Report

Limited Groundwater Assessment Former Laredo Air Force Base Laredo, Texas

Prepared for

U.S. Army Corps of Engineers, Tulsa District

Contract No.

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CH2MHILL
Tulsa, Oklahoma

Executive Summary

This Limited Groundwater Assessment (LGA) Report presents the findings of the site investigation completed at the Former Laredo Air Force Base Construction Landfill (CLF), located near the Laredo International Airport in Laredo, Texas. The purpose of the LGA was to establish the presence or absence of contaminants in the groundwater as a result of past landfilling activities at the CLF. Site activities included drilling soil borings, installing groundwater monitor wells, collecting and analyzing groundwater samples from each of the monitor wells, and excavating test pits to determine the southern extent of the landfill.

A total of eight soil borings (borings SB1 through SB8) were drilled at the CLF site. Four of the soil borings (SB2, SB3, SB7, and SB8) were completed as groundwater monitor wells (MW1, MW2, MW4, and MW5, respectively). Monitor well MW3 was installed in boring SB4 but was later removed and the boring was abandoned because the well did not produce groundwater.

Groundwater samples were collected from each of the four completed monitor wells. The groundwater samples were submitted for analysis for volatile organic compounds (VOCs) by EPA Method 8260B, semivolatile organic compounds (SVOCs) by EPA Method 8270C, polychlorinated biphenyls (PCBs) by EPA Method 8082, and total and dissolved RCRA metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) by EPA Methods 6010B and 7470, as appropriate.

A total of 28 test pits were excavated to delineate the southern extent of the CLF. The test pits were excavated with a backhoe to a maximum depth of 6 feet or until debris was encountered, whichever came first. Materials excavated from the test pits included native soils, disturbed native soils, non-native soils, and concrete, asphalt, and metal debris. The materials encountered were very dry. No groundwater was encountered in any of the test pits.

Contents

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Acronyms

amsl	above mean sea level
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
CLF	Construction Landfill
DOT	Department of Transportation
EM	electromagnetic
EPA	Environmental Protection Agency
FUDS	Formerly Used Defense Site
GW-Ind	Groundwater medium-specific concentration for industrial use
IDW	Investigation-Derived Waste
LAFB	Laredo Air Force Base
LGA	Limited Groundwater Assessment
MCL	maximum contaminant level
MSC	media specific concentrations
MW	monitoring well
NAD	North American Datum
NGVD	National Geodetic Vertical Datum
OD	outside diameter
PCB	polychlorinated biphenyl
PVC	polyvinyl chloride
QA	quality assurance
RCRA	Resource Conservation and Recovery Act of 1976
RRS2	Risk Reduction Standard No. 2
QC	quality control
SB	soil boring
SVOC	semi-volatile organic compound
TNRCC	Texas Natural Resources Conservation Commission
TOC	top of casing
USACE	U.S. Army Corps of Engineers
USCS	Unified Soil Classification System
USDA	U. S. Department of Agriculture
VOC	volatile organic compound
WES	Waterways Experiment Station

Section 1
Introduction

1. Introduction

This Limited Groundwater Assessment (LGA) Report presents the findings of field activities associated with a LGA of the Construction Landfill (CLF) site at the former Laredo Air Force Base (LAFB). The LGA was performed to address the concerns of the Texas Natural Resource Conservation Commission (TNRCC) that the previously performed geophysical and soil gas surveys (being field screening techniques) did not adequately demonstrate the absence of contaminants at the CLF. The purpose of the LGA, therefore, was to establish the presence or absence of contaminants in the groundwater as a result of the historical landfill activities. The field activities were performed between October 18, 1999, and October 23, 1999, and included drilling several soil borings, installing four groundwater monitor wells, collecting and analyzing groundwater samples from the monitor wells, and excavating several test pits to identify the southern extent of the landfill area. The investigation was conducted by the US Army Corps of Engineers (USACE). CH2M HILL provided support for the field activities.

Section 2
Site Background

2. Site Background

2.1 General Background

2.1.1 Site Location

The site under investigation is located in Laredo, Texas, along the Texas/Mexico border, approximately 150 miles south-southwest of the City of San Antonio (Figure 2-1). The CLF site is located along the northwest boundary of the Laredo International Airport, near the runway terminus.

The CLF site is presently vacant, covered with brush and soil. Construction for an industrial facility is under way at the southwestern portion of the site. The site slopes generally toward the northwest and has a steep slope along the northern and western edges of the landfill area. Some concrete and steel debris is visible on the ground surface. The site is generally bounded by Daugherty Road on the west and north and by a north-south gravel road on the east. The southern extent of the site is designated primarily by the absence of concrete and other debris. A Site Map is presented as Figure 2-2.

The CLF site and surrounding area is zoned M1, "Light Manufacturing District." Development in the immediate vicinity of the CLF site is industrial.

2.1.2 Laredo Air Force Base General History

On May 7, 1942, the U.S. Government acquired 2,085 acres for the construction of Laredo Army Air Corps Base (now known as former Laredo Air Force Base). The Government constructed runways and numerous facilities from 1942 to 1974. The Base was initially deactivated on June 17, 1947; however, it was reactivated during the Korean conflict. The former Base was again deactivated on March 29, 1974. Approximately 309 acres were either deeded or sold to other federal, state, and county agencies, or to private firms. The remainder of the Base was deeded to the City of Laredo. The City of Laredo now operates the former LAFB airfield as Laredo International Airport.

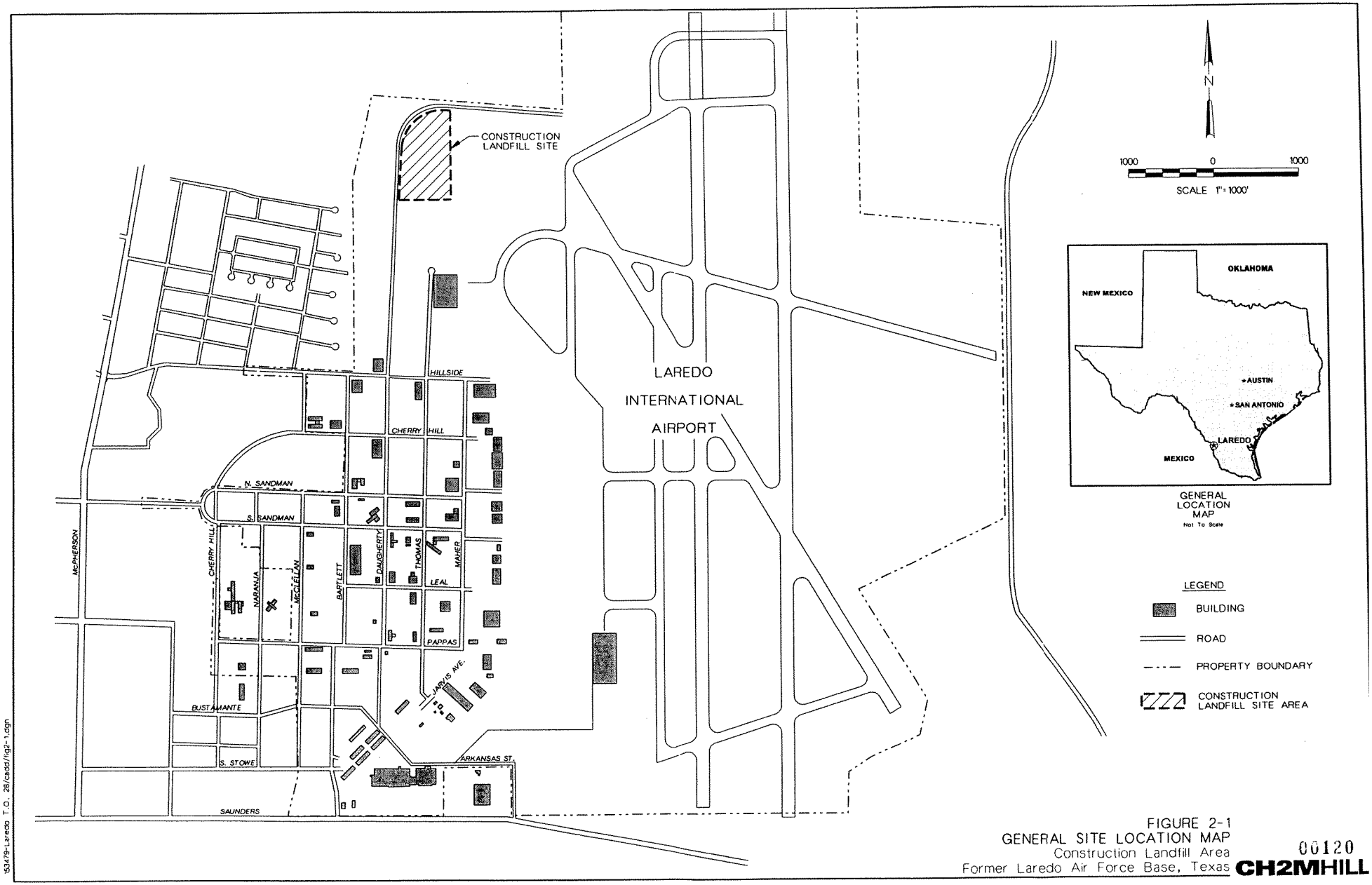

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FIGURE 2-1
GENERAL SITE LOCATION MAP
Construction Landfill Area
Former Laredo Air Force Base, Texas

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FIGURE 2-2
SITE MAP
Construction Landfill Area
Former Laredo Air Force Base, Texas

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2.2 Previous Site Investigations

2.2.1 Historical Aerial Photography Review

Aerial photographs dating from 1934 to 1990 were reviewed by USACE to identify historical and operational changes over time at various sites associated with the former LAFB, including the CLF (USACE, 1997). The CLF site was first identified as an area of disturbed ground in the 1956 aerial photograph. In the 1964 photograph, various piles of objects or materials were identified along the eastern, western, and northern edges of the feature, and two dirt roads leading from the perimeter road to the western and southern sides of the feature were visible. In the 1970 photograph, the feature appeared as disturbed ground with greater relief, possibly indicating that the area had been covered with earthen material. In later photographs, the visual appearance of the CLF site did not appear to change relative to the 1970 photograph.

2.2.2 Electromagnetic (EM) Survey

In September 1996, the USACE Waterways Experimental Station (WES) performed a geophysical survey of the CLF site (USACE, 1997). A total field magnetics survey and two different types of electromagnetic induction techniques were used to determine the limits of the CLF and to predict the types of material buried within it. A copy of the report is included as Appendix A.

According to the results of the geophysical survey, the CLF is an arcuate-shaped zone oriented from south to north, curving toward the east at the northern end. The CLF is bounded on the western and northern sides by a steep slope with construction debris exposed on the incline. Metal pieces that are visible on the CLFs surface are primarily steel reinforcing bars in broken concrete. The survey was not able to definitively determine the southern extent of the CLF.

The interpretation of geophysical responses indicates that subsurface materials at the site consist primarily of construction debris. These responses also identified large pieces of non-ferrous metal, which may represent aircraft parts, office furniture, and/or kitchen equipment, within the boundaries of the landfill. The concentration of metal material in the

subsurface appears to increase from south to north, suggesting different sources of material in the fill.

2.2.3 Soil Gas Survey

In October 1996, a soil gas survey was performed over the CLF area by Target Environmental Services, Inc. (Target) under contract to USACE. A total of 299 soil gas samples, each taken at a depth of approximately 4 feet below ground surface (bgs), were collected from the area delineated by the September 1996 geophysical survey. The samples were submitted to Target's off-site laboratory for analysis of benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8020 Modified and for chlorinated hydrocarbons (1,1-dichloroethene, methylene chloride, trans-1,2-dichloroethene, cis-1,2-dichloroethene, 1,1-dichloroethane, chloroform, 1,1,1-thrichloroethane, carbon tetrachloride, trichloroethene, tetrachloroethene, and 1,1,2-thrichloroethane) by EPA Method 8010 Modified.

None of the soil gas samples contained petroleum hydrocarbon or chlorinated hydrocarbon concentrations above their respective detection limits. A copy of the Soil Gas Survey report is included as Appendix B.

2.2.4 TNRCC Comment On Previous Investigations

In a letter to the Corps of Engineers dated April 21, 1998, the TNRCC stated that whereas EM and soil gas surveys are considered to be field screening techniques, the previously-performed EM and soil gas surveys did not adequately demonstrate the absence of contaminants at the CLF. The TNRCC therefore recommended that a LGA be performed. In response to the TNRCC comment, USACE proposed sampling and analysis of the groundwater in the immediate vicinity of the site.

2.3 Site Characteristics

2.3.1 Physiography

The former LAFB area is located within Webb County, Texas. Webb County is situated within the Arid Plains physiographic province. The countryside around Laredo is characterized by small hills, covered with low-growing brushy vegetation and numerous arroyos and dry creek beds gently sloping toward the Rio Grande River, which lies

approximately 2.5 miles west of the former LAFB (Parker, 1996; Raba-Kistner, 1996). The surface elevation of Webb County ranges from 372 feet above mean seal level (amsl) at the Rio Grande River up to 945 feet amsl. The elevation in the vicinity of the former LAFB is approximately 460 to 490 feet amsl.

2.3.2 Soils

The soils within the former LAFB area are characterized by the US Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) as belonging to the Catarina-Montell-Jimenez soil association: cracking, crumbly clay soils overlying a stiff caliche soil (Parker, 1996). The soils at CLF area have been further classified as Copita fine sandy loam, 0-3 percent slopes and as Nido-Rock Outcrop complex, hilly (USDA, date unknown).

The Copita soil was identified by the NRCS on the northern part of the CLF area. The Copita fine sandy loam is a moderately deep, nearly level to gently sloping soil, found on summits and side slopes of low hills and on broad, convex plains. The soil typically consists of a surface layer of brown fine sandy loam about 9 inches thick, below which is a subsoil of yellowish brown sandy clay loam and light yellowish brown sandy clay loam that extends to a depth of about 37 inches. Underlying the soil is weakly to strongly cemented, pale yellow sandstone. The soil is calcareous and moderately alkaline throughout. The soil is well drained, with a medium surface runoff. Permeability of the Copita series fine sandy loam is considered moderate with a range of 0.6 inches per hour (in./hr) to 2.0 in./hr.

The Nido-Rock Outcrop complex was identified by the NRCS at the southern portion of the CLF area. This complex consists of a combination of Nido soils and sandstone rock outcrops that are so intricately mixed that separate mapping of the units was impractical. Nido soils are found on the summits and side slopes of hills and ridges. Typically, Nido soils have a surface layer of yellowish brown, calcareous, moderately alkaline fine sandy loam about 7 inches thick. This is underlain by brownish yellow, weakly cemented sandstone to a depth of about 60 inches. The soil is well drained, with rapid surface runoff and moderate permeability.

2.3.3 Geology

The surface geology of Webb County is mostly Tertiary in age, with a narrow band of Quaternary-age alluvium along the Rio Grande flood plain. Webb County falls within the Rio Grande Embayment. The sedimentary rocks throughout Laredo are part of the Tertiary (Eocene)-age Claiborne formation, which is composed of sandstone, sand mudstone, and shale.

2.3.4 Meteorology

Webb County receives a limited amount of rainfall per year, with an average annual precipitation of 20 to 22 inches (TNRCC, 1993). The average minimum temperature in January is 47°F, and the average maximum temperature in July is 99°F.

2.3.5 Surface Water

In the Laredo area, surface water runoff is directed toward the Rio Grande River, which lies approximately 2.5 miles west of the former LAFB area. The Rio Grande River is impounded in the International Amistad Reservoir (approximately 160 miles upstream of Laredo), and its flow is controlled by dam releases. The majority of the region's drinking water and irrigation water is obtained from the river.

Stormwater runoff from the CLF area will flow generally toward the north, where it will be intercepted by drainage ditches and carried toward an intermittent stream that lies north of the CLF area. The only other major surface water resource in the area is Casa Blanca Lake located approximately one mile east of the Laredo International Airport. Casa Blanca Lake was created by the impoundment of San Ygnacio Creek. Other creeks in the region are intermittent, draining into the Rio Grande.

2.3.6 Groundwater Hydrogeology

During the present investigation, shallow groundwater was encountered within site soils at depths ranging from approximately 12 to 22 feet bgs. The more productive water bearing zone appears to be located below a hard sandstone layer. The depth to groundwater and the groundwater flow gradient at the CLF area are discussed more fully in Section 4.4.

Groundwater quality parameters were analyzed for samples collected from a depth of 8 to 9 feet bgs at a site approximately 1-1/4 mile south of the CLF. The groundwater pH ranged

from 7.5 to 8, and had an average total dissolved solid concentration of 3,000 milligrams per liter (mg/L). Potable water for the CLF area is obtained through the City of Laredo public water supply system and is collected entirely from the Rio Grande River (Raba-Kistner, 1996).

Section 3
Field Investigation Activities

3. Field Investigation Activities

The field investigation activities associated with the LGA were performed during October 1999. The field activities included drilling soil borings and installing groundwater monitor wells, sampling and analyzing groundwater samples, and excavating test pits. The purpose of the test pits was to identify the southern extent of the construction landfill materials, thereby directing the placement of the monitor wells installed on the southern side of the CLF. The field activities were performed by the USACE. CH2M HILL provided observation services.

3.1 Soil Boring Drilling

Eight soil borings, identified as SB1 through SB8 were drilled at the CLF site. The purpose of the soil borings was to allow the installation of at least three groundwater monitor wells. The locations of the soil borings are illustrated in Figure 3-1.

The soil borings were drilled utilizing a Mobile Drill B59 drilling rig equipped with 6-inch and 8-inch outside diameter (OD) solid-flight augers. Borings SB1 through SB6 were drilled using the 8-inch augers directly. Borings SB7 and SB8 were first drilled using the 6-inch augers, then were enlarged by re-drilling with the 8-inch augers. The 6-inch augers were utilized to more easily drill through the sandstone encountered at the southern end of the CLF area. The 8-inch augers were used to bring the borings into compliance with regulatory standards for monitor well installation.

Soil cuttings generated during drilling were continuously logged by a USACE representative according to the Unified Soil Classification System (USCS). Soil cuttings from drilling activities were placed into DOT approved 55-gallon steel drums and retained onsite pending waste characterization and disposal.

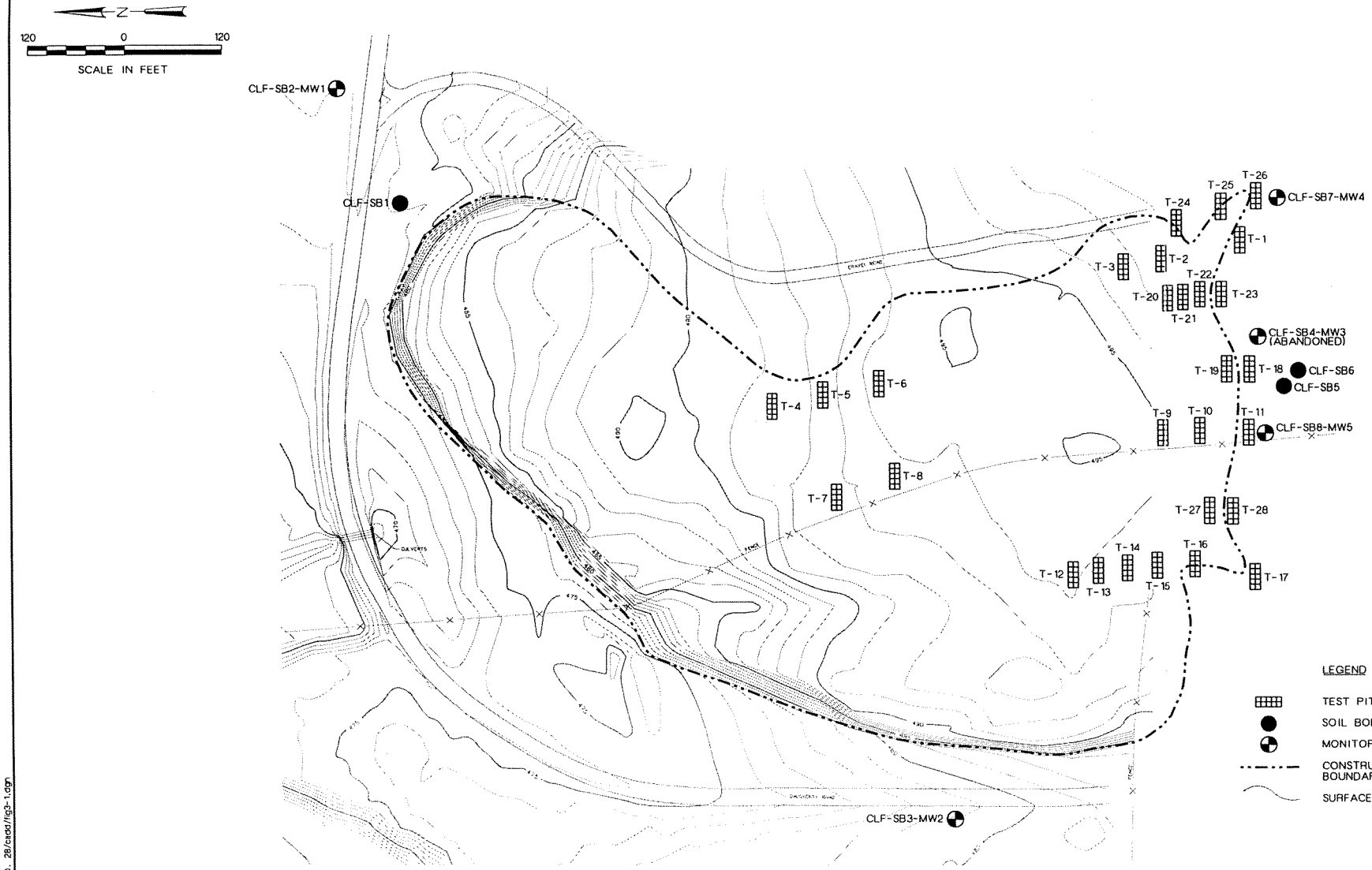

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FIGURE 3-1
SOIL BORING, MONITORING WELL, AND TEST PIT LOCATION MAP
Construction Landfill Area
Former Laredo Air Force Base, Texas

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Activities at each of the soil boring locations are presented below:

- Boring SB1 was drilled near the northeastern corner of the CLF area to a total depth of 10.5 feet, where auger refusal was encountered. No indication of groundwater was observed, and the boring was abandoned.
- Boring SB2 was drilled approximately 50 feet north and slightly east of SB1 to a total depth of 19.0 feet. Groundwater was encountered at approximately 17 feet bgs while drilling. Monitor well MW1 was installed in boring SB2.
- Boring SB3 was drilled near the southwestern corner of the CLF area, outside the fenced boundary of the airport property, on the west side of Daugherty Road. SB3 was drilled to a total depth of 30.5 feet. Groundwater was encountered at approximately 26.5 feet bgs during drilling. Monitor well MW2 was installed in SB3.
- Boring SB4 was drilled just south of the southern extent of the landfill (as determined by the test pit results) approximately 250 feet west of a dirt road that lies along the western side of the CLF area. SB4 was drilled to a total depth of approximately 20.5 feet. Slightly moist soil was encountered at approximately 20.5 feet bgs, so monitor well MW3 was installed into SB4. Monitor well MW3 was subsequently abandoned because the well failed to produce groundwater.
- Boring SB5 was drilled south of the southern extent of the landfill and approximately 75 feet east of the airport boundary fence. The boring was drilled to a depth of approximately 12.9 feet below ground surface, where auger refusal was encountered. No groundwater was encountered and the boring was subsequently abandoned.
- Boring SB6, was drilled approximately 50 feet south of SB-5. Auger refusal was encountered at a depth of approximately 2.0 feet bgs, where hard sandstone was encountered. The boring was subsequently abandoned.
- Boring SB7 was drilled approximately 100 feet south of survey marker LA-5 and 50 feet west of the dirt road along the eastern side of the landfill. The boring was drilled to a total depth of approximately 30.5 feet bgs. Groundwater was encountered at approximately 22.6 feet bgs during drilling. Monitor well MW4 was installed into SB7.

- Boring SB8 was drilled adjacent to the southern extent of the landfill, just inside the airport's boundary fence. The boring was drilled to a total depth of approximately 31.6 feet. Groundwater was encountered at approximately 30.5 feet bgs during drilling. Monitor well MW5 was installed into SB8.

Upon completion of each soil boring that was not completed as a permanent monitor well, the boring was backfilled using a cement/bentonite grout mixture. The soil boring logs are presented in Appendix C.

3.2 Monitoring Well Installation

Five groundwater monitor wells, MW1, MW2, MW3, MW4, and MW5, were installed in borings SB2, SB3, SB4, SB7, and SB8, respectively. Monitor well MW3 was abandoned because it did not produce groundwater.

All of the monitor wells were constructed using new, factory-threaded, 4-inch-diameter, Schedule 40 polyvinyl chloride (PVC) casing and screen. The well screen was factory slotted with 0.010-inch slots. A 5-foot screen was installed in MW-1. Ten-foot screens were utilized in the other four wells. The well screens were installed such that the groundwater surface would be within the screened interval. A one-half-foot-long sump was placed below the screen in MW1.

For each well, a sand-filter pack consisting of graded silica sand (#20-#40 sieve size) was placed in the borehole annulus from the total depth of the boring to a level of about 2 feet above the well screen. Bentonite pellets were then placed on top of the sand to a level at least 2 feet above the top of the sand filter pack. Potable water was then used to hydrate the bentonite pellets. After allowing the pellets to hydrate, the remainder of the borehole annulus up to the ground surface was filled with a cement/bentonite grout mixture.

