped to the Main Site (9000 S. Rita Road, Tucson, AZ) for treatment or for storage prior to shipment to out of state permitted vendor disposal facilities.

5. Transporters

Airport Site to Main Site

1979 - 1982

A. Ralphs Transfer, Tucson, Arizona
EPA ED# AZD068396654

B. Arizona Tank Lines, Tucson, Arizona
EPA ID# IAD000065227

Airport Site to Rollins Environmental, Deer Park, Texas

1/1980 - 11/1980

A. East Texas Motor Freight - Yellow Freight Lines

11/80 - 1982

B. Time D.C. EPA ID# TXD007934193

Airport Site to Chemical Waste Management, Coalinga, CA

1/1980 - 12/1980

A. McKay Trucking Co. Coalinga, CA
EPA ID# CAD003986718

Airport Site to International Distribution Corporation, Houston, Texas for storage prior to disposal at Ensco, El Dorado, AK

1981 - 1982

A. Time - D.C. EPA ID# TXD007934193

B. Freightways Express EPA ID# ART0600103386

6. There are no monitoring, supply or injection wells at this facility.

7. As stated in answer six there are no monitoring, supply or injection wells at this facility.

8. IBM Tucson has no information dealing with disposal of chlorinated solvents by other persons or businesses except for the information provided by the news media.

9. IBM purchased the property, built the site and began occupancy May 1978. IBM sold the property to Carlos and Ceasar Arredondo. Gemma Properties Caroline, Ltd., Two Greenwich Plaza, Greenwich, CT 06830 and leased the airport site back under an agreement dated October 26, 1978. IBM has been the only occupant.

If you have any questions, please call me at (602) 741-6050.

Sincerely,

J. V. Babcock

J. V. Babcock
RCRA Coordinator

/mpo-49

ATTACHMENT #1

CHLORINATED SOLVENTS/CHROMIUM USAGE

CHLOROBENZENE	1979	3 GALLONS
	1980	225 GALLONS
	1981	150 GALLONS
	1982	29 GALLONS AS OF 7/82
METHYLENE CHLORIDE	1978	67 GALLONS
	1979	36 GALLONS
	1980	39 GALLONS
	1981	259 GALLONS
	1982	237 GALLONS AS OF 7/82
DEGLAZING SOLVENT (100% METHYLENE CHLORIDE)	1979	23 GALLONS
	1980	49 GALLONS
	1981	16 GALLONS
	1982	NO USAGE-AS OF 7/82
TRICHLOROETHYLENE	1979	2 GALLONS
	1980	2 GALLONS
	1981	1 GALLON
1,1,1-TRICHLORETHANE	1979	23 GALLONS
	1980	73 GALLONS
	1981	84 GALLONS
	1982	34 GALLONS AS OF 7/82
PERCHLOROETHYLENE	1979	10 GALLONS
TAP AID (100% 1,1,1-TRICHLORETHANE)	1979	4 PINTS
	1980	52 PINTS
	1981	57 PINTS
	1982	2 PINTS AS OF 7/82

CHROMIUM CONTAINING MATERIALS

STRIPPER #4 (SULFURIC/CHROMIC)

1980	144 POUNDS
1981	108 POUNDS
1982	324 POUNDS AS OF 7/82

GMC 528-B CLEANER (.5% SODIUM CHROMATE)

1978	55 GALLONS
1979	25 GALLONS
1980	35 GALLONS
1981	105 GALLONS
1982	10 GALLONS AS OF 7/82

ATTACHMENT #2
WASTE INVENTORY

PRIOR TO MAY 1980

WASTE SHIPMENT 1/17/80

2 DRUMS	Ammonia in water (corrosive)
1 DRUM	Battery Acid Mixture (corrosive)
1 DRUM	Developer Waste (corrosive)
9 DRUMS	Hydraulic & Cutting Oils
1 DRUM	Tape Cleaner (40% 1,1,1-Trichloroethane)
10 PALLETS	of 1 pint cans of Tape Cleaner (40% 1,1,1,-Trichloroethane) Est. Volume 750 Gal.
2 DRUMS	Solvent, Adhesives, Epoxies (Flammable Liquid)

All drums are 55 gal. capacity.

/mpo-40

Attachment #2

1980 Waste Inventory
Includes Last Three Quarters

Waste Received From Other IBM Tucson Locations for Disposal

THF/MIBK Mixture	11,265 Gallons
Waste Acid Liquid	240 Gallons
Chromium Dioxide	20 Pints
Organic Solvent Mixture	1925 Gallons
THF/MIBK Contaminated Rags and Filters	1385 Gallons
Capacitors Containing Polychlorinated Biphenyls	880 Gallons
Mercury Contaminated Waste	20 Gallons
Corrosive Solids	180 Gallons
Freon TF	715 Gallons
Solvent Contaminated Rags	110 Gallons
Caustic Wastewater	275 Gallons
Chromate Waste	1 Gallon
Amine Waste	30 Gallon
Oxidizer	30 Gallon
Solvent Contaminated dirt	165 Gallon
Waste Containing IPA	10 Gallon

Waste Shipped For Disposal

THF/MIBK Mixture	13,025 Gallons
THF/MIBK Contaminated Rags and Filters	1220 Gallons
Waste Acid Liquid	770 Gallons
Capacitors Containing Polychlorinated Biphenyls	770 Gallons
Methyl Chloroform	165 Gallons
Freon TF	605 Gallons
Solvent Contaminated Dirt	165 Gallons
Caustic Wastewater	220 Gallons
Solvent Mixture	2,145 Gallons
Corrosive Solids	165 Gallons
Solvent Contaminated Rags	55 Gallons

Attachment #2 (Cont'd)

1981 - Waste Inventory

Waste Received From Other IBM Tucson Locations for Disposal

Flammable Solids	6335 Gal.
Solvent Mixtures	3984 Gal.
Solvent/Water Mixtures	1045 Gal.
THF/MIBK Mixtures	337 Gal.
THF/MIBK Contaminated Solids	110 Gal.
CrO_2 Contaminated Solids	440 Gal.
Acid Contaminated Solids	810 Gal.
Oxidizers	355 Gal.
Freons	2310 Gal.
Acids	520 Gal
Amines	55 Gal.
Caustics	2325 Gal
Capacitors Containing PCB's	440 Gal.
Corrosive/Flammable Wastes	115 Gal.
Mercury Contaminated Wastes	25 Gal.
Caustic Contaminated Solids	150 Gal
BIO Sludge	990 Gal.