Monitor well MW3 was found to be unsuitable for permanent completion as a monitor well and was therefore abandoned. Prior to the placement of the bentonite seal and the cement/bentonite grout, the well casing was pulled from the ground and the auger drilling rig was used to remove the sand filter pack from the borehole. The borehole was then backfilled up to the ground surface with a cement/bentonite grout mixture.

The remaining wells were equipped with above-ground completions. The well casings extend approximately 2.5 to 3 feet above ground. A 6-inch-square steel protective casing with a lockable steel cover was placed over the well casings for protection. A 4-foot-square by 6-inch-thick concrete pad was then constructed around the surface casing. Steel bumper posts (bollards) were installed at each corner of the well pad to further protect the pad and well casing. Well construction details are summarized in Table 3-1. Monitoring well completion diagrams are presented in Appendix D.

3.3 Monitor Well Development

The completed monitor wells were developed by USACE. A minimum of 48 hours was allowed following completion of each well before each well was developed.

Prior to development, the water level within each well and the total depth of the well was measured using a water level probe capable of measuring to within 0.01 foot. Development began by using a bailer to withdraw as much sediment from the well as possible. Development continued using a submersible pump.

During development, the turbidity of the produced groundwater was visually monitored. Development continued until the water ran clear. Approximately two well-volumes each were produced from wells MW1 and MW2 during development (5 and 10 gallons, respectively). Approximately nine well volumes (about 45 gallons) were produced from MW4. Approximately ten well volumes (about 50 gallons) were produced from MW5.

3.4 Groundwater Sampling

After a minimum of 24 hours following development, the monitor wells were sampled using low-flow sampling procedures, as required by the TNRCC, to ensure the collection of low turbidity samples. The wells were purged and sampled utilizing QED model T1200 bladder pumps. The temperature, pH, conductivity, turbidity, and dissolved oxygen levels of the purged water were monitored to ensure the collection of representative samples of the groundwater. Copies of the monitor well purging and sampling forms are presented in Appendix E. The temperature, pH, conductivity, turbidity, and dissolved oxygen and other purging information is summarized in Table 3-2.

TABLE 3-1
Monitor Well Construction Details
Construction Landfill Limited Groundwater Assessment, Former Laredo AFB, Laredo, Texas

	CLF MW1	CLF MW2	CLF MW3	CLF MW4	CLF-MW5
Elevation TOC (ft, amsl)	477.02	480.84	na	502.74	499.14
Total depth of well, below TOC (ft)	21.90	33.41	na	33.26	32.69
Total depth of boring, bgs (ft)	19.0	30.5	20.5	30.5	31.6
Screen length (ft)	5.0	10.0	na	10.0	10.0
Length of sump (ft)	0.5	None	na	none	none
Screened interval, bgs (ft)	13.5 to 18.5	20.0 to 30.0	na	19.5 – 29.5	19.5 – 29.5
Sand pack, bgs (ft)	11.5 to 19.0	18.0 to 30.5	na	18.0 to 30.5	17.5 to 31.6
Bentonite seal, bgs (ft)	8.0 to 11.5	15.5 to 18.0	na	15.0 to 18.0	15.5 to 17.5
Cement seal, bgs (ft)	8.0 to surface	15.5 to surface	20.5 to surface (abandoned)	15.0 to surface	15.5 to surface
Surface Pad	4 ft x 4 ft x 6 in	4 ft x 4 ft x 6 in	None	4 ft x 4 ft x 6 in	4 ft x 4 ft x 6 in
Wellhead Protection	Steel monument with locking cover	Steel monument with locking cover	None	Steel monument with locking cover	Steel monument with locking cover

amsl = above mean sea level
TOC = top of casing

TABLE 3-2
Monitor Well Sampling Purge Data
Construction Landfill Limited Groundwater Assessment, Former Laredo Air Force Base, Laredo, TX

Parameter	CLF-MW1	CLF-MW2	CLF-MW3	CLF-MW4
Date	10/23/99	10/23/99	10/23/99	10/23/99
Temperature (^{O}C)	22.64	22.63	22.21	22.77
PH (standard units)	7.11	7.11	7.25	6.93
Conductivity (ms/cm)	22.96	32.35	22.77	21.12
Turbidity (NTUs)	10	9	5	3
Dissolved Oxygen (mg/L)	6.23	5.61	5.23	2.11
Purge Rate (ml/min)	100	100	100	100
Total Purged Volume (ml)	1400	800	1100	800

Ms/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
ml = milliliter
ml/min = milliliter per minute

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Groundwater samples were collected from all four completed monitor wells—MW1, MW2, MW4, and MW5. The samples were collected directly into appropriate containers, properly labeled, then placed into an ice-cooled insulated chest pending shipment to the analytical laboratory. Samples intended for dissolved metals analysis were filtered prior to placement into the sample containers.

Upon completion of the well sampling activities, the samples were shipped under chain-of-custody documentation to Specialized Assays in Nashville, Tennessee, for analysis. The samples were analyzed for VOCs by EPA Method 8260B, semivolatile organic compounds (SVOCs) by EPA Method 8270C, PCBs by EPA Method 8082, and total and dissolved RCRA metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) by EPA Methods 6010B and 7470, as appropriate.

In addition to the regular field groundwater samples, one QA duplicate and one QC duplicate were prepared. The QA and QC duplicate samples were prepared by collecting the groundwater sample from monitor well MW4 in triplicate. Two portions of the triplicate sample collected from MW4 were submitted to the analytical laboratory as the regular field sample and the QC duplicate sample. The third portion of the triplicate sample was submitted to the QA laboratory (Environmental Testing and Consulting, Inc. in Memphis, Tennessee) as the QA duplicate sample. The QA and QC duplicate samples were analyzed for the same parameters as the regular field samples.

A trip blank sample was also submitted for analysis with the regular field samples. The trip blank sample was prepared prior to field activities and remained with the sample containers throughout the field activities and the shipment of the field samples to the analytical laboratory. The trip blank sample was analyzed for VOCs.

3.5 Test Pit Excavation

Approximately 28 test pits were excavated to determine the southern boundary of the CLF (which was not confirmed during the geophysical survey conducted in 1996) and direct the placement of the monitor wells on the southern side of the CLF. The test pits were excavated with a backhoe to a maximum depth of 6 feet or until debris was encountered, whichever came first. The test pits were about 2-feet wide and ranged from approximately 5 to 8 feet in

length and 4 to 6 feet in depth. Materials excavated from each test pits were placed back into the test pit at the completion of the excavation.

A visual survey of the southern end of the landfill was conducted prior to excavation of the test pits to determine whether there were visual indicators of the boundary. The first test pit location, T-1, was placed at the visually apparent southern extent of the landfill (approximately 170 feet south of survey marker LA-5 and 25 feet west of a dirt road that transverses the landfill from north to south). Additional test pits were excavated north, east, and west of T-1 to delineate the southern extent of the landfill. The test pit locations and the determined landfill boundary are shown on Figure 3-1.

3.6 Surveying

The four groundwater monitor wells installed at the CLF site, as well as the seven test pits (T-1, T-11, T-17, T-18, T-23, T-26, and T-28) that delineated the southern extent of the CLF, were surveyed for horizontal location (North American Datum, NAD 27) and vertical elevation (National Geodetic Vertical Datum, NGVD 29) by Howland Surveyors, a State of Texas registered land surveyor. Both ground elevation and top-of-casing elevation were surveyed for the monitor wells. Horizontal locations and ground surface elevations were surveyed to within one-tenth (0.1) of a foot. Well top-of-casing elevations were surveyed to within one-hundredth (0.01) of a foot (with the well cap removed). Survey data are presented in Appendix F.

3.7 Management of Investigation-Derived Waste

Investigation-derived wastes (IDW) generated during the LGA include soil cuttings, monitor well purge/development water, and decontamination fluids. All waste, except for general trash, was placed into 55-gallon steel drums. The drums were sequentially numbered and labeled with the date of generation, the type of material, the associated boring and or monitoring well number, the site name, and the generator name.

Composite samples were collected from the soil and liquid wastes. The samples were placed into appropriate sample containers, then properly labeled and placed into an ice-cooled insulated chest. The samples were shipped under chain-of-custody documentation via

overnight courier to EET Environmental Services of Manchaca, Texas, for waste characterization analysis.

The analytical results of the waste characterization samples indicated that the IDW generated during the LGA field activities was non-hazardous. Eleven 55-gallon drums of soil cuttings were disposed at the City of Laredo Landfill as non-hazardous waste. Four 55-gallon drums of well development/purge water and four 55-gallon drums of decontamination water were disposed at BFI/Sunset Farms Landfill, Austin, Texas, as non-hazardous waste. Waste disposal was arranged by EET. Waste manifests and waste characterization analytical data are provided in Appendix G.

Section 4
Investigation Results

4. Investigation Results

4.1 Site Soils

The soils encountered at the CLF site during drilling of the soil borings and excavation of the test pits typically consisted of light brown sandy silts, sandy silty clays, and clays. Streaks of caliche and caliche nodules were also encountered. Sandstone was encountered at depths ranging from 2- to approximately 30-ft bgs. A hard, dark, shale was encountered at 29.5-ft bgs in boring SB3. The soils were typically dry to moist. Depths to water encountered during drilling ranged from about 17-ft bgs to about 30-ft bgs.

4.2 Groundwater Analytical Results

A total of four groundwater samples (LAFBCLFMW-101, LAFBCLFMW-201, LAFBCLFMW-401, and LAFBCLFMW-501) were collected from the newly installed monitor wells (one sample per well, excluding QA/QC samples). The samples were analyzed for VOCs, SVOCs, PCBs, and total and dissolved RCRA metals. The results of the groundwater sample analyses are compared to the TNRCC Risk Reduction Standard No. 2 (RRS2) GW-Ind Media Specific Concentrations (MSCs) for each parameter. The TNRCC RRS2 GW-Ind MSCs are the concentrations of each particular compound or parameter that are allowed to be present in groundwater at industrial sites. The TNRCC RRS2 GW-Ind MSCs are generally numerically equivalent to the Federal Drinking Water Standards Maximum Concentration Limits (MCLs) and the Texas State Drinking Water Standards MCLs. It is noted that the groundwater at the CLF area is not utilized as a water supply. Water supply services are provided by the City of Laredo.

No detectable concentrations of SVOCs or PCBs were reported for the groundwater samples. Only one groundwater sample, from monitor well MW2, was reported to contain a detectable concentration of a VOC, acetone. Acetone was reported at a concentration of 0.104 mg/L, well below the TNRCC RRS2 GW-Ind MSC of 10 mg/L. It is noted that acetone is a common laboratory contaminant. Therefore, the detected concentration of acetone may not reflect actual environmental conditions.

For the metals analyses, no detectable concentrations of arsenic, mercury, or silver were reported for either the total or dissolved metals analyses. All of the detected metals concentrations are well below the respective TNRCC RRS2 GW-Ind MSCs.

Barium was detected in both the total and dissolved analyses for all four groundwater samples. Cadmium was reported only for the dissolved and total analyses for the sample from MW2 and the total analysis for the sample from MW4. Chromium was reported only for the dissolved analysis for the sample from MW4. Selenium was reported for the dissolved and total analyses for the sample from MW4 and for the total analyses for the samples from MW1 and MW5. Lead was reported only for the total analysis for the sample from MW4.

A summary of analytical parameters for which detectable concentrations were reported is provided in Table 4-1. The laboratory analytical data sheets and the Data Validation Report are included as Appendix H.

4.3 Data Validation

The data packages generated by the analytical laboratory were reviewed by a CH2M HILL project chemist using the processes outlined in guidance documents such as the Environmental Protection Agency (EPA) *National Functional Guidelines for Evaluating Inorganic Analyses* (July 1994) and *National Functional Guidelines for Organic Data Review* (July 1994). Engineering Manual 200-1-6 (EM 200-1-6) US Army Corps of Engineers *Chemical Quality Assurance for Hazardous, Toxic and Radioactive Waste (HTRW) Projects* (October 1997) was consulted as well.

The data validation concluded that the analytical data generated by this sampling event is complete and valid for its intended use. None of the data were rejected, and only 25 of the reported results were qualified as "estimated." The validation also concluded that the sample documentation, the sampling procedures, and laboratory analyses were performed in a proper manner. The data validation report, with the check sheets, is included with the laboratory data sheets in Appendix H.

TABLE 4-1
Summary of Groundwater Analytical Detections (mg/L)
CLF – Former Laredo Air Force Base, Laredo, Texas

	Sample ID:	LAFBCLFMW-101	LAFBCLFMW-201	LAFBCLFMW-401	LAFBCLFMW-501
	Monitor Well No.:	CLF-MW1	CLF-MW2	CLF-MW4	CLF-MW5
	Date Collected:	10/23/1999	10/23/1999	10/23/1999	10/23/1999
Parameter	**TNRCC RRS2 GW-Ind**				
Metals					
Barium, Dissolved	2.0	**0.026**	**0.027**	**0.037**	**0.02**
Barium, Total	2.0	**0.027**	**0.028**	**0.044**	**0.02**
Cadmium, Dissolved	0.005	<0.0002	**0.001**	<0.0002	<0.0002
Cadmium, Total	0.005	<0.0005	**0.001**	**0.002**	<0.0005
Chromium, Total	0.1	<0.0019	<0.00019	**0.042 J**	<0.0019
Selenium, Dissolved	0.05	<0.0047	<0.0047	**0.007**	**0.008**
Selenium, Total	0.05	**0.01**	<0.0024	**0.013**	**0.011**
Lead, Total	0.015	<0.0005	<0.0005	**0.006**	<0.0005
VOCs					
Acetone	10	<0.0049	**0.104**	<0.0049	<0.0049

Notes: J – Estimated value
mg/L = milligrams per liter

4.4 Groundwater Flow Direction and Gradient

Groundwater was encountered in site soils during drilling at depths ranging from about 17 ft bgs to about 30 ft bgs. Following installation and development of the site monitor wells, groundwater levels in the wells ranged from 12.6 feet to 22.6 ft bgs. The water level measurements taken from the new monitor wells on October 23, 1999, indicate that the groundwater flow gradient is directed generally toward the northwest with a magnitude of approximately 0.01 to 0.02 ft/ft. A groundwater potentiometric surface map is presented as Figure 4-1. Groundwater elevation data for each of the monitor wells are presented in Table 4-2.

4.5 Test Pit Observations

Materials excavated from the test pits included native soils, disturbed native soils, non-native soils, and concrete, asphalt, and metal debris. The materials encountered were very dry. No groundwater was encountered in any of the test pits.

Test pit T-1 was excavated to approximately 4.6 feet in depth and about 6.0 feet in length. Material removed from the trench appeared to be native, undisturbed soil.

Test pits T-2 and T-3 were excavated further to the north of T-1. Minor amounts of debris were observed near the surface of T-3. However, the lower limits of the pit indicated the soil to be undisturbed native soil.

Test pits T-4, T-5, and T-6 were excavated near what is assumed to be the approximate center of the landfill (starting with T-4 and progressing southward to T-6). Debris was found in all of these pits.

Test pits were then excavated along the fence line and progressed toward the south then toward the east. Debris was observed in test pits T-7 through T-10, T-12 through T-16, T-19 through T-22, and in test pits T-24, T-25, and T-27. Test pits T-12 through T-17, T-27, and T-28 are located west of the airport boundary fence.

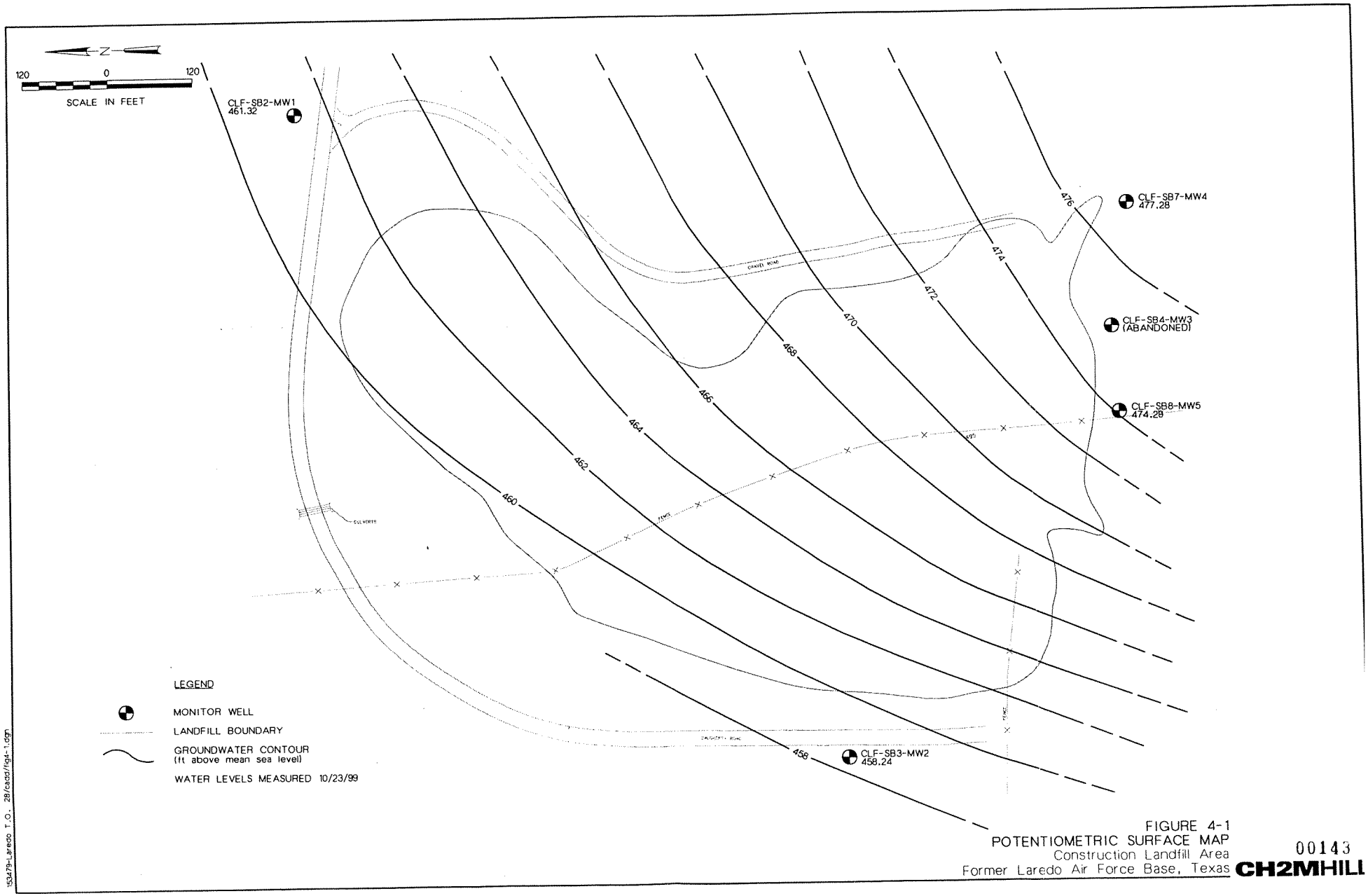

FIGURE 4-1
POTENTIOMETRIC SURFACE MAP
Construction Landfill Area
Former Laredo Air Force Base, Texas

00143

CH2MHILL

153479-Laredo T.O. 28/cadd/fig4-1.dgn

TABLE 4-2
Monitor Well Groundwater Elevation Data
Construction Landfill Limited Groundwater Assessment, Former Laredo Air Force Base, Laredo, TX

Monitor Well ID	Elevation TOC (ft, amsl)	Depth To Water, Below TOC 10/23/99 (ft)	Elevation of Groundwater (ft, amsl)
MW1	477.02	15.70	461.32
MW2	480.84	22.60	458.25
MW4	502.74	25.46	477.28
MW5	499.14	24.85	474.29

TOC = top of casing
ft = feet
amsl = above mean sea level

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The southern boundary of the landfill was determined to be just north of test pits T-17, T-28, T-11, T-18, T-23, T-1, and T-26 (Figure 3-1). Excavation logs for test pits T-1 through T-11 are presented together with the soil boring logs in Appendix C.

Section 5
Conclusions and Recommendations

5. Conclusions and Recommendations

The LGA yielded the following results:

- The southern boundary of the CLF was delineated from the test pits, being identified just north of test pits T-1, T-11, T-17, T-18, T-23, T-26, and T-28.
- No detectable concentrations of SVOCs or PCBs were reported for any of the groundwater samples. Only one VOC, acetone, was reported at a low concentration in a single groundwater sample (from MW2). Low concentrations of various RCRA metals constituents were detected for both the total metals analysis and the dissolved metals analysis. However, the detected contaminant concentrations are well below the applicable TNRCC RRS2 GW-Ind MSCs (generally numerically equivalent to State and/or Federal MCLs for drinking water).
- Groundwater level measurements indicate a generally northwesterly groundwater flow gradient at the CLF, with a magnitude of approximately 0.01 to 0.02 ft/ft.

These results indicate that there is no contamination present in the groundwater under the CLF site due to past landfilling activities.

Based on these findings, the fact that the groundwater in the vicinity of the CLF is not utilized as a water supply, the lack of indications of contamination shown by the soil gas survey performed previously at the CLF site, and the fact that only concrete, asphalt, and metal construction-type debris was encountered during excavation of the test pits, no further investigation of the CLF site is recommended.

Section 6
References

6. References

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USACE, Preliminary Investigation Report, Construction Landfill, Former Laredo Air Force Base (FUDS), Laredo, Texas, November 1997.

USACE, Scope of Work, Limited Groundwater Assessment, Former Laredo Air Force Base Construction Landfill, Contract No. DACA56-97-D-0010, Task Order 28, May 19, 1999.

Appendix A
Geophysical Survey Report

CONSTRUCTION LANDFILL
FORMER LAREDO AIR FORCE BASE (FUDS)
LAREDO, TEXAS

GEOPHYSICAL SURVEY REPORT

PREPARED BY

U.S. ARMY CORPS OF ENGINEERS
WATERWAYS EXPERIMENT STATION
Vicksburg, Mississippi

SEPTEMBER 1997

GEOPHYSICAL SURVEY REPORT
CONSTRUCTION LANDFILL
FORMER LAREDO AIR FORCE BASE (FUDS)
LAREDO, TEXAS

1.0 INTRODUCTION

The former Laredo Air Force Base at Laredo, TX is classified as a Formerly Used Defense Site (FUDS). Certain areas on the past air base were used for the discarding of material. These include sanitary landfill disposal and construction debris placement. Since most of the construction debris originated from broken runway pavement, it is not surprising that the disposal area for this material was at the end of an aircraft runway.

In September of 1996, the U.S. Army Corps of Engineers (USACE) Tulsa District tasked the USACE Waterways Experiment Station (WES) to conduct a series of geophysical investigations at the suspected construction debris landfill site at the former Laredo Air Force Base. This area is just north of the west ramp of the now Laredo International Airport. The methods applied at the site included total field magnetics and two different electromagnetic induction techniques. The investigations defined the limits of the construction debris fill. There is little geophysical indication that any sanitary landfill cells are present under the surveyed area. The geophysical responses are indicative that the subsurface material is chiefly construction debris with other materials such as aircraft parts and furniture included.

2.0 TOPOGRAPHIC SURVEY AND SITE

The area to be geophysically investigated was topographically surveyed by Huffman Surveyors of Muskogee, OK. A grided zone of wooden stakes was formed over the area at a 50 foot interval. Geophysical surveys were conducted over north-south traverses every 25 feet, with measurements taken every 5 feet for the induction methods and every few feet for the magnetic technique. The site consisted of level ground with construction fill (as evident from surface exposures) on the north and west side of the site. The west and north boundaries of the survey were also bounded by a steep topographical slope. Along this slope were numerous large metal discarded objects such as machinery, auto pieces, and other junk. These larger pieces of machinery and vehicles were expected to, and did produce numerous large geophysical anomalies close to the northern edge of the survey.

3.0 GEOPHYSICAL SURVEY METHODS

Three applicable geophysical methods were employed at the construction landfill site at the former Laredo Air Force Base. One of these included total field magnetics. For this investigation the magnetic survey was organized so as to indicate the presence in the subsurface of ferrous material (iron and steel). The method is based upon the following principle. The Earth's magnetic field induces a weaker secondary magnetic field in ferrous objects. This smaller but significant anomalous magnetic field can be detected in the local area around and over the buried ferrous material. Thus, the presence and location of buried ferrous material in the subsurface can be ascertained. The larger the concentration of ferrous objects, generally the greater the secondary magnetic field, if other factors (such as depth of burial) are held constant.

If these objects are scattered in the subsurface, then they will produce a disjointed series of isolated anomalous magnetic responses. If they are compacted into a long linear sanitary landfill, then a long linear magnetic anomaly generally will be established.

The electromagnetic (EM) induction methods included the use of a Geonics EM-31 and a Geonics EM-61. Although both operate on EM induction principles, each are quite different in approach, and consequently measure related subsurface properties by contrasting methods. Hence the results are often different, but the two methods verify and complement each other. The EM31 broadcasts a continuous oscillating sine wave in the 10's of Kilo Hertz. This EM wave penetrates 5 to 15 feet in the substrate or ground and interacts with the electrical properties of the subsurface fluids, soil, rock, and other debris material. Certain types of subsurface soils and conductors will generate secondary EM fields from the excitation of the broadcast primary EM field. The receiver on the EM31 collects both the primary and secondary broadcast fields. From this data the phase shift and amplitude of the received field is measured and processed. As a result the subsurface conductivity (in milli-Seimens / meter or mS/m) can be calculated. In addition the "In-Phase Response" (in parts per thousand or PPT) can be deduced. This measurement is an indication of the broad concentration of subsurface metal.