Wastes Shipped for Disposal

Flammable Solids	6665 Gal.
Solvent/Water Mixtures	110 Gal.
Solvent Mixtures	3020 Gal.
THF/MIBK Contaminated Solids	275 Gal.
THF/MIBK Mixtures	667 Gal.
Acid Contaminated Solids	880 Gal.
CRO_2 Contaminated Solids	565 Gal.
Oxidizers	440 Gal.
Freons	1595 Gal.
Acids	585 Gal.
Amines	85 Gal.
Caustics	1620 Gal.
Capacitors Containing PCB's	770 Gal.
Corrosive/Flammable Waste	165 Gal.
Mercury Contaminated Waste	60 Gal.
Caustic Contaminated Solids	45 Gal.
BIO Sludge	990 Gal.

* Waste In Storage at Year End

Flammable Solid	1,850 Gal.
Solvent Mix	806 Gal.
Solvent/Water Mix	140 Gal.
THF/MIBK Mix	2,852 Gal.
CRO_2 Contaminated Solids	85 Gal.
Acid Contaminated Solids	75 Gal.
Oxidizers	55 Gal.
Freon	275 Gal.
Acid	115 Gal.
Caustic	583 Gal.

Attachment #2 (Cont'd)

1981 - Waste Inventory

Waste In Storage

Capacitors w/PCB[s]	165 Gal
Mercury Contaminated Wastes	105 Gal.
Caustic Contaminated Solids	100 Gal.
Solder	14 Gal.
Corrosive/Flammable Wastes	210 Gal.

*Waste in storage also includes the Main Site, because the waste was transferred to the Main Site prior to 003A (Airport Site) closure.

4-24

INDUSTRIAL TOOL, DIE & ENGINEERING, INC.
P. O. BOX 11458
TUCSON, ARIZONA 85734
PHONE (602) 294-3186

June 7, 1982

United States Ebviromental Protection Agency
REgion IX
215 Fremont St.
San Francisco, CA 94105

Attn : David S. Mowday, Acting Director Toxic & Waste Management Div.

Dear Mr. Mowday,

In reference to your letter of April 26, 1982, we are a small tool & die shop. We do strictly prototype work and no production work at all. To the best of our knowledge we do not us any solvents containing 1,1 Dichloroethylene, 1,1, 2 Trichloroethylene, or 1,1,1, Trichloroethane. We do not or have not to our knowledge ever had to dispose of any of the above chemicals. Also we are not familiar with any other companies usage of these chemicals in the Airport area.

We hope that the above information is what you need and that is is sufficient and helpful to the best of our knowledge.

Sincerely,

Guy P. Theriault
Manager

GPT/bg

RECEIVED
U.S.E.P.A.
REGION 9
COM. CENTER
MAY 13 10 52 AM '82

Keystone

May 5, 1982

United States Environmental
Protection Agency
Region IX
215 Fremont Street
San Francisco, CA. 94105

Gentlemen:

In Reference to: T-3-1

The following chemicals are used by our company and in quantities specified, also means of disposal:

#1. Engine Oil, Grade 100, 50WT. - Usage of Approximately 55 gallons per year.

#2. Hydraulic Oil, 5606A - Usage 55 gallons per each 3 years.

#3. Preservative Oil, Grade 30WT. - Usage 55 gallons per 3 years.

#4/ Carbuerator Cleaner - Cleaning of metal parts. Usage 55 gallons per each 2 years. Purchased from B&B Chemicals. Disposed of by evaporation.

#5. Industrial Soap.- Used for washing aircraft. Purchased from B&B Chemicals. Approx. 55 gallons per year.

#6. DuPont Lacquer Thinner - Approx. 50 gallons per year. Used for thinning paint.

#7. DuPont Enamal Reducer - 10 gallons per year. Used to thin paint.

#8. Turbine Oils - Mil. 7808 and Mil. 23699. Approx. usage 50 gallons per year.

#9. Methalethel Keytone - 20 gallons per year. Used in cleaning parts. Disposed of by evaporation.

#10. Safety Solvent - used for cleaning parts. Approx. 100 gals per year. Lost through evaporation.

#11. We generate approximately 55 gallons material per year All waste oils. It is picked up by waste oil dealer Metro.

John A. Haertsch
General Manager
Keystone Helicopter - Tucson

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
215 Fremont Street
San Francisco, Ca. 94105

Note

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

April 26, 1982

In Reply
Refer to: T-3-1

Aircrane Inc
Taken over by Keystone Helicopters April 1975

Aircrane, Inc.
Tucson International Airport
Tucson, AZ 85706

Dear Authorized Official:

The Environmental Protection Agency (EPA), the Arizona Department of Health Services, and the City of Tucson are jointly conducting an investigation of groundwater contamination in the vicinity of Tucson International Airport. The purpose of the investigation is to determine the nature, cause and extent of contamination in the area and to assess the effects of the contamination on drinking water and the public health.

As part of this investigation the EPA is in critical need of historical and present information which has been generated or obtained by a variety of parties in the Tucson Basin. The EPA has reason to believe that your company may be in possession of critical information and, for that reason, I make the following request for information pursuant to §3007(a) of the Resource Conservation and Recovery Act:

1. Description of the purpose and operations of your company, including a detailed description of any hazardous waste storage, treatment, or disposal operations at your facility.

2. A detailed description of all past and present usage of chlorinated solvents and chromium containing materials at your facility, particularly 1,1 Dichloroethylene, 1,1,2 Trichloroethylene, and 1,1,1, Trichloroethane.

3. A complete inventory of all wastes that have been generated by your facility, particularly chlorinated solvents. Include dates, types of wastes or chemical composition, and quantities.

Aircrane Inc Taken over by Keystone
[illegible]

4. A complete inventory of all wastes disposed at or near your facility, particularly chlorinated solvents. Include dates, types of wastes or chemical composition, quantities, and disposal practices of past occupants of your present location.

5. If disposal of waste has been conducted off-site, name of transporter(s) and locations of off-site disposal.

6. Locations and detailed descriptions of all monitoring wells, supply wells, and injection wells.

7. All analyses from sampling of monitoring and supply wells.

8. Any information regarding use and disposal of chlorinated solvents by any person or business in the vicinity of Tucson International Airport.

9. Length of time your company has been at the present location and any information regarding former occupants of your present location and their hazardous waste practices.

Each response should include all activities of your company since commencement of operations. The scope of this request extends to all data independently developed or obtained by research on the part of your company, its attorneys, consultants, or any of their agents, consultants, or employees.

Under the provisions of Section 3007(a) of the Resource Conservation and Recovery Act [42 USC §6927], the Administrator of EPA is authorized to require persons subject to the Act to furnish information as may be necessary for the purposes of administering the Act.

Furthermore, under Section 3008 of the Act [42 USC §6928], failure to provide the information requested in this letter may result in an order requiring compliance or a civil action for appropriate relief. This Section further provides for criminal penalties for knowingly making a false statement.

EPA regulations governing confidentiality of business information are set forth in Part 2, Subpart B of Title 40. Of the portion of the information submitted which is entitled to confidential treatment, please assert a confidentiality claim in accordance with 40 CFR §2.203(b). If EPA determines

that the information so designated meets the criteria set forth in 40 CFR §2.208, the information will be disclosed only to the extent, and by means of the procedures, specified in 40 CFR Part 2, Subpart B. EPA will construe the failure to furnish a confidentiality claim with your response to this letter as a waiver of that claim, and information may be made available to the public by EPA without further notice.

Your response to this request must be by letter, signed by you or a duly authorized official, and submitted to EPA within 30 days of receipt of this letter. Supplemental responses, signed by you or a duly authorized official, must be submitted to EPA according to the schedule described above. If you have any questions concerning this matter, please contact Mr. Gary Hokkanen at (415)974-8150 or Mr. John Rothman at (415)974-8030.

Your cooperation in this matter is appreciated.

Sincerely yours,

David S. Mowday
Acting Director
Toxics & Waste Management Division

cc: Arizona Department of Health Services

3-15

Leb's Aircraft Maintenance Co.

ALL TYPES OF

Aircraft Maintenance and Repair

TUCSON INTERNATIONAL AIRPORT
TUCSON, ARIZONA 85706

~~XXXXXXX~~
573-0480

April 5, 1982

United States Enviornmental Protection Agency
Region X
215 Fremont Street
San Francisco, CA 94105

RE: T-3-1

Gentlemen,

1. Operations: Small Aircraft maintenance, repairs, overhaul and storage.
   Chemical on premises: Small amounts of paints, thinners solvents and oil.
   Storage: Paints and thinners - metal cabinet. Solvent - 55 gal. drum. Oil - cans. Waste oil and solvents - 55 gal drums. (Removed by Metro Oil Corp. 3165 East 48 Tucson, AZ 622-3467.)
2. To the best of our knowledge we do not, nor have we ever used these materials.
3. None
4. None
5. Metro Oil Corp.
6. N/A
7. N/A
8. None
9. Established December 1959. We have no knowledge of prior occupants.

Yours truly,

Perilla K. Allen

Perilla K. Allen
Manager

MCDONNELL DOUGLAS CORPORATION

LAW DEPARTMENT

29 June 1984

Mr. Harry Seraydarian
Director - Toxics and Waste
Management Division
U.S. Environmental Protection Agency
Region IX
215 Fremont Street
San Francisco, CA 94105

Subject: Investigation of Groundwater Contamination in Vicinity of Tucson International Airport

Reference: T-4-1 dated 4 May 1984

Dear Mr. Seraydarian:

McDonnell Douglas Corporation acknowledges receipt of the reference letter and submits the following information relative to the subject investigation. Douglas Aircraft is a component of McDonnell Douglas Corporation and has been since 1967. The information included in this response is based on a review of Douglas Aircraft Company records at the Long Beach facility. Any further information required should be requested through the undersigned.

1. The exact dates of tenancy of Douglas Aircraft on Tucson Airport Authority (TAA) property.

Answer - Tenancy started 6-1-54 and the premises were vacated 1-31-60.

2. Legal descriptions of the extent of the property leased by Douglas.

Answer - Southwest quarter of Section 18 and Northwest quarter of Section 19, Township 15 South, Range 14 East of the Gila and Salt River base and meridian.

3. Description of the purpose and operations of Douglas, including a detailed description of any hazardous waste storage, treatment, or disposal operations at your TAA Facility.

Answer - The Tucson Facility was used by Douglas Aircraft to flight test and deliver RB/B66 Aircraft (manufactured at the DAC Long Beach, CA plant). Under an Air Force contract, modify B-47 aircraft as a subcontract to the DAC Tulsa, Oklahoma Plant, replace wing skins on DC-6 Aircraft, and conduct training for the Air Force on maintenance and operation of the Thor Missle.

There were no chemical operations performed at this facility except painting; so there is no recollection of any hazardous waste storage, treatment, or disposal operations.

4. A detailed description of the usage of chlorinated solvents, and chromium containing materials at Douglas TAA Facility, including but not limited to, 1-1 dichloroethylene, 1-1-2 trichloroethylene, 1-1-1 trichloroethane, chloroform and other solvent materials used by Douglas under brand name whose exact composition may have been unknown.

Answer - none.

5. A complete inventory of all wastes that have been generated by your TAA Facility, including, but not limited to, chlorinated solvents and chromium containing materials. Include dates of genration, type and chemical composition, and the quantities generated.

Answer - Since there were no chemical operations performed at this facility, there is no recollection of any hazardous wastes generated and no records are available.

6. A complete inventory of all wastes disposed of at the Douglas Facility, including, but not limited to, chlorinated solvents and chromium containing compounds. Include dates, type and chemical composition of waste disposal quantities, and methods of disposal.

Answer - no records.

7. If disposal of waste was conducted off-site, name of transporter(s) and locations of off-site disposal.

Answer - no records.

8. Locations and detailed descriptions of all monitoring wells, supply wells, and injection wells at the Douglas Facility.

Answer - All wells were under the jurisdiction of the TAA and not on any part of the Douglas leased property.

9. All analyses from sampling of monitoring and supply wells at the Douglas Facility.

Answer - not applicable.

10. Any information regarding the use and disposal of chlorinated solvents or chromium containing compounds by any person or business in the vicinity of Tucson International Airport.

Answer - none available.

11. The nature of the contractual agreement between Douglas Aircraft and the United States Air Force as it generally or specifically relates to the items listed above.

Answer - The Government work accomplished at the Tucson Facility and the appropriate contract numbers included the following:

RB/B-66 Contract Spares	AF33 (600)-25669 & 20368
B/RD-66 Iran and Modification	AF04 (607)-2062
RB66B Producton	AF33 (600)-16314
Kits and Spares	AF04 (607)-1927, 3080, 3081, 3082
B/RE-66 Repair & Sta-foaming	AF04 (607)-2492
Kinescore Sets	AF04 (606)-6223
DM-18 Training School	AF22 (603)-10

I apologize for taking so long to get this material back to you, but we have been doing another check to insure that the information we have included in here is thoroughly checked out through people who were there at the time. To the best of my knowledge and belief, it has been so checked out and the information included in this letter is accurate.

Sincerely,

A. E. Forry
Senior Corporate Attorney

7-29

MICRO-ACCURATE CORP.

2425 EAST MEDINA ROAD, TUCSON, ARIZONA 85706
PHONE 602/889-9521 • TWX 910/952-1107

AUG 16 11 01 AM

U.S.E.P.A.
REGION 9

United States Environmental Protection Agency
215 Fremont Street
San Francisco, CA 94105

Attention: David S. Mowday, Toxics & Waste Mgmt.