The last induction method employed was the Geonics EM-61. This is a time domain induction method whereby a steady state field is broadcast from a transmitter coil. The even part of the EM field establishes (temporarily) steady secondary EM fields around and in conductors in the subsurface. The primary field is quickly switched off and the collapse of the secondary field

around the metallic objects in the subsurface can be measured. This is done using two receiving coils separated vertically by approximately two feet, i.e. one over the other. By numerically processing the responses of the two coils, metallic subsurface conductors can be identified as "shallow" or "deep".

4.0 GEOPHYSICAL SURVEY RESULTS

4.1 EM31 Electromagnetic Induction. The results of the subsurface electrical conductivity as performed with the EM31 are spatially shown and contoured in Figure 1, "EM31 Electrical Conductivity". The area lying within the defined zone north of N10900 and south of N11500, and east of E11250 and west of E11600 is referred to as the Undisturbed Zone (UZ). Centered at N10950-E11430 is an approximately 200 by 200 foot area which displays a conductivity of 125 to 155 mS/m or 25 to 50 mS/m higher than the immediately surrounding area. The underlying material at this location is most likely more clayey than the adjacent material. The remainder of the surveyed area is termed the Filled Area (FA). The UZ is characterized by subsurface electrical conductivities from 75 to over 150 mS/m. These ranges of conductivities are associated with clayey or silty sands. The FA area displays electrical conductivities from 55 to 30 mS/m. The exception to this is the area along the north to south traverse defined by E11060. This is the response from a three strand, four foot high, barbed wire fence. The low electrical conductivities in the FA are not representative of typical sanitary or industrial landfills which often have electrical conductivities of 250 to 500 mS/m. These observed low conductivities are representative of nonconductive debris such as concrete and asphalt. Two small electromagnetic

anomalies are located at N11330-E11050 and N11360-E11170 which have conductivities below 35 mS/m. These areas are most likely underlain by large metal objects which affect the conductivity response in a reverse manner due to instrument to object orientations. At the northern end of the FA and centered at about N11700-E11350 is a zone which displays a 10 to 15 mS/m greater response than the surrounding fill. This slightly greater conductivity response is most likely the result of the increased amounts of metal objects in the subsurface in this area (see below).

The results of the EM31 subsurface "In Phase Response" (Figure 2) is representative of a measure of the collected quadrature response of the sinusoidal broadcasted field. The effect is calculated in Parts Per Thousand (PPT) of the primary field. Larger numerical values generally represent greater concentrations of metal in the subsurface. The surveyed area displays responses of the In-Phase component in numerical values, typically 1 to 15 PPT. These are not significant responses and relate to relatively low concentrations of metal in the subsurface (for a landfill). As with the conductivity chart, two small anomalies are located at N11330-E11050 and N11360-E11170 which have very low responses in PPT. Again this is related to metal subsurface object to sensor geometric configurations. At the northern end of the FA and centered at about N11700-E11350 is an area which displays numerous "In Phase" responses which are indicative of numerous smaller sized metal objects buried near or tipped over the northern edge of the construction landfill. The metallic response of the north-south, 3 strand barbed wire fence is also clearly evident along the traverse E11060.

4.2 **EM61 Electromagnetic Induction**. The EM61 electromagnetic induction is normally contoured in two responses, Channel 1 in milli-Volts/ Volt and Channel 2 in the same units of measure. These two different channels represent data from two different antennas, Channel 1 which is close to the ground and Channel 2 which originates from an antenna about 2 feet above the previous one. The sensing coil for channel 1 is closer to the ground and hence receives responses from larger, deeper buried metal objects and small, near surface metal objects. The antenna for channel number 2 is higher above the ground and senses a weaker response from larger deeper buried metal objects and a MUCH weaker response from the smaller buried objects closer to the surface. As a result, it is possible to discriminate from shallow, small metal pieces and larger metal debris which is at a deeper depth.

The channel 1 results are displayed in Figure 3 titled "EM61 Channel 1 Response". These contoured anomalies form an arc which well defines the limits and area of the construction landfill. Most of the metal pieces that were visible on the surface were from rebar in broken concrete. The density of the closed contours or anomalies increases to the northern end of the construction landfill or FA. This is verified by the increased quantity of metal debris visible at the surface at the location.

The channel 2 results (Figure 4) from the EM61 response display a spatial response similar in area to the channel 1 data. An arcuate band of closed contoured anomalies exists in the FA. The density of these anomalies remains generally constant over the FA suggesting a similar subsurface concentration of fill material with metal constituents. The northern area exhibits

a greater number and intensity of responses indicating, as did the EM31 data, a greater concentration of metallic debris in the subsurface of this area. Centered at approximately E11100-N11300 is a very large EM61 response of approximately 300 mS/m which is indicative of a large metal object in the subsurface, perhaps of 55 gallon barrel or office file cabinet size. As discussed below, this object is probably of nonferrous metal. This area is offset sufficiently from a conductivity anomaly in the same area (detected using the EM31) to be a different subsurface object. This indicates that not all subsurface metal objects are found with both or either the EM61 or EM31 induction systems due to shape, size, orientation, burial, etc. This also verifies the need to use what appear to be redundant systems, but in effect are instruments which can be sensitive to different target parameters.

Figure 5 titled "EM61 Channel 1 - Channel 2" represents data which has been processed using both channels of data in a manner so as to suppress the near surface responses. The information that this figure contains is largely the result of deeper (a few feet to about 10 feet) and larger sized metal objects. With this chart the FA on the construction landfill is clearly defined as an arcuate area extending from the south to the north of the surveyed area. Generally this type of processing best defines sanitary landfill trenches, if they are present. No indication of these type of features are present in this data. The two north-south orientated closed contoured "strips" on the far east side of the figure represent artifacts in the numerical processing of this method and are not manifestations of any subsurface feature.

4.3 Magnetic Survey. The final figure of the geophysical data is Figure 6 titled "Residual Total Magnetic Field". This method maps the ferrous metal in the subsurface. The results are similar to the EM31 In-phase and the EM61 results to the point that a nearly identical arcuate area in the FA is defined which is representative of the fill zone of the construction landfill. Interestingly, only a weak magnetic response is achieved from the EM61 anomaly at E11100-N11300. This most likely means that the source of the electromagnetic response is nonferrous metal, such as stainless steel (e.g. kitchen hardware) or aluminum (e.g. a piece of aircraft). Larger subsurface concentrations of ferrous metal are evident in the northern portion of the FA as was identified with the other geophysical methods. The different concentrations of metal may be indicative of grossly different types of construction fill in the northern vs. southern portions of the construction landfill. No organized disposal areas are evident from the residual total field magnetic investigation, which is identical to the results found using the induction techniques.

5.0 CONCLUSION

The construction landfill site at the Former Laredo Air Force Base was geophysically investigated using three different methodologies. All produced and located different anomalous features in the subsurface. All data, especially the EM31 conductivity investigation, supported the concept that the fill material was construction debris and not sanitary landfill. It was clear on all geophysical investigations that the construction landfill forms an arcuate shaped zone which is bounded on the west and northern side by a steep slope with construction debris exposed on the incline. The concentration of metal material in the subsurface appears to increase from the south to the north in the filled area, suggesting different sources of material in the fill.

The presence of a large non-ferrous piece of metal in the fill suggests that office equipment, airplane parts, and/or functional items such as furniture or kitchen equipment may have also been placed in the fill.

ELEVATION DATUM BASED ON N.G.V.D. 1929 DATUM.

CONSTRUCTION LANDFILL
FORMER LAREDO AIR FORCE BASE (FEDS)
LAREDO, TEXAS

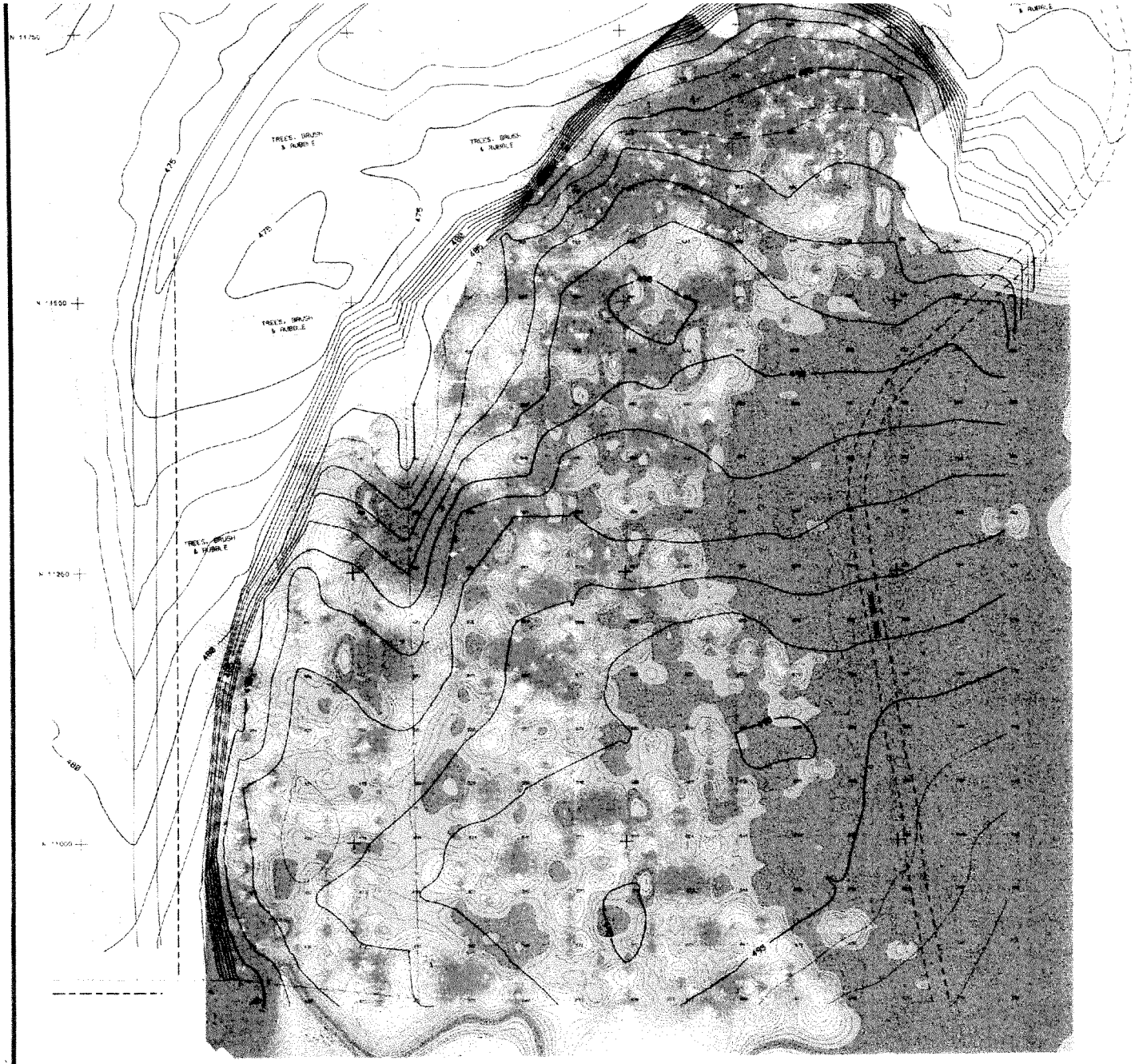
EM31 ELECTRICAL CONDUCTIVITY

00161

ELEVATION DATUM BASED ON
N.G.V.D. 1929 DATUM.

CONSTRUCTION LANDFILL
FORMER LAREDO AIR FORCE BASE (FUDS)
LAREDO, TEXAS

EM31 IN PHASE RESPONSE



ELEVATION DATUM BASED ON N.G.V.D. 1929 DATUM.

CONSTRUCTION LANDFILL
FORMER LAREDO AIR FORCE BASE (FJOS)
LAREDO, TEXAS

EM61 CHANNEL 1 RESPONSE

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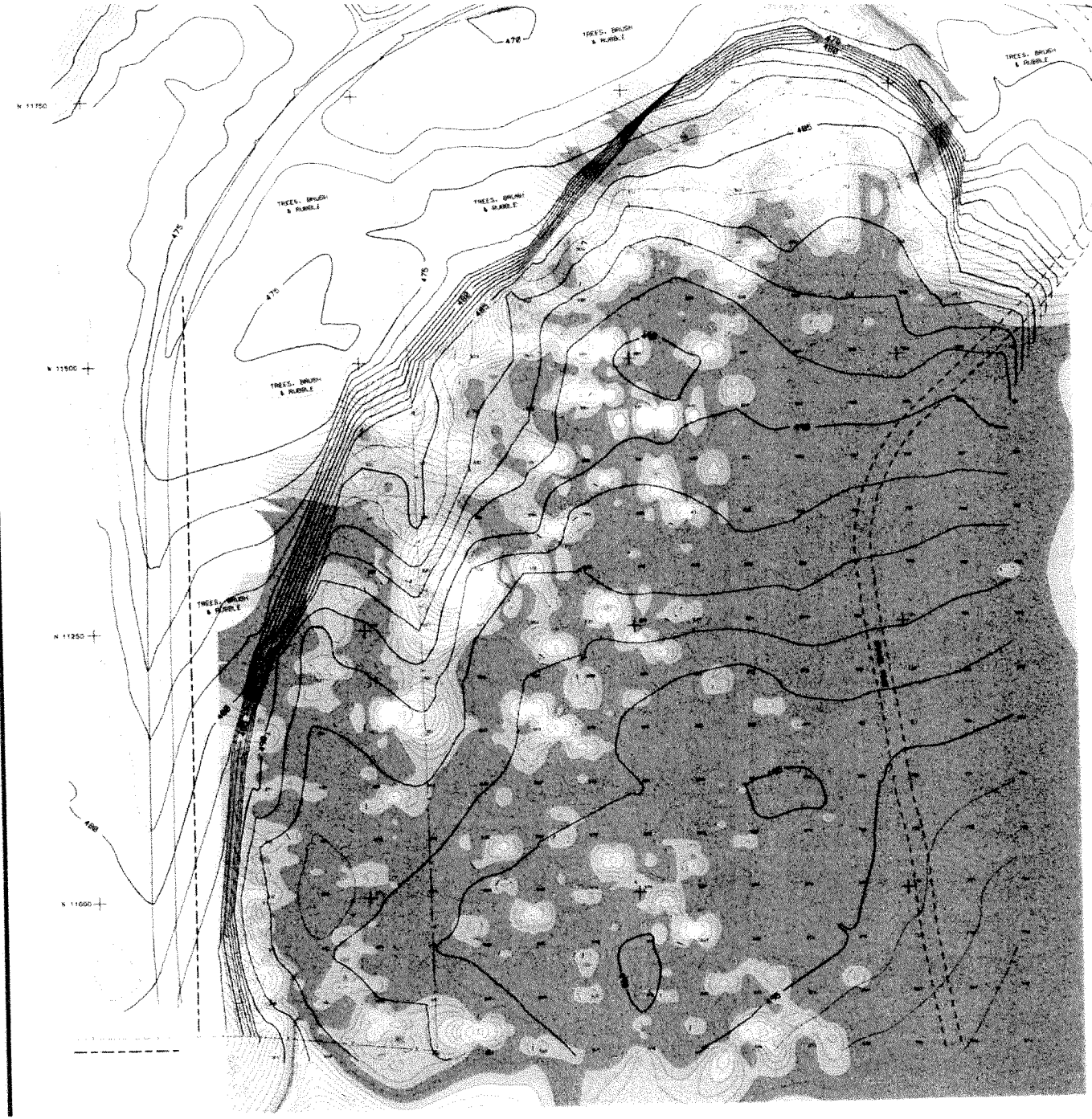
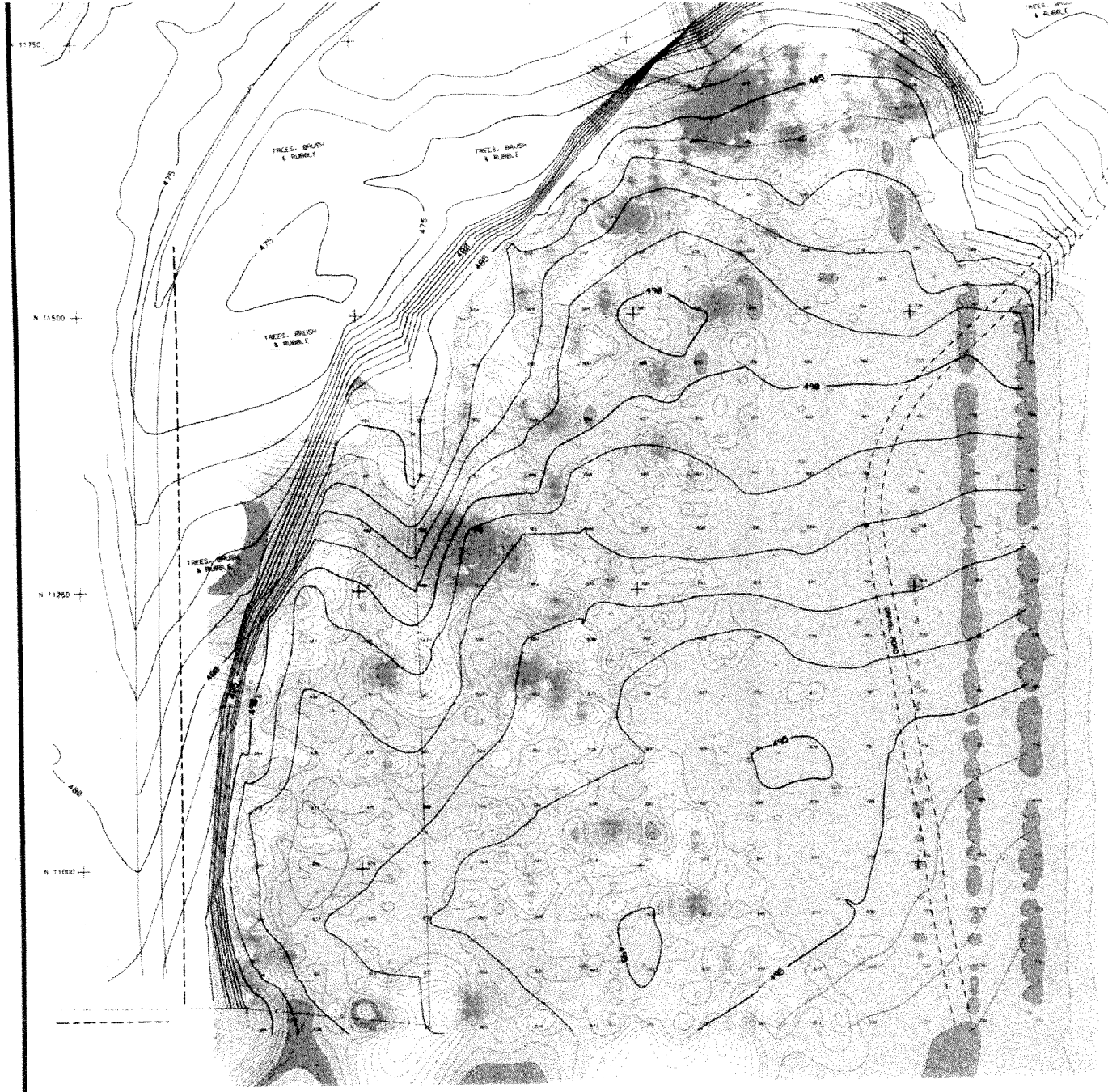


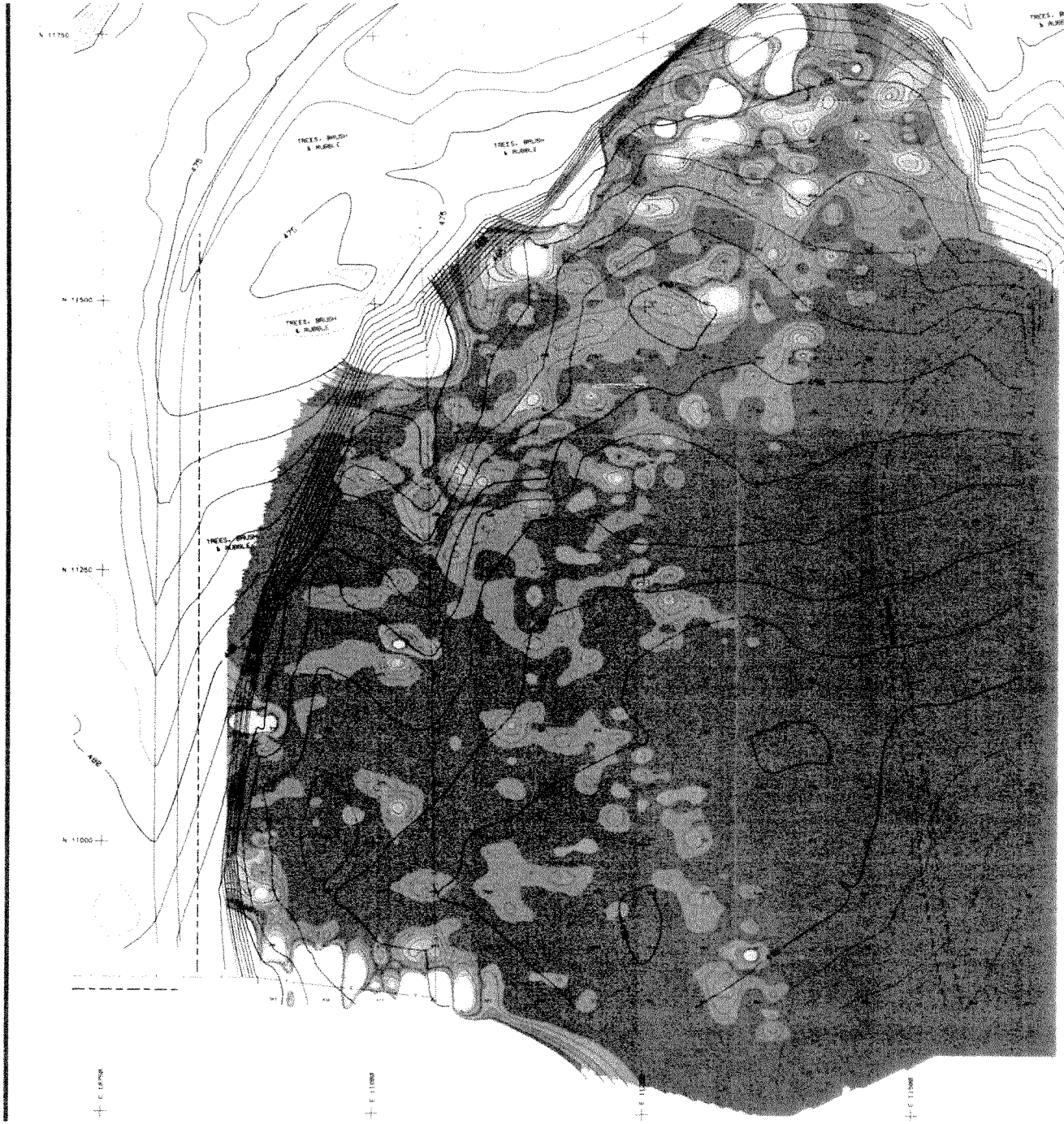
ELEVATION DATUM BASED ON N.G.V.D. 1929 DATUM.

CONSTRUCTION LANDFILL
FORMER LAREDO AIR FORCE BASE (FUDS)
LAREDO, TEXAS



ELEVATION DATUM BASED ON N.G.V.D. 1929 DATUM.

CONSTRUCTION LANDFILL
FORMER LAREDO AIR FORCE BASE (FLDS)
LAREDO, TEXAS



ELEVATION DATUM BASED ON N.G.V.D. 1929 DATUM.

CONSTRUCTION LANDFILL
FORMER LAREDO AIR FORCE BASE (FUDS)
LAREDO, TEXAS

RESIDUAL TOTAL MAGNETIC FIELD

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Appendix B
Soil Gas Survey Report

SOIL GAS SURVEY

FORMER LAREDO AFB
CONSTRUCTION LANDFILL
Laredo, TX

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NOVEMBER 1996

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EXECUTIVE SUMMARY

From October 17 to October 24, 1996, **TARGET Environmental Services, Inc. (TARGET)** conducted a soil gas survey at the Former Laredo Air Force Base, Laredo, Texas. This site is located at the Laredo Municipal Airport. A total of 299 soil gas samples were collected from a depth of 4 feet. The samples were analyzed off-site on a gas chromatograph equipped with a flame ionization detector (GC/FID) for petroleum hydrocarbons and an electron capture detector (ECD) for chlorinated compounds typically contained in industrial solvents. The objective of the survey was to help determine if any hazardous volatile constituents are present in the subsurface.

None of the analytes chosen for this project were found above the detection limit. No evidence of contamination from volatiles was found.

Introduction

The **TULSA DISTRICT CORPS OF ENGINEERS** (The **COE**) contracted **TARGET Environmental Services, Inc. (TARGET)** to perform a soil gas survey at Former Laredo Air Force Base, Laredo, Texas. This site is located at the Laredo Municipal Airport. The objective of the survey was to help determine if any hazardous volatile constituents are present in the subsurface. The planned scope of work included 713 soil gas sample locations on 50 foot spacing, and 10 soil sampling locations. The **COE** elected to complete the soil sampling through other techniques, and the actual number of soil gas samples required to test the areas in question (as determined by The **COE**) was 299.

Sample Collection and Analysis

Soil gas samples were collected at a total of 299 locations at the site, as shown in Figure 1. Soil gas samples were collected from a depth of 4 feet at each location and submitted to **TARGET**'s laboratory in Columbia, MD for analysis. A detailed explanation of the sampling procedure is provided in Appendix A.

All of the samples collected during the field phase of the survey were subjected to dual analyses. One analysis was conducted according to EPA Method 8010 (modified) on a gas chromatograph equipped with an electron capture detector (ECD), and using direct injection. Specific analytes standardized for this analysis were:

1,1-dichloroethene (11DCE)
methylene chloride (CH_2Cl_2)
trans-1,2-dichloroethene (t12DCE)
1,1-dichloroethane (11DCA)
cis-1,2-dichloroethene (c12DCE)

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the samples during collection.

Laboratory QA/QC Samples

To document analytical repeatability, a duplicate analysis was performed on every tenth field sample. Laboratory blanks of nitrogen gas were also analyzed after every tenth field sample. The results of these analyses are reported in Tables 1 and 2. The duplicate analyses were within acceptable limits. Concentrations of all analytes were below the reporting limit in all laboratory blanks.

Results

None of the analytes chosen for this project were found above the detection limit. No evidence of contamination from volatiles was found.

Conclusions

- No evidence of contamination from volatiles was found in any of the soil gas samples.

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TABLE 1

ANALYTE CONCENTRATIONS IN SOIL GAS VIA EPA METHOD 8020M

SAMPLE NUMBER	DATE ANALYZED	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TOTAL FID VOLATILES*
DETECTION LIMIT		1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L	10.0 ug/L
021A	10/27/96	ND	ND	ND	ND	ND
022	10/29/96	ND	ND	ND	ND	ND
022A	10/27/96	ND	ND	ND	ND	ND
023	10/28/96	ND	ND	ND	ND	ND
023A	10/29/96	ND	ND	ND	ND	ND
024	10/28/96	ND	ND	ND	ND	ND
024A	10/29/96	ND	ND	ND	ND	ND
025A	10/29/96	ND	ND	ND	ND	ND
026A	10/29/96	ND	ND	ND	ND	ND
027A	10/29/96	ND	ND	ND	ND	ND
028A	10/29/96	ND	ND	ND	ND	ND
029A	10/29/96	ND	ND	ND	ND	ND
030A	10/28/96	ND	ND	ND	ND	ND
031A	10/28/96	ND	ND	ND	ND	ND
032A	10/28/96	ND	ND	ND	ND	ND
033A	10/28/96	ND	ND	ND	ND	ND
034A	10/30/96	ND	ND	ND	ND	ND
035A	10/28/96	ND	ND	ND	ND	ND
036A	10/28/96	ND	ND	ND	ND	ND
037A	10/28/96	ND	ND	ND	ND	ND
038A	10/28/96	ND	ND	ND	ND	ND
039A	10/28/96	ND	ND	ND	ND	ND
040A	10/28/96	ND	ND	ND	ND	ND
041A	10/28/96	ND	ND	ND	ND	ND
042A	10/28/96	ND	ND	ND	ND	ND
043A	10/28/96	ND	ND	ND	ND	ND
044A	10/28/96	ND	ND	ND	ND	ND
045A	10/28/96	ND	ND	ND	ND	ND
046A	10/28/96	ND	ND	ND	ND	ND
047A	10/27/96	ND	ND	ND	ND	ND
048A	10/27/96	ND	ND	ND	ND	ND
049A	10/29/96	ND	ND	ND	ND	ND
050A	10/28/96	ND	ND	ND	ND	ND
051A	10/28/96	ND	ND	ND	ND	ND
052A	10/29/96	ND	ND	ND	ND	ND
053A	10/30/96	ND	ND	ND	ND	ND
054A	10/27/96	ND	ND	ND	ND	ND
055A	10/28/96	ND	ND	ND	ND	ND
056A	10/28/96	ND	ND	ND	ND	ND
057A	10/28/96	ND	ND	ND	ND	ND
058A	10/28/96	ND	ND	ND	ND	ND

00175

TABLE 1

ANALYTE CONCENTRATIONS IN SOIL GAS VIA EPA METHOD 8020M

SAMPLE NUMBER	DATE ANALYZED	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TOTAL FID VOLATILES*
DETECTION LIMIT		1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L	10.0 ug/L
479	10/28/96	ND	ND	ND	ND	ND
480	10/29/96	ND	ND	ND	ND	ND
481	10/28/96	ND	ND	ND	ND	ND
482	10/29/96	ND	ND	ND	ND	ND
496	10/29/96	ND	ND	ND	ND	ND
497	10/30/96	ND	ND	ND	ND	ND
498	10/28/96	ND	ND	ND	ND	ND
499	10/28/96	ND	ND	ND	ND	ND
500	10/28/96	ND	ND	ND	ND	ND
501	10/30/96	ND	ND	ND	ND	ND
502	10/28/96	ND	ND	ND	ND	ND
503	10/28/96	ND	ND	ND	ND	ND
504	10/29/96	ND	ND	ND	ND	ND
505	10/29/96	ND	ND	ND	ND	ND
506	10/28/96	ND	ND	ND	ND	ND
507	10/28/96	ND	ND	ND	ND	ND
521	10/25/96	ND	ND	ND	ND	ND
522	10/24/96	ND	ND	ND	ND	ND
523	10/25/96	ND	ND	ND	ND	ND
524	10/25/96	ND	ND	ND	ND	ND
525	10/25/96	ND	ND	ND	ND	ND
526	10/27/96	ND	ND	ND	ND	ND
527	10/25/96	ND	ND	ND	ND	ND
528	10/25/96	ND	ND	ND	ND	ND
529	10/27/96	ND	ND	ND	ND	ND
530	10/24/96	ND	ND	ND	ND	ND
531	10/29/96	ND	ND	ND	ND	ND
532	10/29/96	ND	ND	ND	ND	ND
533	10/28/96	ND	ND	ND	ND	ND
534	10/29/96	ND	ND	ND	ND	ND
546	10/25/96	ND	ND	ND	ND	ND
547	10/24/96	ND	ND	ND	ND	ND
548	10/25/96	ND	ND	ND	ND	ND
549	10/25/96	ND	ND	ND	ND	ND
550	10/25/96	ND	ND	ND	ND	ND
551	10/24/96	ND	ND	ND	ND	ND
552	10/27/96	ND	ND	ND	ND	ND
553	10/24/96	ND	ND	ND	ND	ND
554	10/24/96	ND	ND	ND	ND	ND
555	10/25/96	ND	ND	ND	ND	ND
556	10/29/96	ND	ND	ND	ND	ND

00177

TABLE 1

ANALYTE CONCENTRATIONS IN SOIL GAS VIA EPA METHOD 8020M

SAMPLE NUMBER	DATE ANALYZED	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TOTAL FID VOLATILES*
DETECTION LIMIT		1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L	10.0 ug/L
625	10/27/96	ND	ND	ND	ND	ND
626	10/24/96	ND	ND	ND	ND	ND
627	10/25/96	ND	ND	ND	ND	ND
628	10/27/96	ND	ND	ND	ND	ND
629	10/25/96	ND	ND	ND	ND	ND
630	10/25/96	ND	ND	ND	ND	ND
631	10/29/96	ND	ND	ND	ND	ND
632	10/28/96	ND	ND	ND	ND	ND
633	10/28/96	ND	ND	ND	ND	ND
634	10/28/96	ND	ND	ND	ND	ND
635	10/29/96	ND	ND	ND	ND	ND
636	10/30/96	ND	ND	ND	ND	ND
637	10/30/96	ND	ND	ND	ND	ND
638	10/30/96	ND	ND	ND	ND	ND
646	10/25/96	ND	ND	ND	ND	ND
647	10/25/96	ND	ND	ND	ND	ND
648	10/24/96	ND	ND	ND	ND	ND
649	10/25/96	ND	ND	ND	ND	ND
650	10/25/96	ND	ND	ND	ND	ND
651	10/24/96	ND	ND	ND	ND	ND
652	10/24/96	ND	ND	ND	ND	ND
653	10/25/96	ND	ND	ND	ND	ND
654	10/25/96	ND	ND	ND	ND	ND
655	10/28/96	ND	ND	ND	ND	ND
656	10/29/96	ND	ND	ND	ND	ND
657	10/28/96	ND	ND	ND	ND	ND
658	10/28/96	ND	ND	ND	ND	ND
659	10/28/96	ND	ND	ND	ND	ND
660	10/28/96	ND	ND	ND	ND	ND
661	10/30/96	ND	ND	ND	ND	ND
662	10/30/96	ND	ND	ND	ND	ND
663	10/29/96	ND	ND	ND	ND	ND
664	10/29/96	ND	ND	ND	ND	ND
671	10/27/96	ND	ND	ND	ND	ND
672	10/25/96	ND	ND	ND	ND	ND
673	10/25/96	ND	ND	ND	ND	ND
674	10/25/96	ND	ND	ND	ND	ND
675	10/25/96	ND	ND	ND	ND	ND
676	10/24/96	ND	ND	ND	ND	ND
677	10/25/96	ND	ND	ND	ND	ND
678	10/25/96	ND	ND	ND	ND	ND

00179

TABLE 1

ANALYTE CONCENTRATIONS IN SOIL GAS VIA EPA METHOD 8020M

SAMPLE NUMBER	DATE ANALYZED	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TOTAL FID VOLATILES*
DETECTION LIMIT		1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L	10.0 ug/L
732	10/29/96	ND	ND	ND	ND	ND
733	10/29/96	ND	ND	ND	ND	ND
734	10/28/96	ND	ND	ND	ND	ND
735	10/30/96	ND	ND	ND	ND	ND
736	10/29/96	ND	ND	ND	ND	ND
737	10/29/96	ND	ND	ND	ND	ND
738	10/28/96	ND	ND	ND	ND	ND
746	10/27/96	ND	ND	ND	ND	ND
747	10/25/96	ND	ND	ND	ND	ND
748	10/27/96	ND	ND	ND	ND	ND
749	10/24/96	ND	ND	ND	ND	ND
750	10/24/96	ND	ND	ND	ND	ND
751	10/25/96	ND	ND	ND	ND	ND
752	10/25/96	ND	ND	ND	ND	ND
753	10/27/96	ND	ND	ND	ND	ND
754	10/24/96	ND	ND	ND	ND	ND
755	10/28/96	ND	ND	ND	ND	ND
756	10/29/96	ND	ND	ND	ND	ND
757	10/28/96	ND	ND	ND	ND	ND
758	10/29/96	ND	ND	ND	ND	ND
759	10/28/96	ND	ND	ND	ND	ND
760	10/28/96	ND	ND	ND	ND	ND
771	10/27/96	ND	ND	ND	ND	ND
772	10/24/96	ND	ND	ND	ND	ND
773	10/24/96	ND	ND	ND	ND	ND
774	10/24/96	ND	ND	ND	ND	ND
775	10/24/96	ND	ND	ND	ND	ND
776	10/25/96	ND	ND	ND	ND	ND
777	10/27/96	ND	ND	ND	ND	ND
778	10/25/96	ND	ND	ND	ND	ND
779	10/27/96	ND	ND	ND	ND	ND
780	10/28/96	ND	ND	ND	ND	ND
781	10/29/96	ND	ND	ND	ND	ND
782	10/28/96	ND	ND	ND	ND	ND
783	10/28/96	ND	ND	ND	ND	ND
784	10/28/96	ND	ND	ND	ND	ND

** CALCULATED USING THE SUM OF THE AREAS OF ALL INTEGRATED CHROMATOGRAM PEAKS AND THE INSTRUMENT RESPONSE FACTOR FOR TOLUENE*

"ND" INDICATES NO ANALYTE DETECTED AT THE DETECTION LIMITS

00181

TABLE 2

ANALYTE CONCENTRATIONS IN SOIL GAS VIA EPA METHOD 8010M

SAMPLE NUMBER	DATE ANALYZED	11DCE*	CH2Cl2	t12DCE	11DCA	c12DCE	CHCl3	111TCA	CCl4*	TCE	112TCA	PCE
DETECTION LIMIT		1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L
001	10/27/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
001A	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
002	10/27/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
002A	10/29/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
003	10/24/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
003A	10/29/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
004	10/24/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
004A	10/29/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
005	10/27/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
005A	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
006	10/24/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
006A	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
007	10/27/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
007A	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
008	10/27/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
008A	10/29/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
009	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
009A	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
010	10/29/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
010A	10/29/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
011	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
011A	10/29/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
012	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
012A	10/29/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
013	10/29/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
013A	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
014	10/30/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
014A	10/29/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
015	10/29/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
015A	10/30/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
016	10/29/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
016A	10/27/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
017	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
017A	10/29/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
018	10/30/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
018A	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
019	10/29/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
019A	10/29/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
020	10/27/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
020A	10/27/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
021	10/27/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

00183

TABLE 2

ANALYTE CONCENTRATIONS IN SOIL GAS VIA EPA METHOD 8010M

SAMPLE NUMBER	DATE ANALYZED	11DCE*	CH2Cl2	t12DCE	11DCA	c12DCE	CHCl3	111TCA	CCl4*	TCE	112TCA	PCE
DETECTION LIMIT		1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L
059A	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
060A	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
061A	10/27/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
062A	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
063A	10/29/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
064A	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
065A	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
066A	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
067A	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
068A	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
069A	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
070A	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
071A	10/30/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
072A	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
073A	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
074A	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
075A	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
389	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
390	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
391	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
392	10/29/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
393	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
394	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
395	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
430	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
431	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
432	10/29/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
433	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
434	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
435	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
436	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
437	10/29/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
438	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
471	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
472	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
473	10/29/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
474	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
475	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
476	10/29/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
477	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
478	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

00185

TABLE 2

ANALYTE CONCENTRATIONS IN SOIL GAS VIA EPA METHOD 8010M

SAMPLE NUMBER	DATE ANALYZED	11DCE*	CH2Cl2	t12DCE	11DCA	c12DCE	CHCl3	111TCA	CCl4*	TCE	112TCA	PCE
DETECTION LIMIT		1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L
557	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
558	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
559	10/29/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
560	10/29/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
571	10/25/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
572	10/27/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
573	10/25/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
574	10/24/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
575	10/24/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
576	10/24/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
577	10/24/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
578	10/24/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
579	10/24/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
580	10/27/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
581	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
582	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
583	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
584	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
585	10/29/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
586	10/29/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
596	10/24/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
597	10/27/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
598	10/25/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
599	10/24/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
600	10/24/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
601	10/24/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
602	10/25/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
603	10/27/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
604	10/25/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
605	10/25/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
606	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
607	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
608	10/29/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
609	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
610	10/30/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
611	10/29/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
612	10/30/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
621	10/25/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
622	10/24/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
623	10/25/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
624	10/24/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

00187

TABLE 2

ANALYTE CONCENTRATIONS IN SOIL GAS VIA EPA METHOD 8010M

SAMPLE NUMBER	DATE ANALYZED	11DCE*	CH2Cl2	t12DCE	11DCA	c12DCE	CHCl3	111TCA	CCl4*	TCE	112TCA	PCE
DETECTION LIMIT		1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L
679	10/27/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
680	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
681	10/29/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
682	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
683	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
684	10/29/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
685	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
686	10/30/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
687	10/30/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
689	10/29/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
689	10/30/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
696	10/25/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
697	10/27/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
698	10/24/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
699	10/24/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
700	10/25/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
701	10/24/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
702	10/27/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
703	10/25/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
704	10/25/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
705	10/29/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
706	10/29/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
707	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
708	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
709	10/29/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
710	10/30/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
711	10/29/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
712	10/30/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
713	10/29/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
714	10/29/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
721	10/24/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
722	10/27/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
723	10/27/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
724	10/24/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
725	10/25/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
726	10/24/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
727	10/25/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
728	10/24/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
729	10/25/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
730	10/28/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
731	10/29/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

00189

TABLE 2

ANALYTE CONCENTRATIONS IN SOIL GAS VIA EPA METHOD 8010M

SAMPLE NUMBER	DATE ANALYZED	11DCE*	CH2Cl2	t12DCE	11DCA	c12DCE	CHCl3	111TCA	CCl4*	TCE	112TCA	PCE
DETECTION LIMIT		1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L	1.00 ug/L

111TCA = 1,1,1-trichloroethane *CCl4 = carbon tetrachloride* *TCE = trichloroethene*

112TCA = 1,1,2-trichloroethane *PCE = tetrachloroethene*

**11DCE/TCTFA and CCl4/12DCA are co-eluting pairs and are reported in concentrations of 11DCE and CCl4, respectively.*

Analyst:
Reviewed by: _____

00191

FIELD PROCEDURES

To collect the samples, a 1/2-inch hole was produced to a depth of approximately 4 feet by using a drive rod. The entire sampling system was purged with ambient air drawn through an organic vapor filter cartridge, and a stainless steel probe was inserted to the full depth of the hole and sealed off from the atmosphere. A sample of in-situ soil gas was then withdrawn through the probe and used to purge atmospheric air from the sampling system. A second sample of soil gas was withdrawn through the probe and encapsulated in a pre-evacuated glass vial at two atmospheres of pressure (15 psig). The self-sealing vial was detached from the sampling system, packaged, labeled, and stored for laboratory analysis.

Prior to the day's field activities all sampling equipment, slide hammer rods and probes were decontaminated by washing with a Liquinox/distilled water solution and rinsing thoroughly with distilled water. Internal surfaces were flushed dry using filtered ambient air, and external surfaces were wiped clean using clean paper towels or allowed to air dry.

APPENDIX B

LABORATORY PROCEDURES

The soil gas samples were analyzed in **TARGET's** laboratory in Columbia, MD. The analytical equipment was calibrated using a 3-point (FID) or a 5-point (ECD) instrument-response curve and injection of known concentrations of the target analytes. Retention times of the standards were used to identify the peaks in the chromatograms of the field samples, and their average calibration factors were used to calculate the analyte concentrations.

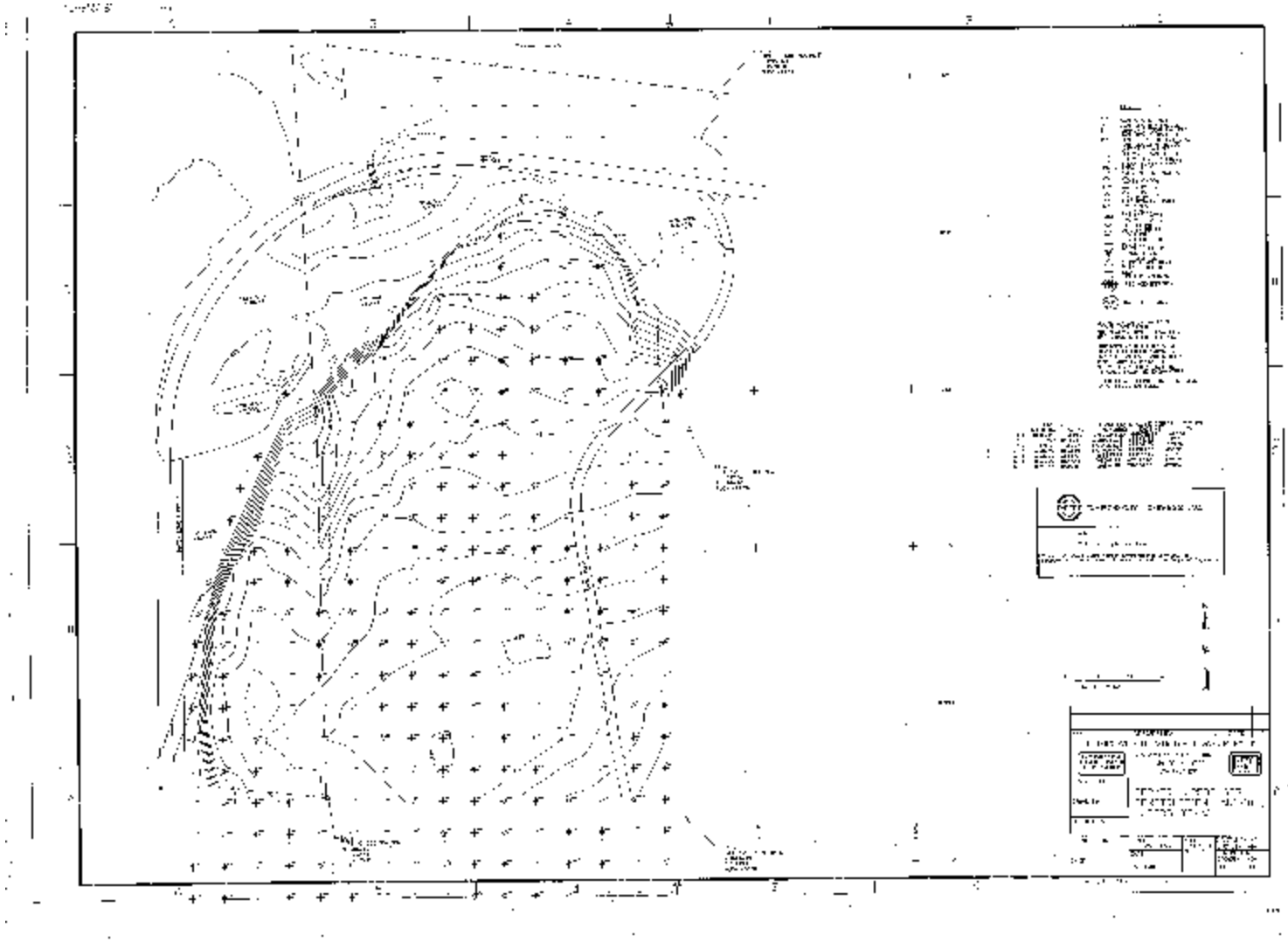
Total FID Volatiles values were generated by summing the areas of all integrated chromatogram peaks and calculated using the instrument response factor for toluene. Injection peaks, which also contain the light hydrocarbon methane, were excluded to avoid the skewing of Total FID Volatiles values due to injection disturbances and biogenic methane. For samples with low hydrocarbon concentrations, the calculated Total FID Volatiles concentration is occasionally lower than the sum of the individual analytes. This is because the response factor used for the Total FID Volatiles calculation is a constant, whereas the individual analyte response factors are compound specific. It is important to understand that the Total FID Volatiles levels reported are relative, not absolute, values.

The tabulated results of the laboratory analyses of the soil gas samples are reported in micrograms per liter (µg/l) of vapor in Tables 1 and 2. Although "micrograms per liter" is equivalent to "parts per billion (volume/volume)" in water analyses, they are not equivalent in gas analyses, due to the difference in the mass of equal volumes of water and gas matrices. The xylenes concentrations reported in Table 1 are the sum of the m- and p-xylene and the o-xylene concentrations for each sample. With **TARGET's** analytical run conditions, 11DCE/TCTFA and CCl_4/12DCA occur as co-eluting pairs and are reported in Table 2 in concentrations of 11DCE and CCl_4, respectively.

DETECTABILITY

Detectability

The soil gas survey data presented in this report are the result of precise sampling and measurement of contaminant concentrations in the vadose zone. Analyte detection at a particular location is representative of vapor, dissolved, and/or liquid phase contamination at that location. The presence of detectable levels of target analytes in the vadose zone is dependent upon several factors, including the presence of vapor-phase hydrocarbons or dissolved or liquid concentrations adequate to facilitate volatilization into the unsaturated zone.