Reference: Your letter dated 7-29-82
T-3-1

DATE: August 9, 1982

Dear Mr. Mowday:

Here below please find the answers to all points as per above referenced letter.

1) Manufacturing of high precision aerospace and computer components. Hazardous waste storage, treatment, etc.: None.

2) and 3) The only materials that may be related to your questions are:

- Gulf Cut IID (cutting oil)
- RHO Methylene Chloride (oil remover)

Any waste of the above two materials is collected in a tank which is quarterly pumped by Metro Oil Co. (Tucson, Arizona) and trucked away.

4) No waste is disposed of at or near our facility. Our present location was vacant for two or more years before our occupancy started in December, 1975.

5) See answer to Points 2 and 3.

6) None.

7) None.

8) We have no knowledge about this point.

9) See answer to Point 4.

MICRO ACCURATE CORP.

We hope that our answers will be of some help.

Sincerely,

Claudio A. Gilardini
Secretary-Treasurer

CAG:bl

TIRE COMPANY
"RELUGGING"
TUCSON INTERNATIONAL AIRPORT / NOGALES HIGHWAY, 85706 / P.O. BOX 11699 / PHONE: (602) 294-2696

March 29, 1982

United States Environmental Protection Agency
215 Fremont Street
San Francisco, CA 94105

ATTENTION: David S. Mowday
Acting Director
Toxics & Waste Management Division

RE: T-3-1

Dear Mr. Mowday:

In response to your certified letter of March 15, 1982; I feel probably the best way to answer your inquiry is to go paragraph by paragraph using the numerical numeration you outlined in questioning us about our hazardous wastes storage and disposal.

1. Our Company is in the business of retreading earth mover and industrial tires. We neither generate nor store any hazardous wastes or treated or dispose of it in our operation.

2. We do not use the materials described in paragraph two.

3. The waste that we generate in our business is normal waste paper, records that are destroyed and the day to day accumulation of garbage. The only exception to this is rubber dust that is generated from the buffing of tires that is disposed of. We generate one dumpster container of garbage approximately every 3 or 4 days.

4. We dispose of no wastes at or near our facility.

5. The waste of disposed of off site is the garbage referred to above and is picked up by the City of Tucson Sanitation Dept.

6. We have no wells.

7. Not applicable.

8. We have no knowledge of anybody who disposes of solvents in the vicinity of Tucson International Airport, other than the information that we may have read in the newspaper.

9. We have been in our present location approximately 14 years, and we have no knowledge or information of former occupants of these premises.

Sincerely yours,

MOBAT ADAMSON TIRE COMPANY

Hal Adamson
President

HA/vl

NEWBERY
INDUSTRIAL, INC.

RECEIVED
U.S. EPA
COMPLIANCE

'84 MAY 21 PM2:00

May 17, 1984

United States Environmental
Protection Agency
Region IX
215 Fremont Street
San Francisco, California 94105

Attn: Harry Seraydarian
Director
Toxics and Waste Management Division

Ref: T-4-1 (Copy Attached)

Dear Mr. Seraydarian,

I hope the following information will be of use to you in your investigation. In response to your inquiry please be advised of the following:

Item 1 - Newbery occupied property at Tucson International Airport from 8/1/73 to 7/19/74, and again from 12/14/76 to present.

Item 2 - No legal description of the property is in our files. Newbery rents approximately 40,000 square feet of unimproved yard storage area located on the southwest service road adjacent to the FAA-RTR facility.

Item 3 - Newbery Industrial, Inc. is an electrical construction firm. Our primary business is new construction on commercial and industrial projects. The storage yard area rented from Tucson International Airport is used for storage of surplus construction equipment, such as trucks, vans, storage boxes, and miscellaneous electrical conduit and wire, etc. We do not have any hazardous waste or hazardous waste operations at our facilities.

NEWBERY
INDUSTRIAL, INC.
NEWBERY ENERGY CORPORATION

Item 4 - Newbery does not and has not used any solvent materials or had any solvent material operations at our facilities.

Item 5 - No wastes generated.

Item 6 - No wastes disposed.

Item 7 - N/A

Item 8 - None

Item 9 - None

Item 10- None

Item 11-None

If there are any questions or if I can be of any further service, please do not hesitate to call.

Sincerely,
NEWBERY INDUSTRIAL, INC.

Stevean W. Carrell
President

SWC;va

PAUL'S AIRCRAFT INC.
TUCSON INTERNATIONAL AIRPORT
P. O. BOX 11009 · TUCSON, ARIZONA 85734
889-4208

April 8, 1982

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

United States Environmental Protection Agency
Region IX
215 Fremont St.
San Francisco, Calif. 94105

RE: T - 3 - 1

Dear Mr. Mowday:

In answer to your letter which I received on March 24, 1982, asking for information concerning Paul's Aircraft Inc.

1. The business is called a fixed base operator, doing maintaince, repair and overhaul of small 2, 4, and 6, place aircraft. The only hazardous waste I have is used oil drained from the aircraft engines. This oil is stored in fifty five (55) gallon drums, and is collected once a month by Metro oil corporation.

2. Have never used any chlorinated or chromium solvents in the past or present.

3. Have never had an inventory of any wastes chlorinated solvents generated by this facility.

4. Have no knowledge of what former occupants used or disposed of.

5. Metro Oil Corporation 3165 E 48st. Tucson, Arizona.

6. Unknown.

7. Do not take samplings for analyses.

8. No information.

9. Twelve 12 years. What former occupants did with their waste, I do not know.

Sincerely yours,

Paul F. Dickens

Paul F. Dickens (President)
Paul's Aircraft Inc.

PD/dl

Copies: File

THE PMT SYSTEM
A Southern Pacific Company

D. HUMPHREY
Vice President Administration
D. W. HILDEBRAND
Vice President and Controller
A. F. CONNORS
Vice President Operation
R. G. OLTERMAN
Vice President Sales and Traffic
P. V. GARIN, III
Vice President Equipment
R. J. O'LEARY
Assistant to Chairman

F-2: 148-4 EPA

November 16, 1982

Mr. David S. Mowday, Acting Director
Toxics and Waste Management Division
215 Fremont Street
San Francisco, CA 94105

Dear Mr. Mowday:

In response to your letter of October 19, 1982, Reference T-3-1, requesting any information we may possess of value to your investigation of groundwater contamination, Pacific Motor Trucking Co. will make every effort to supply any and all information you may deem relevant.

1. Pacific Motor Trucking Company operates a transportation terminal and supporting shop facility at 3333 South Country Club Road. Pacific Motor Trucking does not store, treat or dispose of hazardous wastes.

2. Pacific Motor Trucking Co. has researched all products used by our shop facility and we have determined that we are not consuming any products containing chlorinated solvents or chromium materials.

3. The maintenance shop is the only facility at this location which generates waste. This waste falls into two catagories; waste oil and waste sludge from our steam cleaning clarification pit.