Appendix C
Soil Boring and Test Pit Logs

CH2MHILL

PROJECT NUMBER	BORING NUMBER		
153479.RP.ZZ	CLF-SB1	SHEET 1	OF 1

SOIL BORING LOG

PROJECT : Construction Landfill LOCATION : Former Laredo AFB, Laredo TX ELEVATION (TBM or MSL) :

DRILLING CONTRACTOR : U.S. Army Corps of Engineers NAME OF DRILLER : Ray Voils

DRILLING METHOD/EQUIPMENT: Mobil B59 SIZE/TYPE OF BIT : 8" flight auger

DIRECTION OF HOLE : **vertical** inclined _____ deg from vertical

OVERBURDEN THICKNESS : 10 ft DEPTH DRILLED INTO ROCK : 0.5 ft TOTAL DEPTH OF BORING : 10.5 ft

WATER LEVELS : dry at completion START : 10/18/99 END : 10/18/99 LOGGER : Tom Beavers

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT) / Time	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
1					SANDY CLAY (CL), light brown, dry	
2						
3						
4						
5					SANDY CLAY (CL), dry, w/ caliche nodules	
6					SILTY CLAY W/ GRAVEL (CL-ML), dry	
7						
8						
9						
10					SANDSTONE, hard same as above, but very hard at 10.0 ft.	TD = 10.5 ft
11						
12						
13						
14						
15						

00197

SB1 boring log_Rev.xls

CH2MHILL

153479.RP.ZZ | CLF-SB2-MW1 | SHEET 1 OF 2

SOIL BORING LOG

PROJECT: Construction Landfill | LOCATION: Former Laredo AFB, Laredo TX | ELEVATION (TBM or MSL): 473.93 ft

DRILLING CONTRACTOR: U.S. Army Corps of Engineers | NAME OF DRILLER: Ray Voils

DRILLING METHOD/EQUIPMENT: Mobil B59 | SIZE/TYPE OF BIT: 8" flight auger

DIRECTION OF HOLE: **vertical** inclined _____ deg from vertical

OVERBURDEN THICKNESS: 18.5 ft | DEPTH DRILLED INTO ROCK: 0.5 ft | TOTAL DEPTH OF BORING: 19.0 ft

WATER LEVELS: 17 ft bgs | START: 10/18/99 | END: 10/18/99 | LOGGER: Tom Beavers

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT) Time	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
1–5					SILTY CLAY W/ GRAVEL, (CL-ML), light brown, moist	5 ft well screen set from 18.5 ft to 13.5 ft sand pack from 19.0 ft to 11.5 ft bentonite seal from 11.5 ft to 8.0 ft
6–9					SANDY CLAY, (CL), light brown, dry gravelly caliche lens at 6.5 ft (0.2 ft thick), dry	
10					SILT (ML), sandy, dry	
11–12					SANDY CLAY, (CL), dry	
13–14					SANDY CLAY (CL), light brown, slightly moist	water level in well approx. 12.6 ft bgs on 10/23/99

CH2MHILL

PROJECT NUMBER	BORING NUMBER		
153479.RP.ZZ	CLF-SB3-MW2	SHEET 1	OF 2

SOIL BORING LOG

PROJECT : Construction Landfill LOCATION : Former Laredo AFB, Laredo TX ELEVATION (TBM or MSL) : 478.31 ft

DRILLING CONTRACTOR : U.S. Army Corps of Engineers NAME OF DRILLER : Ray Voils

DRILLING METHOD/EQUIPMENT: Mobil B59 SIZE/TYPE OF BIT : 8" flight auger

DIRECTION OF HOLE : **vertical** inclined _____ deg from vertical

OVERBURDEN THICKNESS : 11.5 ft DEPTH DRILLED INTO ROCK : 19.0 ft TOTAL DEPTH OF BORING : 30.5 ft

WATER LEVELS : 26.5 ft bgs START : 10/19/99 END : 10/19/99 LOGGER : Tom Beavers

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT) Time	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
1					SILTY CLAY, (CL-ML), light brown, dry, w/ sandstone gravel	10 feet well screen set from 30 ft to 20 ft bgs
2						sand pack from 30.5 ft to 18 ft bgs
3						bentonite seal from 18 ft to 15.5 ft bgs
4						
5						
6						
7						
8						
9					SANDSTONE, dry, soft, friable	
10						
11						
12					same as above, but rock slightly cemented	
13						
14						
15						

00200

CH2MHILL

PROJECT NUMBER	BORING NUMBER		
153479.RP.ZZ	CLF-SB4-MW3	SHEET 1	OF 2

SOIL BORING LOG

PROJECT : Construction Landfill LOCATION : Former Laredo AFB, Laredo TX ELEVATION (TBM or MSL) :

DRILLING CONTRACTOR : U.S. Army Corps of Engineers NAME OF DRILLER : Ray Voils

DRILLING METHOD/EQUIPMENT: Mobil B59 SIZE/TYPE OF BIT : 8" flight auger

DIRECTION OF HOLE : **vertical** inclined _____ deg from vertical

OVERBURDEN THICKNESS : 20 ft DEPTH DRILLED INTO ROCK : 0.5 ft TOTAL DEPTH OF BORING : 20.5 ft

WATER LEVELS : dry at completion START : 10/20/99 END : 10/20/99 LOGGER : Tom Beavers

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT) Time	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
1					SANDY SILT (ML), grey, dry, soft	10' screen screen from 20.0 ft to 10.0 ft bgs sand pack from 20.5 ft to 8.0 ft bgs well abandoned on 10/21/99
2						
3						
4						
5						
6					SANDY SILTY CLAY (CL-ML), light brown, dry, stiff	
7						
8						
9					CALICHE, grey, soft, dry	
10						
11					SANDY CLAY (CL), w/ caliche nodules	
12						
13						
14						
15					sandstone fragments @ 15'	

00202

CH2MHILL

PROJECT NUMBER	BORING NUMBER		
153479.RP.ZZ	CLF-SB5	SHEET 1	OF 1

SOIL BORING LOG

PROJECT : Construction Landfill LOCATION : Former Laredo AFB, Laredo TX ELEVATION (TBM or MSL) :

DRILLING CONTRACTOR : U.S. Army Corps of Engineers NAME OF DRILLER : Ray Voils

DRILLING METHOD/EQUIPMENT: Mobil B59 SIZE/TYPE OF BIT : 8" flight auger

DIRECTION OF HOLE : **vertical** inclined _____ deg from vertical

OVERBURDEN THICKNESS : 12 ft DEPTH DRILLED INTO ROCK : 0.9 ft TOTAL DEPTH OF BORING : 12.9 ft

WATER LEVELS : dry at completion START : 10/20/99 END : 10/20/99 LOGGER : Tom Beavers

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT) Time	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
1					SANDY SILT (ML), light brown 0'-1' to olive 1'-2', slightly moist	
2						
3					SANDSTONE, olive, dry, soft, silty, friable	
4						
5						
6						
7						
8						
9						
10					caliche lens at 9.7' to 10'	
11					CLAY (CL), light brown, dry, friable	
12						
13					SANDSTONE	auger refusal at 12.9 ft
14						
15						

00204

CH2MHILL

PROJECT NUMBER	BORING NUMBER		
153479.RP.ZZ	CLF-SB6	SHEET 1	OF 1

SOIL BORING LOG

PROJECT : Construction Landfill LOCATION : Former Laredo AFB, Laredo TX ELEVATION (TBM or MSL) :

DRILLING CONTRACTOR : U.S. Army Corps of Engineers NAME OF DRILLER : Ray Voils

DRILLING METHOD/EQUIPMENT: Mobil B59 SIZE/TYPE OF BIT : 8" flight auger

DIRECTION OF HOLE : **vertical** inclined _____ deg from vertical

OVERBURDEN THICKNESS : 0.5 ft DEPTH DRILLED INTO ROCK : 1.5 ft TOTAL DEPTH OF BORING : 2.0 ft

WATER LEVELS : dry at completion START : 10/20/99 END : 10/20/99 LOGGER : Tom Beavers

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION	COMMENTS
	Time				SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
1					GRAVELLY SILT w/ SAND (ML), grey-white, dry, weathered sandstone, very fine grained, well cemented	
2						auger refusal at 2 ft
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

00205

CH2MHILL

PROJECT NUMBER	BORING NUMBER		
153479.RP.ZZ	CLF-SB7-MW4	SHEET 1	OF 2

SOIL BORING LOG

PROJECT : Construction Landfill LOCATION : Former Laredo AFB, Laredo TX ELEVATION (TBM or MSL) : 499.83 ft

DRILLING CONTRACTOR : U.S. Army Corps of Engineers NAME OF DRILLER : Ray Voils

DRILLING METHOD/EQUIPMENT: Mobil B59 SIZE/TYPE OF BIT : 6-inch flight auger followed by 8-inch flight auger

DIRECTION OF HOLE : **vertical** inclined _____ deg from vertical

OVERBURDEN THICKNESS : 30 ft DEPTH DRILLED INTO ROCK : 0 ft TOTAL DEPTH OF BORING : 30.5 ft

WATER LEVELS : 26.5 ft bgs START : 10/21/99 END : 10/21/99 LOGGER : Tom Beavers

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT) Time	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
1					SANDY SILT (ML), lt. brown, dry	10 ft PVC well screen
2						set well screen 29.5 ft to 19.5 ft bgs
3						sand pack 30.5 ft to 18.0 ft bgs
4						bentonite seal from 18.0 ft to 15.0 ft bgs
5						bale hole approx. 45 gals to develop
6						
7					CALICHE, grey-white, dry, sandy w/ some clay seams	
8						
9						
10						
11						
12					CLAY (CL), lt. brown, dry, soft	
13						
14						
15						

00206

CH2MHILL

PROJECT NUMBER	BORING NUMBER		
153479.RP.ZZ	CLF-SB8-MW5	SHEET 1	OF 2

SOIL BORING LOG

PROJECT : Construction Landfill
LOCATION : Former Laredo AFB, Laredo TX
ELEVATION (TBM or MSL) : 496.18 ft
DRILLING CONTRACTOR : U.S. Army Corps of Engineers
NAME OF DRILLER : Ray Voils
DRILLING METHOD/EQUIPMENT: Mobil B59
SIZE/TYPE OF BIT : 6-inch flight auger followed by 8-inch flight auger
DIRECTION OF HOLE : **vertical** inclined _____ deg from vertical
OVERBURDEN THICKNESS :
DEPTH DRILLED INTO ROCK :
TOTAL DEPTH OF BORING : 31.6 ft
WATER LEVELS : 30.5 ft bgs
START : 10/21/99 END : 10/21/99
LOGGER : Tom Beavers

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT) Time	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
1					SANDY SILTY CLAY (CL-ML), light brown, dry	10 ft well screen
2						well screen from 29.5 ft to 19.5 ft bgs
3					same as above w/ some caliche gravel	sand pack from 31.6 ft to 17.5 ft bgs
4						bentonite seal from 17.5 ft to 15.5 ft bgs
5						
6						
7						
8					SANDY CLAY (CL), brown to light brown, dry, w/ SS stringers	
9						
10						
11						
12						
13					SANDY CLAY (CL), light brown, dry, w/ caliche nodules	
14						
15						

00208

CH2MHILL

PROJECT NUMBER	BORING NUMBER		
153479.RP.ZZ	Test Pits T-1 to T-11	SHEET 1	OF 1

TEST PIT LOGS

PROJECT : Construction Landfill LOCATION : Former Laredo AFB, Laredo TX ELEVATION (TBM or MSL) :

DRILLING CONTRACTOR : U.S. Army Corps of Engineers NAME OF DRILLER : Jerry Camp

DRILLING METHOD/EQUIPMENT: Backhoe SIZE/TYPE OF BIT : n/a

DIRECTION OF HOLE : **vertical** inclined _____ deg from vertical

OVERBURDEN THICKNESS : n/a DEPTH DRILLED INTO ROCK : n/a TOTAL DEPTH OF BORING : n/a

WATER LEVELS : n/a START : 9/20/99 END : 9/20/99 LOGGER : Tom Beavers

DEPTH BELOW SURFACE (FT) / SAMPLE INTERVAL (FT) Time	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
T-1				0-4.6 ft, SANDY SILTY CLAY (CL-ML), gravelly sandstone frags throughout, CLAY (CL) at bottom, light brown, very dry	No water encountered in any test pits
T-2				0-4.5 ft, SANDY CLAY (CL), lt. brown, very dry, w/ sandstone frags.	
T-3				0-7 ft, CLAY (CL), slightly mottled top 2'; GRAVELLY SILTY CLAY (CL), lt. brown, dry, at bottom	
T-4				0-2 ft, CLAY (CL), dark, dry, gravely concrete & asphalt debris at bottom	
T-5				0-1.6 ft, SILTY CLAY (CL-ML), dry, w/ gravel & concrete debris at 1.6'	
T-6				0-4 ft, SILTY CLAY (CL-ML), lt. brown, very dry, gravel throughout, no debris present	
T-7				0-1 ft, metal debris present	
T-8				0-2 ft, CLAY (CL), dk. brown, dry, gravelly, w/ debris	
T-9				0-2.2 ft, SANDY SILTY CLAY (CL-ML), dry, gravel debris and concrete at bottom	
T-10				0-4.2 ft, SANDY SILTY CLAY (CL-ML), very dry, gravelly caliche, no debris present	
T-11				0-3.5 ft, SANDY SILTY CLAY (CL-ML), dry, gravelly weathered caliche at bottom 1.5', no debris present	

00210

Appendix D
Well Completion Diagrams

CH2MHILL

PROJECT NUMBER	WELL NUMBER		
153479.RP.ZZ	CLF-SB2-MW1	SHEET 1	OF 1

WELL COMPLETION DIAGRAM

PROJECT : Construction Landfill LOCATION : Former Laredo AFB, Laredo TX

DRILLING CONTRACTOR : U.S. Army Corps of Engineers

DRILLING METHOD AND EQUIPMENT USED : Mobil B59 w/ 8" flight augers

WATER LEVELS : 15.70 ft BTOC, 10/23/99 START : 0831, 10/23/99 END : 0845 LOGGER : USACOE

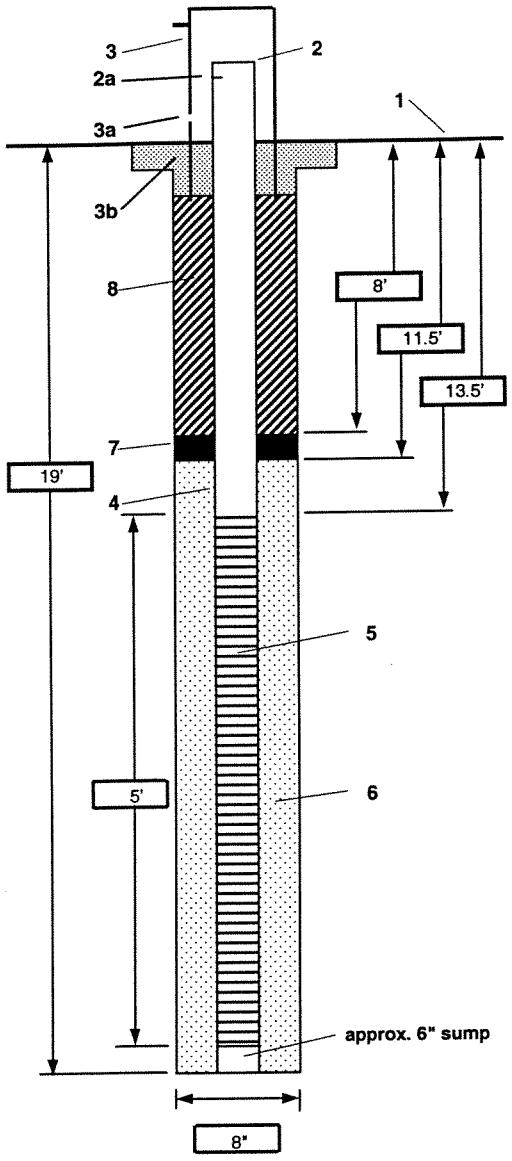


*Diagram not to scale

1- Ground elevation at well: 473.93 ft amsl

2- Top of casing elevation: 477.02 ft amsl
a) vent hole? none

3- Wellhead protection cover type: Steel monument
a) weep hole? none
b) concrete pad dimensions: 4' X 4'

4- Dia./type of well casing: 4 inch, Schedule 40 PVC

5- Type/slot size of screen: 4 inch, Schedule 40 PVC, 0.010 inch factory slotted

6- Type screen filter: #20-#40 silica sand
a) Quantity used

7- Type of seal: bentonite chips
a) Quantity used

8- Grout
a) Grout mix used: cement-bentonite mixture
b) Method of placement
c) Vol. of well casing grout

Development method: bailing - day 1; pumping - day 2

Development time

Estimated purge volume: 5 gal (2 well volumes)

Comments

00212

CH2MHILL

PROJECT NUMBER	WELL NUMBER		
153479.RP.ZZ	CLF-SB3-MW2	SHEET 1	OF 1

WELL COMPLETION DIAGRAM

PROJECT : Construction Landfill LOCATION : Former Laredo AFB, Laredo TX

DRILLING CONTRACTOR : U.S. Army Corps of Engineers

DRILLING METHOD AND EQUIPMENT USED : Mobil B59 w/ 8" flight augers

WATER LEVELS : 22.60 ft BTOC, 10/23/99 START : 0941, 10/23/99 END : 0948 LOGGER : USACOE

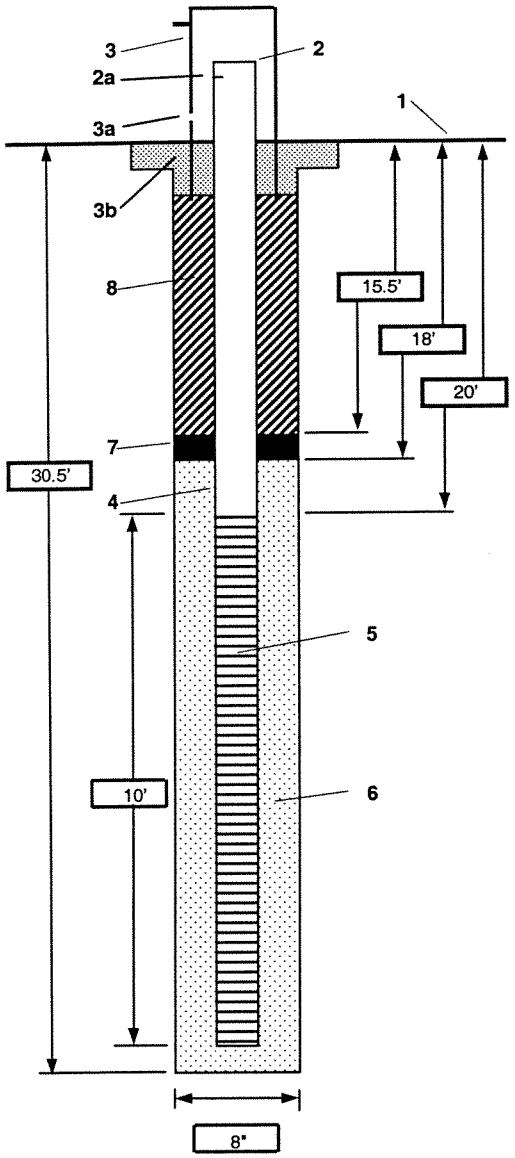


*Diagram not to scale

1- Ground elevation at well	478.31 ft amsl
2- Top of casing elevation	480.84 ft amsl
a) vent hole?	none
3- Wellhead protection cover type	Steel monument
a) weep hole?	none
b) concrete pad dimensions	4' X 4'
4- Dia./type of well casing	4 inch, Schedule 40 PVC
5- Type/slot size of screen	4 inch, Schedule 40 PVC, 0.010 inch factory slotted
6- Type screen filter	#20-#40 silica sand
a) Quantity used	
7- Type of seal	bentonite chips
a) Quantity used	
8- Grout	
a) Grout mix used	cement-bentonite mixture
b) Method of placement	
c) Vol. of well casing grout	
Development method	bailing - day 1; pumping - day 2
Development time	
Estimated purge volume	10 gal (2 well volumes)

Comments

00213

CH2MHILL

PROJECT NUMBER	WELL NUMBER		
153479.RP.ZZ	CLF-SB7-MW4	SHEET 1	OF 1

WELL COMPLETION DIAGRAM

PROJECT : Construction Landfill LOCATION : Former Laredo AFB, Laredo TX

DRILLING CONTRACTOR : U.S. Army Corps of Engineers

DRILLING METHOD AND EQUIPMENT USED : Mobil B59 w/ 8" flight augers

WATER LEVELS : 25.46 ft BTOC, 10/23/99 START : 1232, 10/23/99 END : 1243 LOGGER : USACOE

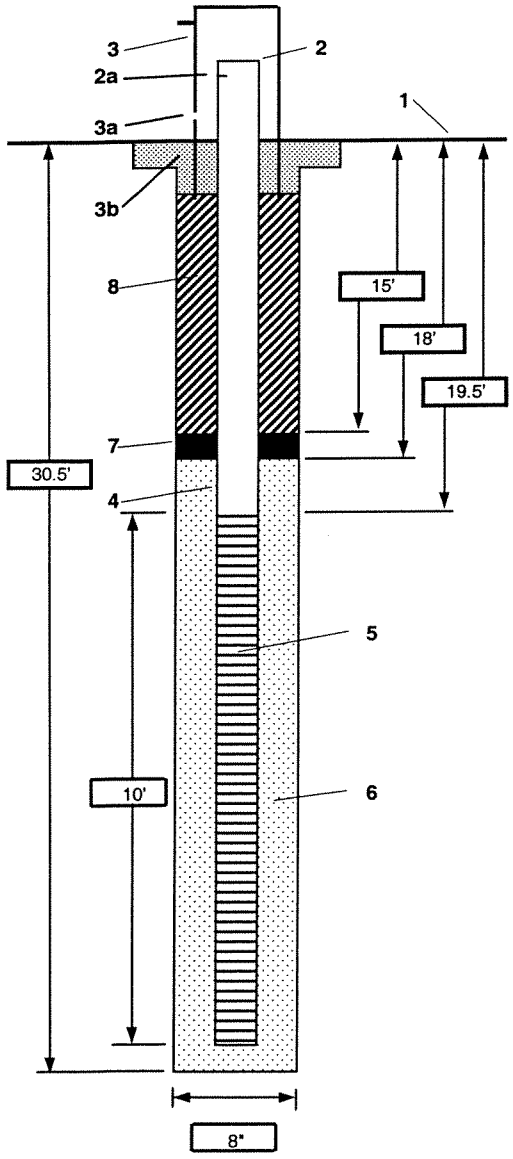


*Diagram not to scale

1- Ground elevation at well	499.83 ft amsl
2- Top of casing elevation	502.74 ft amsl
a) vent hole?	none
3- Wellhead protection cover type	Steel monument
a) weep hole?	none
b) concrete pad dimensions	4' X 4'
4- Dia./type of well casing	4 inch, Schedule 40 PVC
5- Type/slot size of screen	4 inch, Schedule 40 PVC, 0.010 inch factory slotted
6- Type screen filter	#20-#40 silica sand
a) Quantity used	
7- Type of seal	bentonite chips
a) Quantity used	
8- Grout	
a) Grout mix used	cement-bentonite mixture
b) Method of placement	
c) Vol. of well casing grout	
Development method	bailing - day 1; pumping - day 2
Development time	
Estimated purge volume	Approx. 45 gal

Comments

CH2MHILL

PROJECT NUMBER	WELL NUMBER		
153479.RP.ZZ	CLF-SB8-MW5	SHEET 1	OF 1

WELL COMPLETION DIAGRAM

PROJECT : Construction Landfill LOCATION : Former Laredo AFB, Laredo TX

DRILLING CONTRACTOR : U.S. Army Corps of Engineers

DRILLING METHOD AND EQUIPMENT USED : Mobil B59 w/ 8" flight augers

WATER LEVELS : 24.85 ft BTOC, 10/23/99 START : 1433, 10/23/99 END : 1441 LOGGER : USACOE

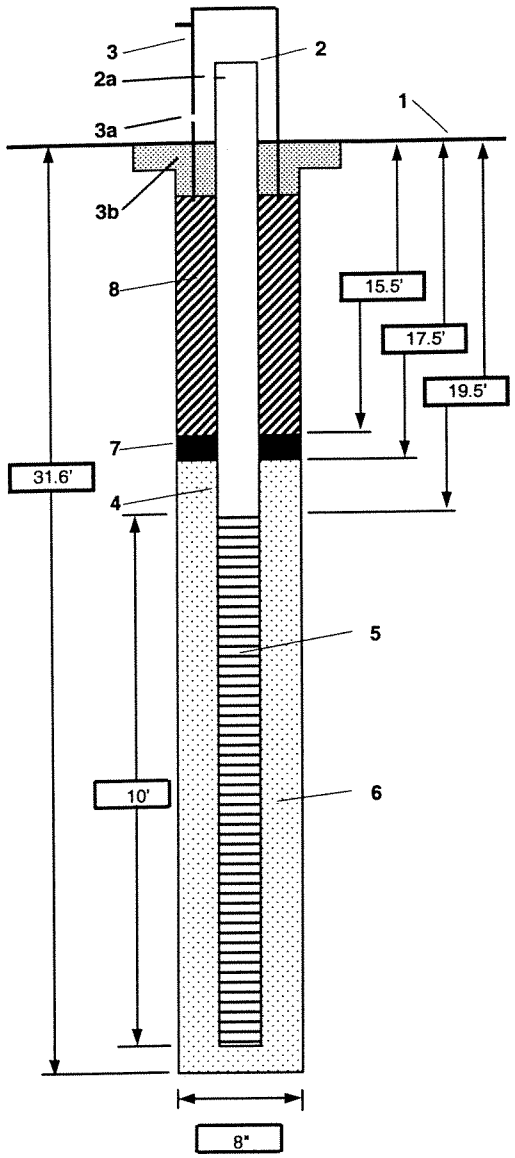


*Diagram not to scale

1- Ground elevation at well: 496.18 ft amsl

2- Top of casing elevation: 499.14 ft amsl
a) vent hole? none

3- Wellhead protection cover type: Steel monument
a) weep hole? none
b) concrete pad dimensions: 4' X 4'

4- Dia./type of well casing: 4 inch, Schedule 40 PVC

5- Type/slot size of screen: 4 inch, Schedule 40 PVC, 0.010 inch factory slotted

6- Type screen filter: #20-#40 silica sand
a) Quantity used

7- Type of seal: bentonite chips
a) Quantity used

8- Grout
a) Grout mix used: cement-bentonite mixture
b) Method of placement
c) Vol. of well casing grout

Development method: bailing - day 1; pumping - day 2

Development time

Estimated purge volume: Approx. 50 gal

Comments

00215

Appendix E
Well Purging and Sampling Forms and Sample Chain of Custody

CH2MHILL / CRC & Associates	Lab # 165656	Chest/Temp.

GROUNDWATER MONITORING WELL

CHAIN OF CUSTODY
U.S. Army Corps of Engineers #6311
Tulsa District

Project: **Laredo Air Force Base** Site: **Construction Landfill**

Sample ID: LAFBCLFMW101 Date: 10-23-99 Time: 0845

USACE Sampling POC: Greg Snider Phone: (918) 832-4120
USACE Technical Manager: Carol Wies Phone: (918) 669-7519

Due Date: 21 Days

CONTAINERS

Glass	Plastic	Vials	Chest #	Custody Seal #
3	2		TC-109	102509

VOA Vials	Chest #	Sampler Initials
2	TC-01	GS

PARAMETERS SAMPLED

✓	pH, Conductivity, Temperature, DO & Turbidity	EPA Method	(0)
✓	Semi Volatile Organics	8270 C	(2)
✓	PCBs	8082 A	(1)
✓	Total Metals (As, Pb, Hg, Se, Ba, Cd, Cr & Ag)	6010 / 7470	[1]
✓	Filtered Metals (As, Pb, Hg, Se, Ba, Cd, Cr & Ag)	6010 / 7470	[1]
✓	Volatile Organics	8260 B	{2}

03233

* Containers: ( ) = 1 L Amber Glass [ ] = 1 L Plastic { } = 40 mL Vials

CUSTODY RECORD

Relinquished By	Received By	Date	Time
[signature]		10-25-99	1200
	[signature]	10/26/99	9:00

Fed Ex Shipping Bill No: 814026809843

PID Reading (PID units): 0

MICROPURGING FIELD DATA FORM

Project: Laredo AFB Sample ID: LAFBCLFMW101

Casing Size/Diameter: 4" Pump System: QED T1200 Bladder

Initial Water Level: 15.70 Total Well Depth: 21.90

Water Quality Meter Type: FC 4000 Meter #: 93703

Meter Calibration Date: 10-23-99 Time: 0700

Start 0831 Time	Cum Vol (gals)	Temp (° C)	pH	Cond (mS/cm)	Turb (NTU)	DO (mg/L)	WL	Ft Drawdown	Purge Rate (ml/min)
0833		23.83	7.42	33.01	13	5.71	15.95	0.25	100
0835		22.38	7.16	32.95	11	6.18	15.97	0.27	100
0837		22.31	7.12	32.92	11	6.16	15.97	0.27	100
0838		22.64	7.11	22.94	10	6.24	15.97	0.27	100
0840		22.65	7.10	22.94	10	6.23	15.97	0.27	100
0841		22.64	7.10	22.95	10	6.23	15.97	0.27	100
0843		22.64	7.11	22.96	10	6.23	15.97	0.27	100
0845	1	22.64	7.11	22.96	10	6.23	15.97	0.27	100

Final four water quality mesurements prior to sampling

0840		22.65	7.10	22.94	10	6.23			
0841		22.64	7.10	22.95	10	6.23			
0843		22.64	7.11	22.96	10	6.23			
0845		22.64	7.11	22.96	10	6.23			

water level measurements: ft BTOC

Final Well Drawdown: 0.27

Comments: well seal # 924, chest TC-109, VOC TC-01,

Sample Collector(s): Mabuda

CH2MHILL / CRC & Associates	Lab #	Chest/Temp.

GROUNDWATER MONITORING WELL
CHAIN OF CUSTODY
U.S. Army Corps of Engineers
Tulsa District

Project: **Laredo Air Force Base** Site: **Construction Landfill**

Sample ID: LAFBCLFMW 201 Date: 10-23-99 Time: 0948

163234

USACE Sampling POC: Greg Snider Phone: (918) 832-4120
USACE Technical Manager: Carol Wies Phone: (918) 669-7519

Due Date: 21 Days

CONTAINERS

Glass	Plastic	Vials	Chest #	Custody Seal #
3	2		TC-109	102509

VOA Vials	Chest #	Sampler Initials
2	TC-01	GS

PARAMETERS SAMPLED

✓	pH, Conductivity, Temperature, DO & Turbidity	EPA Method	(0)
✓	Semi Volatile Organics	8270 C	(2)
✓	PCBs	8082 A	(1)
✓	Total Metals (As, Pb, Hg, Se, Ba, Cd, Cr & Ag)	6010 / 7470	[1]
✓	Filtered Metals (As, Pb, Hg, Se, Ba, Cd, Cr & Ag)	6010 / 7470	[1]
✓	Volatile Organics	8260 B	{2}

* Containers: ( ) = 1 L Amber Glass [ ] = 1 L Plastic { } = 40 mL Vials

CUSTODY RECORD

Relinquished By	Received By	Date	Time
[signature]	→	10-25-99	1200
	MB	10/26/99	9:00

Fed Ex Shipping Bill No: 814026809843

PID Reading (PID units): 0

MICROPURGING FIELD DATA FORM

Project: Laredo AFB Sample ID: LAFBCLFMW201

Casing Size/Diameter: 4" Pump System: QED T1200 Bladder

Initial Water Level: 22.60 Total Well Depth: 33.41

Water Quality Meter Type: FC 4000 Meter #: 93703

Meter Calibration Date: 10-23-99 Time: 0700

Start 0940 Time	Cum Vol (gals)	Temp (° C)	pH	Cond (mS/cm)	Turb (NTU)	DO (mg/L)	WL	Ft Drawdown	Purge Rate (ml/min)
0941		22.62	7.11	32.31	14	5.82	22.71	0.11	100
0942		22.64	7.12	32.33	13	5.61	22.73	0.13	100
0943		22.63	7.13	32.34	10	5.62	22.73	0.13	100
0944		22.63	7.11	32.34	9	5.63	22.73	0.13	100
0945		22.63	7.11	32.35	9	5.62	22.73	0.13	100
0946		22.63	7.11	32.35	9	5.61	22.73	0.13	100
0947		22.63	7.11	32.35	9	5.61	22.73	0.13	100
0948	1	22.63	7.11	32.35	9	5.61	22.73	0.13	100

Final four water quality mesurements prior to sampling

0945		22.63	7.11	32.35	9	5.62			
0946		22.63	7.11	32.35	9	5.61			
0947		22.63	7.11	32.35	9	5.61			
0948		22.63	7.11	32.35	9	5.61			

water level measurements: ft BTOC

Final Well Drawdown: 0.13

Comments: well seal # 29862, chest TC-109, VOC TC-01

Sample Collector(s): MySmith

CH2MHILL / CRC & Associates	Lab #	Chest/Temp.

GROUNDWATER MONITORING WELL
CHAIN OF CUSTODY
U.S. Army Corps of Engineers
Tulsa District

Project: **Laredo Air Force Base** Site: **Construction Landfill**

Sample ID: LAFBCLFMW 401 Date: 10-23-99 Time: 1243

163235

USACE Sampling POC: Greg Snider Phone: (918) 832-4120
USACE Technical Manager: Carol Wies Phone: (918) 669-7519

Due Date: 21 Days

CONTAINERS

Glass	Plastic	Vials	Chest #	Custody Seal #
3	2		TC-86	102586

VOA Vials	Chest #	Sampler Initials
2	TC-01	GS

PARAMETERS SAMPLED

✓	pH, Conductivity, Temperature, DO & Turbidity	EPA Method	(0)
✓	Semi Volatile Organics	8270 C	(2)
✓	PCBs	8082 A	(1)
✓	Total Metals (As, Pb, Hg, Se, Ba, Cd, Cr & Ag)	6010 / 7470	[1]
✓	Filtered Metals (As, Pb, Hg, Se, Ba, Cd, Cr & Ag)	6010 / 7470	[1]
✓	Volatile Organics	8260 B	{2}

* Containers: ( ) = 1 L Amber Glass [ ] = 1 L Plastic { } = 40 mL Vials

CUSTODY RECORD

Relinquished By	Received By	Date	Time
MMcBride	→	10-25-99	1200
	MB	10/26/99	9:20

Fed Ex Shipping Bill No: 814026809843

PID Reading (PID units): 0

MICROPURGING FIELD DATA FORM

Project: Laredo AFB Sample ID: LAFBCLFMW401

Casing Size/Diameter: 4" Pump System: QED T1200 Bladder

Initial Water Level: 25.46 Total Well Depth: 33.26

Water Quality Meter Type: FC 4000 Meter #: 93703

Meter Calibration Date: 10-23-99 Time: 1200

Start 1232 Time	Cum Vol (gals)	Temp (° C)	pH	Cond (ms/cm)	Turb (NTU)	DO (ms/L)	WL	Ft Drawdown	Purge Rate (ml/min)
1234		22.42	7.15	32.45	36	5.14	25.60	0.14	100
1236		22.22	7.26	22.76	35	5.05	25.61	0.15	100
1237		22.21	7.25	22.73	35	5.17	25.61	0.15	100
1238		22.21	7.25	22.75	15	5.18	25.61	0.15	100
1239		22.21	7.25	22.76	7	5.19	25.61	0.15	100
1240		22.21	7.25	22.77	5	5.20	25.61	0.15	100
1241		22.21	7.25	22.77	5	5.21	25.61	0.15	100
1242		22.21	7.25	22.77	5	5.22	25.61	0.15	100
1243	2	22.21	7.25	22.77	5	5.23	25.61	0.15	100

Final four water quality mesurements prior to sampling

1240		22.21	7.25	22.77	5	5.20			
1241		22.21	7.25	22.77	5	5.21			
1242		22.21	7.25	22.77	5	5.22			
1243		22.21	7.25	22.77	5	5.23			

water level measurements: ft BTOC

Final Well Drawdown: 0.15

Comments: well seal 97456, Field TC-86, QA PTX062, QL TC86

Sample Collector(s): MM Smith

CH2MHILL / CRC & Associates	Lab #	Chest/Temp.

GROUNDWATER MONITORING WELL
CHAIN OF CUSTODY
U.S. Army Corps of Engineers
Tulsa District

Project: **Laredo Air Force Base** Site: **Construction Landfill**

163236

Sample ID: LAFBCLFMW 402 Date: 10-23-99 Time: 1243

USACE Sampling POC: Greg Snider Phone: (918) 832-4120
USACE Technical Manager: Carol Wies Phone: (918) 669-7519

Due Date: 21 Days

CONTAINERS

Glass	Plastic	Vials	Chest #	Custody Seal #
3	2		TC-86	102586

VOA Vials	Chest #	Sampler Initials
2	TC-01	GS

PARAMETERS SAMPLED

✓	pH, Conductivity, Temperature, DO & Turbidity	EPA Method	(0)
✓	Semi Volatile Organics	8270 C	(2)
✓	PCBs	8082 A	(1)
✓	Total Metals (As, Pb, Hg, Se, Ba, Cd, Cr & Ag)	6010 / 7470	[1]
✓	Filtered Metals (As, Pb, Hg, Se, Ba, Cd, Cr & Ag)	6010 / 7470	[1]
✓	Volatile Organics	8260 B	{2}

* Containers: ( ) = 1 L Amber Glass [ ] = 1 L Plastic { } = 40 mL Vials

CUSTODY RECORD

Relinquished By	Received By	Date	Time
[signature]		10-25-99	1200
	MB	10/26/99	0900

Fed Ex Shipping Bill No: 814026809843

PID Reading (PID units): 0

CH2MHILL / CRC & Associates	Lab #	Chest/Temp.

GROUNDWATER MONITORING WELL
CHAIN OF CUSTODY
U.S. Army Corps of Engineers
Tulsa District

163237

Project: **Laredo Air Force Base** Site: **Construction Landfill**

Sample ID: LAFBCLFMW501 Date: 10-23-99 Time: 1441

USACE Sampling POC: Greg Snider Phone: (918) 832-4120
USACE Technical Manager: Carol Wies Phone: (918) 669-7519

Due Date: 21 Days

CONTAINERS

Glass	Plastic	Vials	Chest #	Custody Seal #
3	2		TC84	102584

VOA Vials	Chest #	Sampler Initials
2	TC-01	GS

PARAMETERS SAMPLED

✓	pH, Conductivity, Temperature, DO & Turbidity	EPA Method	(0)
✓	Semi Volatile Organics	8270 C	(2)
✓	PCBs	8082 A	(1)
✓	Total Metals (As, Pb, Hg, Se, Ba, Cd, Cr & Ag)	6010 / 7470	[1]
✓	Filtered Metals (As, Pb, Hg, Se, Ba, Cd, Cr & Ag)	6010 / 7470	[1]
✓	Volatile Organics	8260 B	{2}

* Containers: ( ) = 1 L Amber Glass [ ] = 1 L Plastic { } = 40 mL Vials

CUSTODY RECORD

Relinquished By	Received By	Date	Time
[signature]	→	10-25-99	1200
	MB	10/26/99	9:00

Fed Ex Shipping Bill No: 814026809843

PID Reading (PID units): 0

00224

MICROPURGING FIELD DATA FORM

Project: Laredo AFB Sample ID: LAFBCLFMW501

Casing Size/Diameter: 4" Pump System: QED T1200 Bladder

Initial Water Level: 24.85 Total Well Depth: 32.69

Water Quality Meter Type: FC 4000 Meter #: _____

Meter Calibration Date: 10-23-99 Time: 1200

Start 1433 Time	Cum Vol (gals)	Temp (° C)	pH	Cond (ms/cm)	Turb (NTU)	DO (mg/l)	WL	Ft Drawdown	Purge Rate (ml/min)
1435		22.85	6.87	21.39	20	2.06	24.89	0.04	100
1436		22.82	6.89	21.29	11	2.06	24.91	0.06	100
1437		22.79	6.91	21.19	5	2.12	24.91	0.06	100
1438		22.77	6.92	21.12	3	2.11	24.91	0.06	100
1439		22.77	6.93	21.13	3	2.12	24.91	0.06	100
1440		22.77	6.93	21.12	3	2.11	24.91	0.06	100
1441		22.77	6.93	21.12	3	2.11	24.91	0.06	100

Final four water quality mesurements prior to sampling

1438		22.77	6.92	21.12	3	2.11			
1439		22.77	6.93	21.13	3	2.12			
1440		22.77	6.93	21.12	3	2.11			
1441		22.77	6.93	21.12	3	2.11			

water level measurements: ft BTOC

Final Well Drawdown: 0.06

Comments: well seal 48657, chest TC84, VOC TC-01

Sample Collector(s): MMbird

U10

CH2MHILL	Lab ID#	Chest/Temp.

CHAIN OF CUSTODY FOR VOLATILE ORGANCIS

U.S. Army Corps of Engineers
Tulsa District

Project: **LAREDO AFB** Site: **CONSTRUCTION LANDFILL**

TRAVEL BLANK DATA

Sample ID: LAFBCLFMW105 Date: 10-23-99 Time: 0700

163238

Water Source: PSAP Millipore System ASTM Type II Water
Analysis Requested: Volatile Organics / **Method 8260 B**
Date Mfg: 10-18-99 Custody Seal #: 101899 Meter Type: Horiba U-10 #: 604046
pH: 7.01 Cond: 0.001 mS/cm Turb: 0 NTU Temp: 16.9 °C

Signature of Sampler: MM Smith

SAMPLES CONTAINED IN THIS SHIPMENT

Sample ID Number	Vials	Site	X-Chest #	Lab #
LAFBCLFMW105	2			
LAFBCLFMW101	2	CLF	TC-109	
LAFBCLFMW201	2	CLF	TC-109	
LAFBCLFMW401	2	CLF	TC-86	
LAFBCLFMW402	2	CLF	TC-86	
LAFBCLFMW501	2	CLF	TC-84	
Total Samples Shipped	12			

CUSTODY RECORD

Relinquished By: MM Smith		Date 10-25-99	Time 1200
Chest #: TC-01	C/Seal #: 102501	Fed Ex #: 814026809843	
Received By: MB		Date 10/28/99a	Time 9:00

00226

Appendix F
Survey Data

Monitor Well and Test Pit Survey Data
Construction Landfill Site, Former Laredo Air Force Base

Point No.	Northing (NAD 27)	Easting (NAD 27)	Elevation (NGVD 29) (ft)	Description
1	694131.591	1685423.857	490.038	base point
2	694131.9447	1685423.297	490.147538	office contl
6	685591.4491	1685602.83	499.139709	top of casing MW-5
7	685591.1357	1685604.308	496.18009	ground surface MW-5
8	685611.6291	1685635.238	495.987012	trench 18
9	685639.8471	1685732.975	496.454062	trench 23
10	685613.2352	1685798.968	497.881942	trench 1
11	685589.4006	1685852.56	498.534852	trench 26
12	685563.181	1685848.696	502.744154	top of casing MW-4
13	685563.143	1685850.154	499.829488	ground surface MW-4
14	685692.2016	1685935.459	499.150125	conc mon us army LA-5
15	686308.2316	1685976.299	488.845636	conc mon us army LA-6
16	686733.0849	1686064.566	477.020832	top of casing MW-1
17	686732.976	1686066.069	473.930858	ground surface MW-1
18	685199.4194	1685571.521	502.446863	fir 5/8 tp5
19	682195.4375	1685938.435	496.588614	base point airp
20	685617.5808	1685556.632	494.470681	trench 11
21	685643.4247	1685459.304	492.771199	trench 28
22	685621.4207	1685375.816	492.71939	trench 17
23	686032.0867	1685108.271	480.835349	top of casing MW-2
24	686031.6801	1685107.191	478.309708	ground surface MW-2

Appendix G
Waste Disposal Documentation

CITY OF LAREDO LANDFILL
HWY 359
LAREDO, TX

Waste Management Company

39322

NON-HAZARDOUS MANIFEST

GENERATOR

Generator
Address
Phone

Shipping Location
Address
Phone

Description of Waste Materials	Profile Number	Total Quantity	Unit of Measure	Container Type

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CPR, Part 261 or any applicable state law, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable regulations.

Generator Authorized Agent Name (Print) | Signature | Delivery Date

TRANSPORTER

Transporter Name
Address

Driver Name
Truck Number
Truck Type

I hereby acknowledge receipt of the above described materials for transport from the generator site listed above.

Driver Signature | Shipment Date

I hereby acknowledge that the above described materials were received from the generator site were transported without incident to the destination listed below.

Driver Signature | Delivery Date

DESTINATION

Site Name CITY OF LAREDO LANDFILL Phone Number (956) 795-2515

Address HWY 359 LAREDO TX 78041

Disposal Location: North _____ East _____ Level _____

I hereby acknowledge receipt of the above described materials.

Samuel de la Rosa | 1-27-00

Name of Authorized Agent (Print) | Signature | Receipt Date

00230

White - Original Canary - Disposer Retain Pink - Transporter Retain Goldenrod - Generator Retain

CITY OF LAREDO LANDFILL
HWY 359
LAREDO, TX

A Waste Management Company

39322

NON-HAZARDOUS MANIFEST

GENERATOR

Generator CH2M Hill
Address 502 S Main #400
Tulsa OK 74103
Phone 918-619-7519

I.D. # CESQG
Shipping Location Laredo Int Airport
Address Laredo TX 78401
Phone

Description of Waste Materials	Profile Number	Total Quantity	Unit of Measure	Container Type
NON-HAZARDOUS Soil Cuttings			11	DM

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CPR, Part 261 or any applicable state law, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable regulations.

Generator Authorized Agent Name (Print) Signature Delivery Date

TRANSPORTER

Transporter Name
Address

Driver Name
Truck Number
Truck Type

I hereby acknowledge receipt of the above described materials for transport from the generator site listed above.

I hereby acknowledge that the above described materials were received from the generator site were transported without incident to the destination listed below.

Driver Signature Shipment Date

Driver Signature Delivery Date

DESTINATION

Site Name CITY OF LAREDO LANDFILL Phone Number (956) 795-2510
Address HWY 359 LAREDO, TX 78401
Disposal Location: North East Level

I hereby acknowledge receipt of the above described materials.

Name of Authorized Agent (Print) Signature Receipt Date

00231

White - Original Canary - Disposer Retain Pink - Transporter Retain Goldenrod - Generator Retain

Waste Systems
BROWNING-FERRIS INDUSTRIES

TEXAS NON-HAZARDOUS SPECIAL WASTE MANIFEST

NO. 356593

GENERATOR

GENERATOR NAME [illegible]

GENERATING LOCATION [illegible]

ADDRESS [illegible]

ADDRESS [illegible]

PHONE NO. 919 6697519

STATE GENERATOR ID NUMBER CFSQG

T.N.R.C.C.	DESCRIPTION OF WASTE	QUANTITY	UNITS
	PURGE/DECON WATER	200	O

BFI WASTE CODE TX 755 001117 NP3047 /

T.N.R.C.C.	DESCRIPTION OF WASTE	QUANTITY	UNITS

BFI WASTE CODE

T.N.R.C.C.	DESCRIPTION OF WASTE	QUANTITY	UNITS

BFI WASTE CODE

D-DRUM
C-CARTON
B-BAG
T-TRUCK
P-POUNDS
Y-YARDS
O-OTHER [illegible]

GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR Part 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations; AND, if the waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposal Restrictions, I certify and warrant that the waste has been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waste as defined by 40 CFR Part 261.

[illegible] EKLY
GENERATOR AUTHORIZED AGENT NAME

SIGNATURE [signature]

SHIPMENT DATE 01 3 [illegible]

TRANSPORTER

TRUCK NO. [illegible]

PHONE NO. 1-800-[illegible]4 [illegible]114

TRANSPORTER NAME [illegible] ENVIRONMENTAL SVC

DRIVER NAME (PRINT) JAMES [illegible]

ADDRESS 11405 CONROY LANE

MANCHACA TX 78652

VEHICLE LICENSE NO./STATE 1HNT66 TX

STATE TRANSPORTER ID NO. 0057026[illegible]

I HEREBY CERTIFY THAT THE ABOVE NAMED MATERIAL WAS PICKED UP AT THE GENERATOR SITE LISTED ABOVE.

DRIVER SIGNATURE [signature]

SHIPMENT DATE 012700

I HEREBY CERTIFY THAT THE ABOVE NAMED MATERIAL WAS DELIVERED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

DRIVER SIGNATURE [signature]

DELIVERY DATE 012[illegible]

DESTINATION

SITE NAME BROWNING-FERRIS IND. / SUNSET FARMS LANDFILL

PHONE NO. 512-272-4327

ADDRESS 9912 GILES RD. AUSTIN, TX 78754

MSW#1447

[I HER]EBY CERTIFY THAT THE ABOVE NAMED MATERIAL HAS BEEN ACCEPTED AND TO THE BEST OF MY KNOWLEDGE THE FOREGOING IS TRUE AND ACCURATE.

[illegible] Green
NAME OF AUTHORIZED AGENT

SIGNATURE [signature]

[illegible]

00232

5/90

109-720TX

BFI Waste Systems

TEXAS NON-HAZARDOUS SPECIAL WASTE MANIFEST

NO. 356528

GENERATOR

GENERATOR NAME [illegible]

GENERATING LOCATION [illegible]

ADDRESS [illegible]

ADDRESS [illegible]

[illegible] 74103

PHONE NO. 918 6597519

STATE GENERATOR ID NUMBER

T.N.R.C.C.	DESCRIPTION OF WASTE	QUANTITY	UNITS
	[illegible]	[illegible]	[illegible]

BFI WASTE CODE TX [illegible]

BFI WASTE CODE

WASTE CODE

UNITS: D-DRUM, C-CARTON, B-BAG, T-TRUCK, P-POUNDS, Y-YARDS, O-OTHER

GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR Part 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations; AND, if the waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposal Restrictions, I certify and warrant that the waste has been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waste as defined by 40 CFR Part 261.

Charles A. Daugherty — GENERATOR AUTHORIZED AGENT NAME

[illegible] — SIGNATURE

[illegible] — SHIPMENT DATE

TRANSPORTER

TRUCK NO. [illegible]

PHONE NO. [illegible]

TRANSPORTER NAME [illegible]

DRIVER NAME (PRINT) [illegible]

ADDRESS [illegible]

VEHICLE LICENSE NO./STATE [illegible]

STATE TRANSPORTER ID NO. [illegible]

I HEREBY CERTIFY THAT THE ABOVE NAMED MATERIAL WAS PICKED UP AT THE GENERATOR SITE LISTED ABOVE.

[illegible] — DRIVER SIGNATURE

SHIPMENT DATE

I HEREBY CERTIFY THAT THE ABOVE NAMED MATERIAL WAS DELIVERED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

[illegible] — DRIVER SIGNATURE

02/6[illegible] — DELIVERY DATE

DESTINATION

SITE NAME BROWNING-FERRIS INC / SUNSET FARMS LANDFILL

PHONE NO. 512-272-3327

MSW#14-7

ADDRESS 9912 GILES RD. AUSTIN, TX 78754

I HEREBY CERTIFY THAT THE ABOVE NAMED MATERIAL HAS BEEN ACCEPTED AND TO THE BEST OF MY KNOWLEDGE THE FOREGOING IS TRUE AND ACCURATE.

[illegible] — NAME OF AUTHORIZED AGENT

[illegible] — SIGNATURE

02/8/00

00233

109-720TX

Appendix H
Laboratory Analytical Data and Data Validation Report

Data Validation Report

Limited Groundwater Assessment Former Laredo Air Force Base Laredo, Texas

Prepared for

U.S. Army Corps of Engineers, Tulsa District

Contract No.

DACA56-97-D0010
Task Order No. 28

April 2000

CH2MHILL

00235

Contents

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Section 1 – Introduction

Section 1 - Introduction

CH2M HILL was retained by the United States Army Corps of Engineers (USACE), Tulsa District, to perform a Limited Groundwater Assessment (LGA) for the construction landfill (CLF) at the former Laredo Air Force Base (LAFB) located in Laredo, Texas. The CLF associated with the former LAFB is the subject of this investigation.

On 7 May 1942, the U.S. Government acquired 2,085.43 acres for the construction of Laredo Army Air Corps Base (now known as former Laredo Air Force Base). The Government constructed runways and numerous facilities from 1942 to 1974. The Base was initially deactivated on 17 June 1947; however, it was reactivated during the Korean conflict. The former Base was again deactivated on 29 March 1974. Approximately 309 acres were either deeded or sold to other federal, state and county agencies, or private firms. The remainder of the Base was deeded to the City of Laredo.