   A. Waste oil is collected in a holding tank and is periodically removed. Wastes collected include waste oil, solvent waste (Chevron 325) and waste anti-freeze.

   B. Waste sludge is collected in a clarification pit and has in the past been disposed of on the property. Waste is composed of road dirt and grease which is removed with a steam cleaning soap manufactured by Cal Pacific Chemical Company (chemical declaration attached).

4. A. Wastes described above are disposed of on an irregular basis and dates are not available.

   B. There were no previous occupants at this location.

5. Waste oil is picked up for reprocessing by:

Metro Oil Company
3165 E. 48th Street
Tucson, Arizona 85713

6/7. There are no wells located on these premises.

8. We have no knowledge of disposal activity by persons or business in the vicinity of the Tucson International Airport.

9. The facilities at 3333 South County Club Road were built in 1960. This land was vacant prior to our construction.

Although we have been unable to indentify any chemicals or compounds determined to be hazardous, we have submitted a sample of the waste sludge from our steam cleaning sump to an EPA certified firm for analysis.

The results of the pending analysis and any additional information we may obtain will be forwarded to your attention as soon as available.

Very truly yours,

Paul V. Garin III

P. V. Garin III

Dear Customer: This Bulletin contains important environmental, health and toxicology information for your employees who recently ordered this product. Please make sure this information is given to them. If you resell this product, this Bulletin should be given to the Buyer. This Form may be reproduced without permission.

CMS 218223

Chevron U.S.A. Inc.

Material Information Bulletin

Chevron

(Approved – "Essentially Similar" to Form OSHA 20, Material Safety Data Sheet)

CHEVRON Thinner 325 (Form / Size ...) **CMS 218223**

DANGER! **HARMFUL OR FATAL IF SWALLOWED**
COMBUSTIBLE
KEEP OUT OF REACH OF CHILDREN

TYPICAL COMPOSITION

Paraffins (incl. naphthenes)	99%
Aromatics	
C_8+	1%
Benzene	< 0.1%

EXPOSURE STANDARD

The suggested Threshold Limit Value is 150 ppm (parts of vapor per million parts of air) for a daily 8-hour exposure.

PHYSIOLOGICAL & HEALTH DATA

EMERGENCY & FIRST AID PROCEDURES

Eyes

Expected to cause no more than minor eye irritation. Application of a similar product into the eyes of rabbits produced slight membrane irritation.

Wash eyes with fresh water for at least 15 minutes. If irritation continues, see a doctor.

Skin

Not a primary skin irritant but may cause skin irritation on prolonged or frequently repeated contact. Application onto the skin of rabbits produced moderate erythema and edema. See Additional Health Data.

Wash thoroughly with soap and water following skin contact. Launder contaminated clothing.

Inhalation

Expected to have slight acute toxicity by inhalation. The inhalation LC_{50} (rat) of a similar product for a one-hour exposure was greater than 13.3 mg/liter. Breathing the vapors at concentrations above the exposure standard can cause central nervous system depressioin. See Additional Health Data.

If there are signs or symptoms, as described in this bulletin, due to breathing this material, move the person to fresh air. If breathing has stopped, apply artificial respiration. Call a doctor immediately.

Ingestion

Not expected to be acutely toxic by ingestion. The acute oral LD_{50} (rat) for a similar product was greater than 15.3 g/kg. **Note to Physician:** Ingestion of this product or subsequent vomiting can result in aspiration of light hydrocarbon liquid which can cause pneumonitis.

If swallowed, DO NOT make person vomit. Call a doctor immediately.

ADDITIONAL HEALTH DATA

See Page 3.

SPECIAL PROTECTIVE INFORMATION

Eye Protection: Avoid contact with eyes. Eye contact can be avoided by wearing chemical safety goggles.

Skin Protection: Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing impervious protective clothing including rubber gloves.

Respiratory Protection: Wear approved respiratory protection such as an organic vapor cartridge respirator or an air-supplying respirator unless ventilation equipment is adequate to keep airborne concentrations below the exposure standard.

Ventilation: Use adequate ventilation to keep the airborne concentrations of this material below the exposure standard.

FIRE PROTECTION

Liquid evaporates and forms vapors (fumes) which can catch fire and burn with explosive violence. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches. Fire hazard is greater as liquid temperature rises above 85°F.

Flash Point: (TCC) 101°F, (TOC) 111°F
Autoignition Temp.: 500°F
Flammability Limits: 1.0-6.0%

Extinguishing Media: CO_2, Dry Chemical, Foam, Water Spray.

Special Fire Fighting Procedures: For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment. This may include self-contained breathing apparatus to protect against the hazardous effects of normal products of combustion or oxygen deficiency. Read the entire bulletin.

SPECIAL PRECAUTIONS

See Page 3.

ENVIRONMENTAL PROTECTION

Environmental Impact: Certain geographical areas have air pollution restrictions concerning the use of materials in work situations which may release volatile components to the atmosphere. Air pollution regulations should be studied to determine if this material is regulated in the area where it is to be used.
Precautions if Material is Released or Spilled: Eliminate all open flames in vicinity of spill or released vapor. Clean up spills as soon as possible, observing precautions in Special Protective Information and on product label. Absorb large spills with absorbent clay, diatomaceous earth, or other suitable material. A fire or vapor hazard may exist since these cleanup materials will only absorb liquid; they will not absorb vapor.
Waste Disposal Methods: Place contaminated materials in disposable containers and bury in an approved dumping area.

REACTIVITY DATA

Stability (Thermal, Light, etc.): Stable.

Incompatibility (Materials to Avoid): May react with strong oxidizing materials.

Hazardous Decomposition Products: Normal combustion forms carbon dioxide and water vapor; incomplete combustion can produce carbon monoxide.

Hazardous Polymerization: Will not occur.

PHYSICAL PROPERTIES

Solubility: Miscible with hydrocarbons; insoluble in water.

Appearance (Color, Odor, etc.): Colorless liquid.

Boiling Point: 310-370°F
Melting Point: n/a
Specific Gravity: 0.78 @ 60/60°F
Vapor Pressure: 5 mm Hg @ 77°F
Vapor Density (Air = 1): 4.8
Percent Volatile (Volume %): 99+%
Evaporation (Bu Ac = 1): 0.22
Molecular Weight: 138 (Avg.)
Viscosity: 0.96 cSt @ 100°F

n/a = Not Applicable

The above information is based on data of which we are aware and is believed to be correct as of the date hereof. Since the information contained herein may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon the condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

CRR-6745(B)(10M-9-79) Printed in U.S.A.

Material Information Bulletin

CHEVRON Thinner 325 **CMS 218223**

ADDITIONAL HEALTH DATA

Not expected to be acutely toxic by skin contact; the acute dermal LD_{50} (rabbit) for a similar product was greater than 19.1 g/kg. Signs and symptoms of central nervous system depression may include one or more of the following: headache, dizziness, loss of appetite, weakness and loss of coordination. Affected persons usually experience complete recovery when removed from the exposure area.

SPECIAL PRECAUTIONS

READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL.

Contains Petroleum Naphtha.
DO NOT USE OR STORE near flame, sparks, or hot surfaces. USE ONLY IN WELL VENTILATED AREA.
DO NOT weld, heat or drill container.
Keep containter closed. Replace cap or bung.
Emptied container still contains hazardous or explosive vapor or liquid.

CAUTION! Do not use pressure to empty drum or explosion may result.

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved
OMB No. 44-R1387

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME CAL PAC CHEMICAL CO., INC.	EMERGENCY TELEPHONE NO. Cal Pac (213) 585-2178 Chemtrec (800) 424-9300
ADDRESS (Number, Street, City, State, and ZIP Code) 6231 Maywood Ave., Huntington Park, CA 90255	
CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS SUPERSTEAM
CHEMICAL FAMILY	FORMULA POWDER MIXTURE

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES		%	TLV (Units)
SODIUM HYDROXIDE	Greater Than	10	

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H_2O=1)	
VAPOR PRESSURE (mm Hg.)		PERCENT, VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER	prox. 3#/gal max		
APPEARANCE AND ODOR	Skin color - Slight irritating odor		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
EXTINGUISHING MEDIA			
SPECIAL FIRE FIGHTING PROCEDURES	NO FIRE OR EXPLOSION HAZARD		
UNUSUAL FIRE AND EXPLOSION HAZARDS			

(Continued on reverse side)

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: Not available

EFFECTS OF OVEREXPOSURE
Severe chemical burn of skin, eyes, respiratory tract, mucous membranes.

EMERGENCY AND FIRST AID PROCEDURES
SKIN: Flush with water, Neutralize with vinegar

EYES: Flush with water 15 minutes, Get medical attention.

INTERNAL: Give large amounts of vinegar, citrus juice or water. DO NOT CAUSE VOMITING. Get immediate medical help.

SECTION VI - REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY (Materials to avoid)

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Sweep or soak up in abosrobent material.

WASTE DISPOSAL METHOD
May be flushed into sewer system after neutralization to pH 7-8.
Non-neutralized material must be treated as hazardous waste, and must be disposed of in accordance with Title 49-CFR, & local regs.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type): OHSA-Approved particle respirator

VENTILATION	LOCAL EXHAUST		SPECIAL
	MECHANICAL (General)	X	OTHER

PROTECTIVE GLOVES	Yes	EYE PROTECTION	Yes

OTHER PROTECTIVE EQUIPMENT: Clothing, Face mask, boots.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in cool dry area. Keep container closed when not in use.

OTHER PRECAUTIONS
Acids & low pH materials render material useless.

GPO 934-190

Form OSHA-20
Rev. May 72

4-26

Perfection Machine & Tool, Inc.

General Machining, Tool & Die Work
Tucson Aviation Center

P.O. Box 11216
Tucson, Az. 85734
889-7775

REGION IX

TO: U.S. ENVIRONMENTAL PROT. AGENCY

MAY 6 1982

SIRS:
ANSWERS TO CERT. LETTER REF ACCT T-3-1

#1. DESCP. OF OPERATIONS:
GENERAL MACH. AND TOOL AND DIE SHOP.

#2. DESCP. OF USAGE OF TRI-TYPE SOLVENTS.
NO PAST OR PRESENT USAGE OF TRI-TYPE SOLVENTS:

#3. INVENTORY OF WASTE.
NO INV. ON HAND OF CHLORINATED WASTES, WE JUST USE OILS AND GREASES FOR MACNINES.

#4. INVENTORY OF WASTE DISPOSED.
NO INV. AS OF DEC. 1 1981 WHEN WE STARTED BUSINESS.

#5. OFF SITE DISPOSAL.
NO OFF SITE DISPOSAL USED,PAST OR PRESENT. JUST LOCAL TRASH BIN FOR STEEL SHAVINGS.

#6. WELLS:
NO WELLS ON OUR PREMISES.

#7. ANALYSES:
NO WASTES=NO ANALYSES.

8 INFO. ON AREA.
NO INFO. ON HAND OR I SUGGEST YOU CONTACT THE OWNERS OF BLDG. AT TUCSON AVIATION CENTER,RENTAL OFFICES.

#9. TIME IN BUSINESS:
5MONTHS,2MAN SHOP OPENED DEC.1-1981

SIGNED.
Robert W. Assenmacher
ROBERT W. ASSENMACHER
GEN' MGR.

Samsonite Corporation

Corporate Offices
11200 East Forty-Fifth Avenue
Denver, Colorado 80239
Phone (303) 373-6025
Telex [illegible]

Irving J. Schwayder
President

Samsonite

September 14, 1982

David S. Mowday
Acting Director
Toxic & Waste Management Division
United States Environmental
Protection Agency - Region IX
215 Fremont Street
San Francisco, California 94105

Re: T-3-1

Dear Mr. Mowday:

This is in response to your July 29, 1982, letter requesting information regarding our facility at 6855 Old Nogales Highway, Tucson, Arizona 85706.

1. The Samsonite facility in Tucson is a luggage plant which is involved in the manufacture of softside luggage made primarily from vinyl, wood, paper, polypropylene and/or cloth. These materials are purchased by us in "final process" form, which means that we do not employ any additional chemical processes at our facility to alter the composition of the materials.

   The materials are made into configurations of luggage parts through various automated or manual manufacturing processes such as die cutting, shear type cutting, high frequency forming and splitting. After processing, the parts are shipped to Mexico for assembly into completed softside luggage units.

   Samsonite Corporation has leased its Tucson facility from the Tucson Airport Authority since May 1, 1971. During this time, Samsonite has not stored, treated or disposed of any hazardous wastes at its Tucson facility.

2. On September 5, 1973, Samsonite purchased 2 drums (55 gallons) of acetone for use as an adhesive cleaner at its Tucson facility. The acetone was used to clean adhesive from equipment at the plant. All of the acetone was used in the mid-1970's and air evaporation was employed as the

vehicle for solvent dissipation.

3. No hazardous wastes have been generated by the Samsonite Tucson facility.

4. No hazardous wastes have been disposed of at or near this facility.

   No waste disposal practices of former occupants is known by Samsonite personnel in the Tucson facility.