The former LAFB is located in the City of Laredo, Webb County, Texas. Most of the former LAFB is now operated as Laredo International Airport. Other areas have been developed for residential, commercial, and industrial use.

The CLF is located along the northwest boundary of the Laredo International Airport, near the runway terminus. The CLF was reportedly used both during the period of Department of Defense (DoD) occupancy and after the property was deeded to the City of Laredo. Machinery, vehicles, and concrete rubble were reportedly visible along the slope.

The project samples were collected by CH2M HILL personnel. The samples collected include four field groundwater samples, one QC field duplicate, one QA field duplicate, and one trip blank sample. The field samples, the QC field duplicate, and the trip blank sample were shipped to CRC & Associates, Inc (Tulsa, OK). The samples were then subcontracted to Specialized Assays, Inc. (Nashville, TN) for analysis. The QA field duplicated was shipped to Environmental Testing and Consulting (Memphis, TN) for analysis. The QA and QC duplicates were collected from well MW4. All samples except

the trip blank sample were analyzed for volatile organic compounds (VOCs) by EPA Method 8260B, semivolatile organic compounds (SVOCs) by EPA Method 8270C, polychlorinated biphenyls (PCBs) by EPA Method 8082A, and for total and dissolved RCRA metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) by EPA Methods 6010B and 7470A, as appropriate. The trip blank sample was analyzed for VOCs only.

Section 2 – Data Validation/Data Quality Review Process

Section 2 - Data Validation/Data Quality Review Process

The purpose of the data quality evaluation process is to assess the effect of the overall analytical process on the usability of the data. The two major categories of data evaluation are laboratory performance and matrix interferences. Evaluation of laboratory performance is a check for compliance with the method requirements; either the laboratory did, or did not, analyze the samples within the limits of the analytical method. Evaluation of matrix interferences is more subtle and involves the analysis of several areas of results including surrogate spike recoveries, matrix spike recoveries, and duplicate sample results.

Before the analytical results were released by the laboratory, both the sample and QC data were carefully reviewed to verify sample identity, instrument calibration, detection limits, dilution factors, numerical computations, accuracy of transcriptions, and chemical interpretations. Additionally, the QC data were reduced and the resulting data were reviewed to ascertain whether they were within the laboratory-defined limits for accuracy and precision. Any non-conforming data were discussed in the data package cover letter and case narrative.

All of the data packages were reviewed by the project chemists using the process outlined in such guidance documents as the Environmental Protection Agency (EPA) *National Functional Guidelines for Evaluating Inorganic Analyses (July 1994) and National Functional Guidelines for Organic Data Review (July 1994)*. Engineering Manual 200-1-6 (EM 200-1-6) US Army Corps of Engineers *Chemical Quality Assurance for Hazardous, Toxic and Radioactive Waste (HTRW) Projects (October 1997)* was consulted as well.

The data validation and review process is independent of the laboratory's checks and focuses on the usability of the data to support the project data interpretation and decision-making processes. "Did it meet the Data Quality Objectives (DQOs) as defined in the workplan?" Areas of review included holding time compliance, surrogate recoveries, matrix spiked sample results, method blank results, initial and continuing

calibrations, laboratory control samples, internal standard response and retention times, instrument tuning criteria, laboratory duplicate sample results and field sample duplicate results. A data review worksheet was completed for each of these data packages.

Sample results that were not within the acceptance limits were appended with a qualifying flag, which consists of a single or double-letter abbreviation that indicated a potential problem with the data. Although the qualifying flags originate during the data review and validation processes, they are included in the data summary tables deliverable so that the data will not be used indiscriminately. The following flags were used in this text:

- **U** Undetected. Samples were analyzed for this analyte, but it was not detected above the method detection limit (MDL) or instrument detection limit (IDL).
- **UJ** Detection limit estimated. Samples were analyzed for this analyte, but the results were qualified as not detected. The result is estimated.
- **J** Estimated. The analyte was present, but the reported value may not be accurate or precise.
- **R** Rejected. The data are unusable. (NOTE: Analyte/compound may or may not be present.)
- = Detected. Target parameter detected at the concentration reported.

Numerical sample results that were greater than the method detection limit but less than the Reporting Limit (RL) were qualified with a "J" for estimated.

Once the data validation review and processes were completed, the entire data set was reviewed for chemical compound frequencies of detection, dilution factors that might affect data usability, and patterns of target compounds distribution. The data set was also evaluated to identify potential data limitations, uncertainties, or both in the analytical results.

Section 3 – List of Common Acronyms and Abbreviations

Section 3 - List of Common Acronyms and Abbreviations

CLF	Construction Landfill (CLF)
COC	Chain-of-Custody
DoD	Department of Defense
DQO	Data Quality Objective
EM	Engineering Manual
EPA	Environmental Protection Agency
HTRW	Hazardous, Toxic, Radioactive Waste
ICP	Inductively Coupled Plasma
IDL	Instrument Detection Limit
LAFB	Laredo Air Force Base
LB	Laboratory Blank
LCS/LCSD	Laboratory Control Sample/Laboratory Control Sample Duplicate
LGA	Limited Groundwater Assessment
MDL	Method Detection Limit
MS/MSD	Matrix Spike/Matrix Spike Duplicate
PCBs	Polychlorinated Biphenyls
QA/QC	Quality Assurance/Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference
SVOC	Semi-volatile Organic Compound
TB	Trip Blank
USACE	United States Army Corps of Engineers
VOC	Volatile Organic Compound

Section 4 – Chain of Custody Synopsis

Section 4 - Chain of Custody Synopsis

Chemical Analytical Methods

Sample ID: LAFBCLFMW-	Matrix	Time	Type	ICP Metals - Total and Filtered SW6010	Mercury - Total and Filtered SW7470	Volatile Organics SW8260	Semivolatile Organics SW8270	PCBs SW8082
Samples Collected on 21 July 1999								
101	GW	8:45:00 AM	N	X	X	X	X	X
201	GW	9:48:00 AM	N	X	X	X	X	X
401	GW	12:43:00 PM	N	X	X	X	X	X
402	GW	12:43:00 PM	FD	X	X	X	X	X
501	GW	14:41:00 PM	N	X	X	X	X	X
105	WQ	8:30:00 AM	TB	NR	NR	X	NR	NR

Notes: X – Specialized Assays, Inc. Nashville, TN
FD – Field Duplicate
NR – Not Requested
TB – Trip Blank

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Section 5 – Sample Cross Reference Tables

Section 5 - Sample Cross Reference Tables

Sample Cross Reference
by Laboratory ID

Lab Sample ID	Sample ID	Sample Type
99-A163233	LAFBCLFMW-101	N
99-A163234	LAFBCLFMW-201	N
99-A163235	LAFBCLFMW-401	N
99-A163236	LAFBCLFMW-402	FD
99-A163237	LAFBCLFMW-501	N
99-A163238	LAFBCLFMW-105	TB

Sample Cross Reference
By Sample ID

Sample ID	Lab Sample ID	Sample Type
LAFBCLFMW-101	99-A163233	N
LAFBCLFMW-201	99-A163234	N
LAFBCLFMW-401	99-A163235	N
LAFBCLFMW-402	99-A163236	FD
LAFBCLFMW-501	99-A163237	N
LAFBCLFMW-105	99-A163238	TB

Section 6 – Laredo Air Force Base – Construction Landfill

Section 6 – Laredo Air Force Base – Construction Landfill

6.1 Volatile Organic Compounds

Groundwater samples were collected and analyzed for VOCs using SW-846 method 8260. The total number of field samples analyzed during this sampling event, are outlined in Section 3.0 of this report. A Laboratory Quality Assurance Results table is included in this report. The only compound detected was Acetone, reported at a concentration of 104 µg/L in sample LAFBCLFMW-201. The reported detection of Acetone is also listed in the attached Hits Tables.

6.1.1 Accuracy

All surrogate recoveries were within acceptable quality control limits.

All matrix spike (MS), matrix spike duplicate (MSD), and laboratory control spike (LCS) recoveries were within acceptable quality control limits.

The sample selected for the matrix spike and matrix spike duplicate was not a client-specified sample. However, the laboratory provided the MS/MSD sample information from the associated QC batch.

6.1.2 Precision

All MS/MSD relative percent difference (RPD) values were within acceptable quality control limits.

Comparison of the field (MW401)and quality control duplicate (MW402) samples reflected no reportable differences. Both samples reported non-detects for all target parameters.

6.1.3 Representativeness

All travel and method blanks were free of contamination.

All samples were analyzed within the required fourteen-day holding time.

No dilutions were required in the analysis of these samples.

6.1.4 Comparability

A QA field duplicate groundwater sample was collected from MW4 (sample MW403). A comparison of the field and field duplicates will be provided by the USACE.

6.2 Semivolatile Organic Compounds

Groundwater samples were collected and analyzed for SVOCs using SW-846 method 8270. The total number of samples analyzed during this sampling event, are outlined in Section 3.0 of this report. A Laboratory Quality Assurance Results table is included in this section. There were no reported detections of any semivolatile target parameter.

6.2.1 Accuracy

All surrogate recoveries were within acceptable quality control limits.

All matrix spike (MS), matrix spike duplicate (MSD), and laboratory control spike (LCS) recoveries were within acceptable quality control limits except as listed below:

The sample selected for the matrix spike and matrix spike duplicate was not a client-specified sample. However, the laboratory provided the MS/MSD sample information from the associated QC batch.

Matrix Spike and LCS Recoveries Out of Criteria

Sample ID	Compound	Spike Recovery (% rec)	Recovery Limits
Matrix Spike	1,4-Dichlorobenzene	31	46 - 108
	1,2,4-Trichlorobenzene	37	41 - 127
Matrix Spike Duplicate	1,4-Dichlorobenzene	28	46 - 108
	1,2,4-Trichlorobenzene	34	41 - 127
LCS	n-Nitrosodimethylamine	36	37 - 136
	Aniline	<25	39 – 124
	3,3'-Dichlorobenzidine	<20	5 - 127
	4-Nitrophenol	<25	21 - 116

- Semivolatile data is not flagged based on spike recovery alone, but in conjunction with other QC parameters such as surrogate recoveries. The results for the dichlorobenzene isomers were also reported from the volatile fraction. The recoveries for the dichlorobenzene isomers in the LCS for the volatile fraction were within acceptable ranges. Taking into consideration all of the information, the results for the dichlorobenzene isomers were not flagged.
- As the recovery for n-nitrosodimethylamine was only one percent below QC limits in the LCS, no flags were applied.
- The recoveries for 4-Nitrophenol in the MS/MSD samples were within acceptable recovery limits, therefore no flags were applied.
- Although semivolatile data is not flagged based on spike recovery alone, in this case, the results for aniline and 3,3'-Dichlorobenzidine were flagged "UJ", as not detected, estimated, due to the low recoveries in the LCS.

6.2.2 Precision

All MS/MSD relative percent difference (RPD) values were within acceptable quality control limits.

Comparison of the field (MW401) and quality control duplicate (MW402) samples reflected no reportable differences. Both samples reported non-detects for all target parameters.

6.2.3 Representativeness

The laboratory method blank was reported free of contamination.

All water samples were extracted within the seven day holding time, and analyzed within the subsequent forty day holding time.

No dilutions were required in the analysis of these samples.

6.2.4 Comparability

A QA field duplicate groundwater sample was collected from MW4 (sample MW403). A comparison of the field and field duplicates will be provided by the USACE.

6.3 Polychlorinated biphenyls (PCBs)

Groundwater samples were collected and analyzed for PCBs using SW-846 method 8082. The total number of samples analyzed during this sampling event, are outlined in Section 3.0 of this report. A Laboratory Quality Assurance Results table is included in this section. There were no reported detections of any target parameter.

6.3.1 Accuracy

All surrogate recoveries were within acceptable quality control limits.

All matrix spike (MS), matrix spike duplicate (MSD), and laboratory control spike (LCS) recoveries were within acceptable quality control limits.

The sample selected for the matrix spike and matrix spike duplicate was not a client-specified sample. However, the laboratory provided the MS/MSD sample information from the associated QC batch.

6.3.2 Precision

All MS/MSD relative percent difference (RPD) values were within acceptable quality control limits.

Comparison of the field (MW401) and quality control duplicate (MW402) samples reflected no reportable differences. Both samples reported non-detects for all target parameters.

6.3.3 Representativeness

The laboratory method blank was reported free of contamination.

All water samples were extracted within the seven day holding time, and analyzed within the subsequent forty day holding time.

No dilutions were required in the analysis of these samples.

6.3.4 Comparability

A QA field duplicate groundwater sample was collected from MW4 (sample MW403). A comparison of the field and field duplicates will be provided by the USACE.

6.4 Metals

Groundwater samples were collected and analyzed for both total and dissolved metals, following SW-846 method 6010 (arsenic, barium, cadmium, chromium, lead, selenium, and silver) and SW-846 method 7470 (mercury). The total number of samples analyzed during this sampling event, are outlined in Section 3.0 of this report. A Laboratory Quality Assurance Results table is included in this section. The report indicated the presence of some target elements in the samples. These concentrations are listed in the attached Hits Tables.

6.4.1 Accuracy

All matrix spike (MS), matrix spike duplicate (MSD), and laboratory control spike (LCS) and recoveries were within acceptable quality control limits with the following exceptions:

- The recoveries for chromium in the total and dissolved metal samples were slightly below the limits of 75 percent recovery at 73.4 and 69.9 percent, respectively. The results for chromium were flagged with a "UJ" as not detected, estimated, or a "J" as estimated.
- The case narrative stated that the spike recovery for dissolved cadmium was low, but this was not reflected in the summary forms. No further action was taken.

6.4.2 Precision

The laboratory sample duplicate values were within acceptable quality control limits.

Comparison of the detected parameters in the field (MW 401) and quality control duplicate (MW402) samples reflected no reportable differences.

6.4.3 Representativeness

The laboratory method blank was reported free of contamination.

All samples were analyzed within the required six-month holding time. Mercury was analyzed within the required twenty-eight day holding time.

No dilutions were required in the analysis of these samples.

6.4.4 Comparability

A QA field duplicate groundwater sample was collected from MW4 (sample MW403). A comparison of the field and field duplicates will be provided by the USACE.

6.5 Technical Summary

A complete review of the laboratory data collected during the investigation of the Laredo AFB CLF groundwater assessment sampling event was performed. Upon completion, the following items were noted:

The chain-of-custody and field data forms were complete and contained the required information without any noted exceptions.

6.6 Completeness

All of the data have been qualified according to the findings in the sections listed above. None of the data validated for this sampling event were rejected (where no valid result for parameter remains) and 25 results were qualified as estimated (J/UJ). The data is 100 percent complete therefore, the goal of 90 percent completeness has been met.

6.7 Conclusions

An overall evaluation of the samples collected indicates that the sampling procedures and laboratory analyses have been conducted in an acceptable manner.

Appendix A. Data Forms

VOCs

Data Review and Validation for: GC/MS Volatiles

roject Name & Task: LAREDO AFB

Project # & Case/SDG: 153479.DV.ZZ 165856

Methods: ☐ OLM03.2 ☑ SW-846 8260B ☐ EPA 624 ☐ Other:

Program: ☐ AFCEE ☐ NFESC ☐ Other **Number of Samples:** 6

Field QC Samples: 401/402 - F.D up 105 - TB

Reviewed by & Date: A. Kelly 1/6/00

Matrix: ☑ Water ☐ Soil ☐ Other

Quality Control	Form #	Requirements	Check (If No* checked, see comments)	Flags Applied (see comments)
Data Pkg Complete (DP)	Pkg	All required deliverables in pkg.	☑ OK ☐ No* ☐ Not provided	☐ Flags Applied
	COC	All samples on COC reported	☑ OK ☐ No*	☐ Flags Applied
Holding Times (HT)	1	Water 7/14d (unpres/pres)	☑ OK ☐ No*	☐ Flags Applied
	COC	Soil 14d (low)	☐ OK ☐ No*	☐ Flags Applied
		Soil (med/high)	☐ OK ☐ No*	☐ Flags Applied
Surrogates (SS)	2	Method surrogates used	☑ OK ☐ No* ☐ Not provided	☐ Flags Applied
		Recovery Limits: ☑ Lab ☐ Meth	☑ OK ☐ No* ☐ Diluted out	
MS/MSD or MS/LD	3	Matrix Spikes Provided	☑ MS/MSD ☐ MS/LD ☐ None*	☐ Flags Applied
		Correct Spike Used	☑ OK ☐ No*	
		Acceptance Limits: ☑ Lab ☐ Meth	☑ OK ☐ No* ☐ Diluted out	
LCS (BS) ☑ LCS only ☐ LCS/LCSD	3	LCS per prep. batch	☑ OK ☐ No*	☐ Flags Applied
		Acceptance criteria met	☑ OK ☐ No*	
Blanks (MB,TB,EB, FB/AB)	1	Detects (> MDL or RL/CRQL)	☑ All ND ☐ see blnk wksht	☐ Flags Applied
Method/Lab Blank (MB)	5	Meth Blnk per 12 hr shift	☑ OK ☐ No*	
Tune - BFB (TN) prior to sample analysis	5	Initial & Begin of 12-hr shift	☑ OK ☐ No*	☐ Flags Applied
		Mass Assignment Correct	☑ OK ☐ No*	
		Ion Abundance Criteria met	☑ OK ☐ No*	
Initial Calibration (IC)	6	Minimum of 5 levels	☑ OK ☐ No*	☐ Flags Applied
		Linearity criteria met	☑ OK ☐ No* ☐ see cal wksht	
		Minimum RRF criteria met	☑ OK ☐ No* ☐ see cal wksht	
Continuing Calib. Verif. (CC) prior to sample analysis	7	Analyzed at begin of 12-hr shift	☑ OK ☐ No*	☐ Flags Applied
		%diff or %drift criteria met	☑ OK ☐ No* ☐ see cal wksht	
		Minimum RRF criteria met	☑ OK ☐ No* ☐ see cal wksht	
	8	Int. Std. RT/Area criteria met	☑ OK ☐ No*	
Internal Standards (IS)	8	Sample IS area criteria met	☑ OK ☐ No*	☐ Flags Applied
Sample Evaluation	1	All hits within cal. Range	☑ OK ☐ No* ☐ All ND	☐ Flags Applied
	5	Samples w/in 12-hr clock	☑ OK ☐ No*	
	raw	Manual Integration performed	☐ No ☐ see comments	
Field Duplicate (FD)	1	Precision of native vs Field Dup	☑ OK ☐ No* ☐ N/A	☐ Flags Applied

This sheet is applicable to multiple methods. All requirement items may not apply to every analytical method.

Case Narrative Comments: NO EXCEPTIONS NOTED.

QC Item	Comments
	NO EXCEPTIONS - NO FLAGS

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SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

CRC & ASSOCIATES, INC 8311
JOHN STATHAM
916 W. 23RD STREET
TULSA, OK 74107

Lab Number: 99-A163233
Sample ID: LAFBCLFMW-101
Sample Type: Ground water
Site ID:

Date Collected: 10/23/99
Time Collected: 8:45
Date Received: 10/26/99
Time Received: 9:00

Project:
Project Name: LAREDO AIR FORCE BASE
Sampler: GREG SNIDER

Parameter	Result	Flag	Units	Limit of Quantitation	Limit of Detection	Dilution Factor	Date	Time	Method	Analyst	Batch
Volatile Organics											
Acetone	ND		ug/l	10.0	4.9	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
Acetonitrile	ND		ug/l	5.0	5.0	1.0	11/ 5/99	18:01	8260B	B. Elliott	2035
Acrolein	ND		ug/l	10.0	2.5	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
Acrylonitrile	ND		ug/l	10.0	0.6	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
lyl chloride	ND		ug/l	10.0	5.0	1.0	11/ 5/99	18:01	8260B	B. Elliott	2035
nzene	ND		ug/l	2.0	0.4	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
Bromoform	ND		ug/l	2.0	0.2	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
Bromomethane	ND		ug/l	2.0	0.2	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
2-Butanone	ND		ug/l	10.0	0.6	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
Carbon disulfide	ND		ug/l	2.0	0.7	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
Carbon tetrachloride	ND		ug/l	2.00	0.4	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
Chlorobenzene	ND		ug/l	2.0	0.4	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
Chloroethane	ND		ug/l	2.0	0.5	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
Chloroform	ND		ug/l	2.0	0.4	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
Chloromethane	ND		ug/l	2.0	0.5	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
Chloroprene	ND		ug/l	5.0	5.0	1.0	11/ 5/99	18:01	8260B	B. Elliott	2035
1,2-Dibromo-3-chloropropane	ND		ug/l	10.0	0.5	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
Dibromochloromethane	ND		ug/l	2.0	0.1	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
1,2-Dibromoethane	ND		ug/l	2.0	0.4	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
Dibromomethane	ND		ug/l	2.0	0.4	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
1,4-Dichloro-2-butene	ND		ug/l	2.0	1.6	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
1,2-Dichlorobenzene	ND		ug/l	2.0	0.5	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
1,3-Dichlorobenzene	ND		ug/l	2.0	0.2	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
1,4-Dichlorobenzene	ND		ug/l	2.0	0.3	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
Dichlorodifluoromethane	ND		ug/l	2.0	0.2	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
1,1-Dichloroethane	ND		ug/l	2.0	0.2	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
1,2-Dichloroethane	ND		ug/l	2.0	0.1	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
1,1-Dichloroethene	ND		ug/l	2.0	0.6	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
1,2-Dichloroethene (total)	ND		ug/l	2.0	0.5	1.0	11/ 5/99	18:01	8260A	B. Elliott	1651
1,2-Dichloropropane	ND		ug/l	2.0	0.4	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
-1,3-Dichloropropene	ND		ug/l	2.0	0.5	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
rans-1,3-Dichloropropene	ND		ug/l	2.0	0.5	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
1,4-Dioxane	ND		ug/l	10.0	2.0	1.0	11/ 5/99	18:01	8260B	B. Elliott	2035
Ethylbenzene	ND		ug/l	2.0	0.2	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
Ethyl methacrylate	ND		ug/l	10.0	0.5	1.0	11/ 5/99	18:01	8260B	B. Elliott	2035

SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

U17

ANALYTICAL REPORT

Laboratory Number: 99-A163233
Sample ID: LAFBCLFMW-101

Parameter	Result	Flag	Units	Limit of Quantitation	Limit of Detection	Dilution Factor	Date	Time	Method	Analyst	Batch
Hexachlorobutadiene	ND		ug/l	2.0	0.9	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
2-Hexanone	ND		ug/l	10.0	2.4	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
Iodomethane	ND		ug/l	2.0	0.2	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
Isobutyl alcohol	ND		ug/l	10.0	10.0	1.0	11/ 5/99	18:01	8260B	B. Elliott	2035
Methacrylonitrile	ND		ug/l	5.0	5.0	1.0	11/ 5/99	18:01	8260B	B. Elliott	2035
Methyl methacrylate	ND		ug/l	5.0	5.0	1.0	11/ 5/99	18:01	8260B	B. Elliott	2035
4-Methyl-2-pentanone	ND		ug/l	10.0	0.6	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
Methylene chloride	ND		ug/l	10.0	0.4	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
Pentachloroethane	ND		ug/l	5.0	2.0	1.0	11/ 5/99	18:01	8260B	B. Elliott	2035
Propionitrile	ND		ug/l	5.0	5.0	1.0	11/ 5/99	18:01	8260B	B. Elliott	2035
Styrene	ND		ug/l	2.0	0.7	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
1,1,1,2-Tetrachloroethane	ND		ug/l	2.0	0.4	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
1,1,2,2-Tetrachloroethane	ND		ug/l	2.0	0.3	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
Tetrachloroethene	ND		ug/l	2.0	0.1	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
Toluene	ND		ug/l	2.0	0.3	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
1,2,4-Trichlorobenzene	ND		ug/l	2.0	0.6	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
1,1,1-Trichloroethane	ND		ug/l	2.0	0.1	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
1,1,2-Trichloroethane	ND		ug/l	2.0	0.4	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
Trichloroethene	ND		ug/l	2.0	0.5	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
1,2,3-Trichloropropane	ND		ug/l	2.0	0.4	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
Vinyl acetate	ND		ug/l	2.0	1.6	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
Vinyl chloride	ND		ug/l	2.0	1.4	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
Xylenes	ND		ug/l	2.0	0.8	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
Dichloroisopropylether	ND		ug/l	5.0	2.0	1.0	11/ 5/99	18:01	8260B	B. Elliott	2035
Bromodichloromethane	ND		ug/l	2.0	0.6	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651
Trichlorofluoromethane	ND		ug/l	2.0	0.2	1.0	11/ 5/99	18:01	8260B	B. Elliott	1651

ND = Not detected at the limit of quantitation.

Surrogate	% Recovery	Target Range
VOA Surrogate, 1,2-Dichloroethane, d4	104.	60. - 138.
VOA Surr, 1,2-DCA, d4	99.	60. - 138.
VOA Surrogate, Toluene d8	106.	80. - 123.
VOA Surr, Toluene d8	91.	80. - 123.
VOA Surrogate, 4-Bromofluorobenzene	99.	73. - 122.
VOA Surr, 4-BFB	90.	73. - 122.

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2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

Laboratory Number: 99-A163233
Sample ID: LAFBCLFMW-101

Authorized by: _____

Theodore J. Duello, Ph.D., QA Officer
Michael H. Dunn, M.S., Technical Dir.
Danny B. Hale, M.S., Laboratory Mgr.
Johnny A. Mitchell, Technical Serv. Dir.