5. Disposal of offal materials consisting of luggage grade vinyls, polypropylene sheeting, chip paper board and paper products, wood, cotton, rayon and nylon cloths were transported from the Samsonite Tucson facility via the following companies and/or services:

   1971 - Arizona Transport Sanitation, 1224 North Main Avenue, Tucson, Arizona 85705
   1972 - Environment Control, 6300 North Campbell, Tucson, Arizona 85718
   1973 - Environment Control, 2777 North Campbell, Tucson, Arizona 85719
   1974 - Environment Control, 2777 North Campbell, Tucson, Arizona 85719
   1975 - Environment Control, 1211 East Big Rock Road, Tucson, Arizona 85718
   1975 - City Refuse Collection Services, P. O. Box 27567, Tucson, Arizona 85726
   1976 - New Pueblo Development, P. O. Box 27566, Tucson, Arizona 85726
   1977 - New Pueblo Development, P. O. Box 27566, Tucson, Arizona 85726
   1978 - New Pueblo Development, P. O. Box 27566, Tucson, Arizona 85726
   1979 - Arizona Reliable Co., P. O. Box 12681, Tucson, Arizona 85733
   1980 - Arizona Reliable Co., P. O. Box 12681, Tucson, Arizona 85733
   1981 - Arizona Reliable Co., P. O. Box 12681, Tucson, Arizona 85733
   1982 - City of Tucson Sanitation Division, P. O. Box 27210, Tucson, Arizona 85726

   Current (1982) offal/refuse unit is a 30 cubic yard capacity

compactor scheduled for a twice weekly pick-up supplied by the City of Tucson Sanitation Division.

From 1979 through 1981, the offal/refuse containers were four - eight (8) cubic yard dumpsters serviced a minimum of twice weekly by the Arizona Reliable Company.

From the time period prior to 1979, three (3), two (2), and one (1) dumpsters was employed with the increase in offal/ refuse dumpster requirements geared to increasing production.

The location(s) of the off-site disposal area(s) are not known by Samsonite personnel.

No on-site disposal of refuse has been performed by Samsonite Corporation during its occupancy of the Tucson facilities.

6. No monitoring or use of wells, supply wells, or injection wells is being or has been done by Samsonite Corporation at the Tucson facility.

7. Not applicable (Ref. 6, above).

8. No information is available on actions by person(s) or business(es) in the Tucson International Airport vicinity.

9. Samsonite Corporation has occupied the Tucson location from May 1, 1971, to date.

   We believe that the building was previously rented by Philco-Ford; but we have no further information about the nature of their business or of any prior lessees.

   No information is available as to past waste disposal practices of former owners/lessees.

I hope this information is helpful. Please feel free to contact us if you have any further questions.

Very truly yours,

Irving J. Shwayder
President

4-26

RECEIVED
U.S. REGION IX
11 26 AM '82

TUCSON AVIATION CENTER

TUCSON INTERNATIONAL AIRPORT • P. O. BOX 7213 • TUCSON, ARIZONA 85725 • PH. (602) 889-4087

Mr. Jim Grove T-3-1
U.S. E.P.A.
215 Freemont
San Francisco, CA 94105

Dear Mr. Grove:

Following is a list of our tenants here at the airport, including address, name to contact, and phone number:

Aircrane P.O. Box 11757 Tucson, AZ 85734	J. Haertsch (602)883-3152
Air Tech 6422 S. Del Moral Blvd. Tucson, AZ	Dennis Luttrell (604)294-9759
Anthony Plumbing 2404 E. 36th St. Tucson, AZ	Anthony Scopellite (602)622-2956
ARDCO P.O. Box 27495 Tucson, AZ 85726	Ken White (602)889-9549
Austin Fabricators P.O. Box 11397 Tucson, AZ 85734	Jim Austin (602)294-3302
Bear Creek Mining 2502 N. Huachuca Dr. Tucson, AZ 85745	F. Blaine Greenhalgh (602)790-3612
Burr Brown P.O. Box 11400 Tucson, AZ 85734	Ed Hagen (602)623-6071
Durodyne P.O. Box 11740 Tucson, AZ 85734	Clyde Vallery (602)889-2889

Hamilton Aviation P.O. Box 11747 Tucson, AZ 85706	Gordon Hamilton (602)325-8040 2943481
Hughes Aircraft P.O. Box 11337 Tucson, AZ 85734	(602)746-6000
Industrial Tool & Die P.O. Box 11458	Guy Theriault (602)294-1433
Mathews Classics 12851 E. Speedway R.R.8 Tucson, AZ 85710	Bob Mathews (602)294-3048
Metals Refining P.O. Box 382 Beatty, Nev. 89003	Ed Whipple (602)745-5709
Perfection Machine P.O. Box 11216	(602)889-7775
Ralphs Transfer & Storage P.O. Box 5046 Tucson, AZ 85703	Fred Stang (602)294-1463
Samsonite P.O. Box 11520 Tucson, AZ 85734	(602)745-5709
Tucson Container P.O. Box 11561 Tucson, AZ 85734	Richard DelaCerda (602)881-5525

Sincerely,

A.L. Brunen

ALB/tlb

TURCO PRODUCTS

5101 Clark Avenue
Lakewood, California 90712

June 1, 1984

Mr. Harry Seraydarian
Director
Toxics and Waste Management Division
United States Environmental Protection Agency
Region IX
215 Fremont Street
San Francisco, CA 94105

Dear Mr. Seraydarian:

In response to your inquiry received on May 4, we offer the following information to further your investigation and cooperate in every manner possible.

1. We have no listing of what products were sold by Turco to Grand Central Aircraft. We believe that a product, Turco 3095, may have been used in the Tucson, Arizona area in the early 1950's to remove the "cocoons" from older military aircraft. Assuming this is true, it is logical to assume that the following products would also be sold to Grand Central Aircraft during this time period in addition to Turco 3095: Turco Transpo, Turco W.O. #1, Turco 3002, Turco 2177, Turco Prepaint, Turco Aktiv and Turco Steam Aero.

2. Attached are the chemical compositions of the products mentioned in item number 1. Please see attachment that we assert a business confidentiality claim as set forth in 40 C.F.R. §2.203. We have no records of volumes of each product sold or the shipping dates to Grand Central Aircraft, or the means by which they were shipped. The data you have requested is over thirty years old and there are no records available.

   It is most probable that the largest quantities any of these products would have been sold in was 55 gallon drums.

3. Turco is a blender of different chemicals. The nature of its business was and generally still is to provide a customer with a product that conforms to the customer's specification. We make no warranty as to the results of use of the product. This obviously results in many special formulas. It is estimated that Turco produced products with well over three hundred different formulas during the early 1950's. We cannot find or give you the products and formulas you request other than those attached hereto.

In order to try and be responsive to your inquiry, the attached list of the principal products made by Turco during the time period requested is offered. It is felt these twenty chemicals comprised 80% of Turco's total sales volume.

Please see attached sheet that we assert a business confidentiality claim as set forth in 40 C.F.R. § 2.203.

May it be stated that we have no records of Turco ever disposing of any hazardous waste in the Tucson area. Turco would have only sold finished products to Grand Central Aircraft, f.o.b. Turco's Los Angeles, California plant. Turco did no manufacturing in Arizona.

If I can be of further assistance, please feel free to contact me at (213) 634-3300.

Regards,

Jeffrey M. Smith

Jeffrey M. Smith

JMS:as

Attachments

DENNIS N. WARNER
Warner Propeller and Governor Company
P.O. Box 11278
Tucson, Arizona 85734

April 20, 1982

United States Environmental
Protection Agency
Region IX
215 Fremont Street
San Francisco, California 94105

RE: T-3-1

Gentlemen:

This letter is in response to your letter of March 15, 1982 and keyed to the paragraph numbering in your letter.

1. The purpose and operations of the company are to overhaul and repair propellers and propeller governors. Some hazardous material is stored in 55 gallon drums on the premises pending regeneration for reuse. No disposal operations for any waste material have taken place or are presently being undertaken or planned.

2. Trichloroethylene (TCE), (type unknown), has been used in the past during the period 1974 to 1979. No use of this material has been made since 1979. The TCE was used in a vapor degreaser which, by means of a distillation process, regenerated reusable TCE leaving only small quantities of solid materials consisting primarily of greases and oil. The reusable TCE was then recycled in the vapor degreaser.

Chromic acid has been used since 1969 to date for anodizing aircraft propeller blades and hub assemblies by electrolysis. The chromic acid solution consists of approximately 100 gallons of water with a 10% chromic acid by weight mixture. The chromic acid solution is also used on rare occasion for hard chroming of aircraft metal parts and is stored in a 15 gallon tank.

3. Approximately 300 gallons total of TCE has been used in the process described in Paragraph 2 above from 1974 to 1979. Of this amount approximately 150 gallons of distilled TCE still remains for reuse as a result of the distillation regeneration. Approximately 150 gallons of TCE has been lost through evaporation during use of the equipment (the vapor degreaser). The 150 reusable gallons of distilled TCE is stored on the premises in three 55 gallon drums for future use in a vapor degreaser.

Approximately 100-140 lbs. of chromium residue has been accumulated over the thirteen years in use. Some residue is collected approximately every six years due to evaporation of the 100 gallons of solution. It is estimated that approximately 50 to 70 lbs. of residue remain after evaporation of the solution over the six year period. The residue is maintained on the premises in a 55 gallon drum pending collection of a sufficient amount to make it economically feasible for reclamation. No disposal has taken place or is anticipated.

4. As stated above, no disposal of waste is or has been made by this company. In addition, the occupations or disposal practices of past occupants at my location are unknown. The Tucson Airport Authority, the lessor of the property, may have knowledge of the occupations and practices of previous tenants.

5. No waste has been disposed of on or off - site.

6. No wells are located on the property.

7. Not applicable.

8. I have no information regarding the possible use and or disposal practices of other persons or businesses in the vicinity of Tucson International Airport with respect to chlorinated solvents.

9. My company has been at the present location since 1969. As stated in Paragraph 4 above, I have no information regarding former occupants at this location with respect to uses or hazardous waste practices and suggest that the Tucson Airport Authority as lessor may have knowledge of past tenancies.

Note: Some use has been made since 1979 of a proprietary brand name product supplied by a local chemical company, Tucson Manufacturing Company, 1850 W. Grant Road, Tucson, Arizona, for

use as a cold dip carbon remover. The product is water sealed an some evaporation of the water seal takes place over a period of time and is replaced. Approximately 150 gallons of the product and water seal is being maintained in a 150 gallon tank. The chemical composition of the product, being a proprietary brand name, is unknown to me and may or may not contain any materials of interest. However, no disposal of any of the material has occurred since installation of the equipment in approximately 197

Very truly yours,

Dennis N. Warner

Dennis N. Warner

DNW/pd

7-29

WEST-CAP ARIZONA

FOUNDED 1961

SUBSIDIARY OF SAN FERNANDO ELECTRIC MANUFACTURING CO., 1501 FIRST STREET, SAN FERNANDO, CALIFORNIA 91341

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

August 31, 1982

Mr. David S. Mowday
Acting Director-Toxics & Waste Management Div.
United States Environmental Protection Agency
Region IX
215 Fremont Street
San Francisco, CA., 94105

RE: T-3-1

Dear Mr. Mowday;

This is in reply to your certified letter dated 7/29/82, receipted 8/5/82. The following are answers to your request for information pursuant to RCRA and CERCLA.

1. Description of the purpose and operations of your company, including a detailed description of any hazardous waste storage, treatment, or disposal operations at your facility.

   The manufacture of small film capacitor and magnetics. The hazardous waste material is Chlorothene V.G.1.11, Trichloroethylene. The material is stored in 55 gallon drums and picked up and disposed of by Van Waters & Rogers. The material is not disposed of at our facility.

2. A detailed description of all past and present usage of chlorinated solvents and chromium containing materials at your facility, including, but not limited to, 1,1 Dichloroethylene, 1,1,2 Trichloroethylene, and 1.1.1 Trichloroethane.

   Dichloroethylene has never been used at our facility. Trichloroethylene had been used on a basis of about 37 fifty-five gallon drums annually for the past two years. We ceased using TCE several months ago.

3. A complete inventory of all wastes that have been generated by your facility, including, but not limited to, chlorinated solvents. Include dates, types of wastes or chemical composition, and quantities.

   We have not disposed of TCE ourselves for about two (2) years. At this time, two years ago, we started storing it in 55 gal. containers and having it disposed of by a commercial disposal company.

4. A complete inventory of all wastes disposed of at or near your facility, including, but not limited to, chlorinated solvents. Include dates, types of wastes or chemical composition, quantities, and disposal practices of past occupants of your present location.

   None, not on or near our property.

5. If disposal of waste has been conducted off-site, name of transporter(s) and locations of off-site disposal.

   The transporter is Van Waters & Rogers, division of Univer, 50 S. 45th Avenue, Phoenix, AZ.

   The material was disposed of at Southwest Solvents, Chandler, AZ.

6. Locations and detailed descriptions of all monitoring wells, supply wells, and injection wells at your facility.

   None; no wells at our facility.

7. All analyses from sampling of monitoring and supply wells at your facility.

   None; no wells at our facility.

8. Any information regarding the use and disposal of chlorinated solvents by any person or business in the vicinity of Tucson International Airport.

   We have no information about the use of chlorinated solvents by any other person or company in the vicinity of Tucson International Airport.

9. Length of time your company has been at the present location and any information regarding former occupants of your present location and their hazardous waste practices.

   We have been located at this facility for 19 years. There have been no other occupants.