00254 HL 1/6/00

SPECIALIZED ASSAYS, INC.
2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

CRC & ASSOCIATES, INC 8311
JOHN STATHAM
916 W. 23RD STREET
TULSA, OK 74107

Project:
Project Name: LAREDO AIR FORCE BASE
Sampler: GREG SNIDER

Lab Number: 99-A163234
Sample ID: LAFBCLFMW-201
Sample Type: Ground water
Site ID:

Date Collected: 10/23/99
Time Collected: 9:48
Date Received: 10/26/99
Time Received: 9:00

Parameter	Result	Flag	Units	Limit of Quantitation	Limit of Detection	Dilution Factor	Date	Time	Method	Analyst	Batch
**Volatile Organics											
Acetone	104.0		ug/l	10.0	4.9	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
Acetonitrile	ND		ug/l	5.0	5.0	1.0	11/ 5/99	18:35	8260B	B. Elliott	2035
Acrolein	ND		ug/l	10.0	2.5	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
Acrylonitrile	ND		ug/l	10.0	0.6	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
Allyl chloride	ND		ug/l	10.0	5.0	1.0	11/ 5/99	18:35	8260B	B. Elliott	2035
Benzene	ND		ug/l	2.0	0.4	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
Bromoform	ND		ug/l	2.0	0.2	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
Bromomethane	ND		ug/l	2.0	0.2	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
2-Butanone	ND		ug/l	10.0	0.6	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
Carbon disulfide	ND		ug/l	2.0	0.7	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
Carbon tetrachloride	ND		ug/l	2.00	0.4	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
Chlorobenzene	ND		ug/l	2.0	0.4	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
Chloroethane	ND		ug/l	2.0	0.5	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
Chloroform	ND		ug/l	2.0	0.4	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
Chloromethane	ND		ug/l	2.0	0.5	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
Chloroprene	ND		ug/l	5.0	5.0	1.0	11/ 5/99	18:35	8260B	B. Elliott	2035
1,2-Dibromo-3-chloropropane	ND		ug/l	10.0	0.5	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
Dibromochloromethane	ND		ug/l	2.0	0.1	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
1,2-Dibromoethane	ND		ug/l	2.0	0.4	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
Dibromomethane	ND		ug/l	2.0	0.4	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
1,4-Dichloro-2-butene	ND		ug/l	2.0	1.6	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
1,2-Dichlorobenzene	ND		ug/l	2.0	0.5	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
1,3-Dichlorobenzene	ND		ug/l	2.0	0.2	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
1,4-Dichlorobenzene	ND		ug/l	2.0	0.3	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
Dichlorodifluoromethane	ND		ug/l	2.0	0.2	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
1,1-Dichloroethane	ND		ug/l	2.0	0.2	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
1,2-Dichloroethane	ND		ug/l	2.0	0.1	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
1,1-Dichloroethene	ND		ug/l	2.0	0.6	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
1,2-Dichloroethene (total)	ND		ug/l	2.0	0.5	1.0	11/ 5/99	18:35	8260A	B. Elliott	1651
1,2-Dichloropropane	ND		ug/l	2.0	0.4	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
cis-1,3-Dichloropropene	ND		ug/l	2.0	0.5	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
trans-1,3-Dichloropropene	ND		ug/l	2.0	0.5	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
1,4-Dioxane	ND		ug/l	10.0	2.0	1.0	11/ 5/99	18:35	8260B	B. Elliott	2035
Ethylbenzene	ND		ug/l	2.0	0.2	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
Ethyl Methacrylate	ND		ug/l	10.0	0.5	1.0	11/ 5/99	18:35	8260B	B. Elliott	2035

SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

U2U

ANALYTICAL REPORT

Laboratory Number: 99-A163234
Sample ID: LAFBCLFMW-201

Parameter	Result	Flag	Units	Limit of Quantitation	Limit of Detection	Dilution Factor	Date	Time	Method	Analyst	Batch
Hexachlorobutadiene	ND		ug/l	2.0	0.9	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
2-Hexanone	ND		ug/l	10.0	2.4	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
Iodomethane	ND		ug/l	2.0	0.2	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
Isobutyl alcohol	ND		ug/l	10.0	10.0	1.0	11/ 5/99	18:35	8260B	B. Elliott	2035
Methacrylonitrile	ND		ug/l	5.0	5.0	1.0	11/ 5/99	18:35	8260B	B. Elliott	2035
Methyl methacrylate	ND		ug/l	5.0	5.0	1.0	11/ 5/99	18:35	8260B	B. Elliott	2035
4-Methyl-2-pentanone	ND		ug/l	10.0	0.6	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
Methylene chloride	ND		ug/l	10.0	0.4	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
Pentachloroethane	ND		ug/l	5.0	2.0	1.0	11/ 5/99	18:35	8260B	B. Elliott	2035
Propionitrile	ND		ug/l	5.0	5.0	1.0	11/ 5/99	18:35	8260B	B. Elliott	2035
Styrene	ND		ug/l	2.0	0.7	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
1,1,1,2-Tetrachloroethane	ND		ug/l	2.0	0.4	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
1,1,2,2-Tetrachloroethane	ND		ug/l	2.0	0.3	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
Tetrachloroethene	ND		ug/l	2.0	0.1	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
Toluene	ND		ug/l	2.0	0.3	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
1,2,4-Trichlorobenzene	ND		ug/l	2.0	0.6	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
1,1,1-Trichloroethane	ND		ug/l	2.0	0.1	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
1,1,2-Trichloroethane	ND		ug/l	2.0	0.4	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
Trichloroethene	ND		ug/l	2.0	0.5	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
1,2,3-Trichloropropane	ND		ug/l	2.0	0.4	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
Vinyl acetate	ND		ug/l	2.0	1.6	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
Vinyl chloride	ND		ug/l	2.0	1.4	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
Xylenes	ND		ug/l	2.0	0.8	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
Dichloroisopropylether	ND		ug/l	5.0	2.0	1.0	11/ 5/99	18:35	8260B	B. Elliott	2035
Bromodichloromethane	ND		ug/l	2.0	0.6	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651
Trichlorofluoromethane	ND		ug/l	2.0	0.2	1.0	11/ 5/99	18:35	8260B	B. Elliott	1651

ND = Not detected at the limit of quantitation

Surrogate	% Recovery	Target Range
VOA Surrogate, 1,2-Dichloroethane, d4	103.	60. - 138.
VOA Surr, 1,2-DCA, d4	100.	60. - 138.
VOA Surrogate, Toluene d8	101.	80. - 123.
VOA Surr, Toluene d8	90.	80. - 123.
VOA Surrogate, 4-Bromofluorobenzene	102.	73. - 122.
VOA Surr, 4-BFB	93.	73. - 122.

11/6/08

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SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

Laboratory Number: 99-A163234
Sample ID: LAFBCLFMW-201

Authorized by: _____

Theodore J. Duello, Ph.D., QA Officer
Michael H. Dunn, M.S., Technical Dir.
Danny B. Hale, M.S., Laboratory Mgr.
Johnny A. Mitchell, Technical Serv. Dir.

1/6/08

U22

SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

CRC & ASSOCIATES, INC 8311
JOHN STATHAM
916 W. 23RD STREET
TULSA, OK 74107

Lab Number: 99-A163235
Sample ID: LAFBCLFMW-401
Sample Type: Ground water
Site ID:

Project:
Project Name: LAREDO AIR FORCE BASE
Sampler: GREG SNIDER

Date Collected: 10/23/99
Time Collected: 12:43
Date Received: 10/26/99
Time Received: 9:00

Parameter	Result	Flag	Units	Limit of Quantitation	Limit of Detection	Dilution Factor	Date	Time	Method	Analyst	Batch
**Volatile Organics											
Acetone	ND		ug/l	10.0	4.9	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
Acetonitrile	ND		ug/l	5.0	5.0	1.0	11/ 5/99	19:09	8260B	B. Elliott	2035
Acrolein	ND		ug/l	10.0	2.5	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
Acrylonitrile	ND		ug/l	10.0	0.6	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
Allyl chloride	ND		ug/l	10.0	5.0	1.0	11/ 5/99	19:09	8260B	B. Elliott	2035
Benzene	ND		ug/l	2.0	0.4	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
Bromoform	ND		ug/l	2.0	0.2	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
Bromomethane	ND		ug/l	2.0	0.2	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
2-Butanone	ND		ug/l	10.0	0.6	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
Carbon disulfide	ND		ug/l	2.0	0.7	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
Carbon tetrachloride	ND		ug/l	2.00	0.4	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
Chlorobenzene	ND		ug/l	2.0	0.4	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
Chloroethane	ND		ug/l	2.0	0.5	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
Chloroform	ND		ug/l	2.0	0.4	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
Chloromethane	ND		ug/l	2.0	0.5	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
Chloroprene	ND		ug/l	5.0	5.0	1.0	11/ 5/99	19:09	8260B	B. Elliott	2035
1,2-Dibromo-3-chloropropane	ND		ug/l	10.0	0.5	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
Dibromochloromethane	ND		ug/l	2.0	0.1	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
1,2-Dibromoethane	ND		ug/l	2.0	0.4	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
Dibromomethane	ND		ug/l	2.0	0.4	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
1,4-Dichloro-2-butene	ND		ug/l	2.0	1.6	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
1,2-Dichlorobenzene	ND		ug/l	2.0	0.5	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
1,3-Dichlorobenzene	ND		ug/l	2.0	0.2	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
1,4-Dichlorobenzene	ND		ug/l	2.0	0.3	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
Dichlorodifluoromethane	ND		ug/l	2.0	0.2	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
1,1-Dichloroethane	ND		ug/l	2.0	0.2	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
1,2-Dichloroethane	ND		ug/l	2.0	0.1	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
1,1-Dichloroethene	ND		ug/l	2.0	0.6	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
1,2-Dichloroethene (total)	ND		ug/l	2.0	0.5	1.0	11/ 5/99	19:09	8260A	B. Elliott	1651
1,2-Dichloropropane	ND		ug/l	2.0	0.4	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
cis-1,3-Dichloropropene	ND		ug/l	2.0	0.5	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
trans-1,3-Dichloropropene	ND		ug/l	2.0	0.5	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
1,4-Dioxane	ND		ug/l	10.0	2.0	1.0	11/ 5/99	19:09	8260B	B. Elliott	2035
Ethylbenzene	ND		ug/l	2.0	0.2	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
Ethyl Methacrylate	ND		ug/l	10.0	0.5	1.0	11/ 5/99	19:09	8260B	B. Elliott	2035

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SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

U23

ANALYTICAL REPORT

Laboratory Number: 99-A163235
Sample ID: LAFBCLFMW-401

Parameter	Result	Flag	Units	Limit of Quantitation	Limit of Detection	Dilution Factor	Date	Time	Method	Analyst	Batch
Hexachlorobutadiene	ND		ug/l	2.0	0.9	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
2-Hexanone	ND		ug/l	10.0	2.4	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
Iodomethane	ND		ug/l	2.0	0.2	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
Isobutyl alcohol	ND		ug/l	10.0	10.0	1.0	11/ 5/99	19:09	8260B	B. Elliott	2035
Methacrylonitrile	ND		ug/l	5.0	5.0	1.0	11/ 5/99	19:09	8260B	B. Elliott	2035
Methyl methacrylate	ND		ug/l	5.0	5.0	1.0	11/ 5/99	19:09	8260B	B. Elliott	2035
4-Methyl-2-pentanone	ND		ug/l	10.0	0.6	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
Methylene chloride	ND		ug/l	10.0	0.4	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
Pentachloroethane	ND		ug/l	5.0	2.0	1.0	11/ 5/99	19:09	8260B	B. Elliott	2035
Propionitrile	ND		ug/l	5.0	5.0	1.0	11/ 5/99	19:09	8260B	B. Elliott	2035
Styrene	ND		ug/l	2.0	0.7	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
1,1,1,2-Tetrachloroethane	ND		ug/l	2.0	0.4	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
1,1,2,2-Tetrachloroethane	ND		ug/l	2.0	0.3	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
Tetrachloroethene	ND		ug/l	2.0	0.1	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
Toluene	ND		ug/l	2.0	0.3	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
,2,4-Trichlorobenzene	ND		ug/l	2.0	0.6	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
1,1-Trichloroethane	ND		ug/l	2.0	0.1	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
,1,2-Trichloroethane	ND		ug/l	2.0	0.4	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
Trichloroethene	ND		ug/l	2.0	0.5	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
1,2,3-Trichloropropane	ND		ug/l	2.0	0.4	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
Vinyl acetate	ND		ug/l	2.0	1.6	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
Vinyl chloride	ND		ug/l	2.0	1.4	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
Xylenes	ND		ug/l	2.0	0.8	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
Dichloroisopropylether	ND		ug/l	5.0	2.0	1.0	11/ 5/99	19:09	8260B	B. Elliott	2035
Bromodichloromethane	ND		ug/l	2.0	0.6	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651
Trichlorofluoromethane	ND		ug/l	2.0	0.2	1.0	11/ 5/99	19:09	8260B	B. Elliott	1651

ND = Not detected at the limit of quantitation.

Surrogate	% Recovery	Target Range
VOA Surrogate, 1,2-Dichloroethane, d4	100.	60. - 138.
VOA Surr, 1,2-DCA, d4	97.	60. - 138.
VOA Surrogate, Toluene d8	102.	80. - 123.
VOA Surr, Toluene d8	91.	80. - 123.
VOA Surrogate, 4-Bromofluorobenzene	100.	73. - 122.
VOA Surr, 4-BFB	91.	73. - 122.

AK 1/6/00

00259

SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

Laboratory Number: 99-A163235
Sample ID: LAFBCLFMW-401

Authorized by:

Theodore J. Duello, Ph.D., QA Officer
Michael H. Dunn, M.S., Technical Dir.
Danny B. Hale, M.S., Laboratory Mgr.
Johnny A. Mitchell, Technical Serv. Dir.

1/6/08

SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

CRC & ASSOCIATES, INC 8311
JOHN STATHAM
916 W. 23RD STREET
TULSA, OK 74107

Lab Number: 99-A163236
Sample ID: LAFBCLFMW-402
Sample Type: Ground water
Site ID:

Date Collected: 10/23/99
Time Collected: 12:43
Date Received: 10/26/99
Time Received: 9:00

Project:
Project Name: LAREDO AIR FORCE BASE
Sampler: GREG SNIDER

Parameter	Result	Flag	Units	Limit of Quantitation	Limit of Detection	Dilution Factor	Date	Time	Method	Analyst	Batch
**Volatile Organics											
Acetone	ND		ug/l	10.0	4.9	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
Acetonitrile	ND		ug/l	5.0	5.0	1.0	11/ 5/99	19:43	8260B	B. Elliott	2035
Acrolein	ND		ug/l	10.0	2.5	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
Acrylonitrile	ND		ug/l	10.0	0.6	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
Allyl chloride	ND		ug/l	10.0	5.0	1.0	11/ 5/99	19:43	8260B	B. Elliott	2035
Benzene	ND		ug/l	2.0	0.4	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
Bromoform	ND		ug/l	2.0	0.2	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
Bromomethane	ND		ug/l	2.0	0.2	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
2-Butanone	ND		ug/l	10.0	0.6	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
Carbon disulfide	ND		ug/l	2.0	0.7	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
Carbon tetrachloride	ND		ug/l	2.00	0.4	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
Chlorobenzene	ND		ug/l	2.0	0.4	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
Chloroethane	ND		ug/l	2.0	0.5	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
Chloroform	ND		ug/l	2.0	0.4	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
Chloromethane	ND		ug/l	2.0	0.5	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
Chloroprene	ND		ug/l	5.0	5.0	1.0	11/ 5/99	19:43	8260B	B. Elliott	2035
1,2-Dibromo-3-chloropropane	ND		ug/l	10.0	0.5	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
Dibromochloromethane	ND		ug/l	2.0	0.1	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
1,2-Dibromoethane	ND		ug/l	2.0	0.4	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
Dibromomethane	ND		ug/l	2.0	0.4	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
1,4-Dichloro-2-butene	ND		ug/l	2.0	1.6	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
1,2-Dichlorobenzene	ND		ug/l	2.0	0.5	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
1,3-Dichlorobenzene	ND		ug/l	2.0	0.2	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
1,4-Dichlorobenzene	ND		ug/l	2.0	0.3	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
Dichlorodifluoromethane	ND		ug/l	2.0	0.2	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
1,1-Dichloroethane	ND		ug/l	2.0	0.2	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
1,2-Dichloroethane	ND		ug/l	2.0	0.1	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
1,1-Dichloroethene	ND		ug/l	2.0	0.6	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
1,2-Dichloroethene (total)	ND		ug/l	2.0	0.5	1.0	11/ 5/99	19:43	8260A	B. Elliott	1651
1,2-Dichloropropane	ND		ug/l	2.0	0.4	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
cis-1,3-Dichloropropene	ND		ug/l	2.0	0.5	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
trans-1,3-Dichloropropene	ND		ug/l	2.0	0.5	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
1,4-Dioxane	ND		ug/l	10.0	2.0	1.0	11/ 5/99	19:43	8260B	B. Elliott	2035
Ethylbenzene	ND		ug/l	2.0	0.2	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
Ethyl methacrylate	ND		ug/l	10.0	0.5	1.0	11/ 5/99	19:43	8260B	B. Elliott	2035

00261 ML 1/6/00

SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

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ANALYTICAL REPORT

Laboratory Number: 99-A163236
Sample ID: LAFBCLFMW-402

Parameter	Result	Flag	Units	Limit of Quantitation	Limit of Detection	Dilution Factor	Date	Time	Method	Analyst	Batch
Hexachlorobutadiene	ND		ug/l	2.0	0.9	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
2-Hexanone	ND		ug/l	10.0	2.4	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
Iodomethane	ND		ug/l	2.0	0.2	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
Isobutyl alcohol	ND		ug/l	10.0	10.0	1.0	11/ 5/99	19:43	8260B	B. Elliott	2035
Methacrylonitrile	ND		ug/l	5.0	5.0	1.0	11/ 5/99	19:43	8260B	B. Elliott	2035
Methyl Methacrylate	ND		ug/l	5.0	5.0	1.0	11/ 5/99	19:43	8260B	B. Elliott	2035
4-Methyl-2-pentanone	ND		ug/l	10.0	0.6	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
Methylene chloride	ND		ug/l	10.0	0.4	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
Pentachloroethane	ND		ug/l	5.0	2.0	1.0	11/ 5/99	19:43	8260B	B. Elliott	2035
Propionitrile	ND		ug/l	5.0	5.0	1.0	11/ 5/99	19:43	8260B	B. Elliott	2035
Styrene	ND		ug/l	2.0	0.7	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
1,1,1,2-Tetrachloroethane	ND		ug/l	2.0	0.4	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
1,1,2,2-Tetrachloroethane	ND		ug/l	2.0	0.3	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
Tetrachloroethene	ND		ug/l	2.0	0.1	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
Toluene	ND		ug/l	2.0	0.3	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
1,2,4-Trichlorobenzene	ND		ug/l	2.0	0.6	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
1,1,1-Trichloroethane	ND		ug/l	2.0	0.1	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
1,1,2-Trichloroethane	ND		ug/l	2.0	0.4	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
Trichloroethene	ND		ug/l	2.0	0.5	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
1,2,3-Trichloropropane	ND		ug/l	2.0	0.4	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
Vinyl acetate	ND		ug/l	2.0	1.6	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
Vinyl chloride	ND		ug/l	2.0	1.4	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
Xylenes	ND		ug/l	2.0	0.8	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
Dichloroisopropylether	ND		ug/l	5.0	2.0	1.0	11/ 5/99	19:43	8260B	B. Elliott	2035
Bromodichloromethane	ND		ug/l	2.0	0.6	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651
Trichlorofluoromethane	ND		ug/l	2.0	0.2	1.0	11/ 5/99	19:43	8260B	B. Elliott	1651

ND = Not detected at the limit of quantitation

Surrogate	% Recovery	Target Range
VOA Surrogate, 1,2-Dichloroethane, d4	100.	60. - 138.
VOA Surr, 1,2-DCA, d4	99.	60. - 138.
VOA Surrogate, Toluene d8	104.	80. - 123.
VOA Surr, Toluene d8	90.	80. - 123.
VOA Surrogate, 4-Bromofluorobenzene	103.	73. - 122.
VOA Surr, 4-BFB	94.	73. - 122.

1/6/00

SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

027

ANALYTICAL REPORT

Laboratory Number: 99-A163236
Sample ID: LAFBCLFMW-402

Authorized by: _____

Theodore J. Duello, Ph.D., QA Officer
Michael H. Dunn, M.S., Technical Dir.
Danny B. Hale, M.S., Laboratory Mgr.
Johnny A. Mitchell, Technical Serv. Dir.

1/6/00

SPECIALIZED ASSAYS, INC.
2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

U28

ANALYTICAL REPORT

CRC & ASSOCIATES, INC 8311
JOHN STATHAM
916 W. 23RD STREET
TULSA, OK 74107

Lab Number: 99-A163237
Sample ID: LAFBCLFMW-501
Sample Type: Ground water
Site ID:

Date Collected: 10/23/99
Time Collected: 14:41
Date Received: 10/26/99
Time Received: 9:00

Project:
Project Name: LAREDO AIR FORCE BASE
Sampler: GREG SNIDER

Parameter	Result	Flag	Units	Limit of Quantitation	Limit of Detection	Dilution Factor	Date	Time	Method	Analyst	Batch
**Volatile Organics											
Acetone	ND		ug/l	10.0	4.9	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
Acetonitrile	ND		ug/l	5.0	5.0	1.0	11/ 5/99	20:18	8260B	B. Elliott	2035
Acrolein	ND		ug/l	10.0	2.5	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
Acrylonitrile	ND		ug/l	10.0	0.6	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
llyl chloride	ND		ug/l	10.0	5.0	1.0	11/ 5/99	20:18	8260B	B. Elliott	2035
nzene	ND		ug/l	2.0	0.4	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
oform	ND		ug/l	2.0	0.2	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
Bromomethane	ND		ug/l	2.0	0.2	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
2-Butanone	ND		ug/l	10.0	0.6	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
Carbon disulfide	ND		ug/l	2.0	0.7	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
Carbon tetrachloride	ND		ug/l	2.00	0.4	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
Chlorobenzene	ND		ug/l	2.0	0.4	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
Chloroethane	ND		ug/l	2.0	0.5	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
Chloroform	ND		ug/l	2.0	0.4	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
Chloromethane	ND		ug/l	2.0	0.5	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
Chloroprene	ND		ug/l	5.0	5.0	1.0	11/ 5/99	20:18	8260B	B. Elliott	2035
1,2-Dibromo-3-chloropropane	ND		ug/l	10.0	0.5	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
Dibromochloromethane	ND		ug/l	2.0	0.1	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
1,2-Dibromoethane	ND		ug/l	2.0	0.4	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
Dibromomethane	ND		ug/l	2.0	0.4	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
1,4-Dichloro-2-butene	ND		ug/l	2.0	1.6	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
1,2-Dichlorobenzene	ND		ug/l	2.0	0.5	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
1,3-Dichlorobenzene	ND		ug/l	2.0	0.2	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
1,4-Dichlorobenzene	ND		ug/l	2.0	0.3	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
Dichlorodifluoromethane	ND		ug/l	2.0	0.2	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
1,1-Dichloroethane	ND		ug/l	2.0	0.2	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
1,2-Dichloroethane	ND		ug/l	2.0	0.1	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
1,1-Dichloroethene	ND		ug/l	2.0	0.6	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
1,2-Dichloroethene (total)	ND		ug/l	2.0	0.5	1.0	11/ 5/99	20:18	8260A	B. Elliott	1651
1,2-Dichloropropane	ND		ug/l	2.0	0.4	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
s-1,3-Dichloropropene	ND		ug/l	2.0	0.5	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
rans-1,3-Dichloropropene	ND		ug/l	2.0	0.5	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
1,4-Dioxane	ND		ug/l	10.0	2.0	1.0	11/ 5/99	20:18	8260B	B. Elliott	2035
Ethylbenzene	ND		ug/l	2.0	0.2	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
Ethyl methacrylate	ND		ug/l	10.0	0.5	1.0	11/ 5/99	20:18	8260B	B. Elliott	2035

1/6/00

SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

Laboratory Number: 99-A163237
Sample ID: LAFBCLFMW-501

Parameter	Result	Flag	Units	Limit of Quantitation	Limit of Detection	Dilution Factor	Date	Time	Method	Analyst	Batch
Hexachlorobutadiene	ND		ug/l	2.0	0.9	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
2-Hexanone	ND		ug/l	10.0	2.4	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
Iodomethane	ND		ug/l	2.0	0.2	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
Isobutyl alcohol	ND		ug/l	10.0	10.0	1.0	11/ 5/99	20:18	8260B	B. Elliott	2035
Methacrylonitrile	ND		ug/l	5.0	5.0	1.0	11/ 5/99	20:18	8260B	B. Elliott	2035
Methyl methacrylate	ND		ug/l	5.0	5.0	1.0	11/ 5/99	20:18	8260B	B. Elliott	2035
4-Methyl-2-pentanone	ND		ug/l	10.0	0.6	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
Methylene chloride	ND		ug/l	10.0	0.4	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
Pentachloroethane	ND		ug/l	5.0	2.0	1.0	11/ 5/99	20:18	8260B	B. Elliott	2035
Propionitrile	ND		ug/l	5.0	5.0	1.0	11/ 5/99	20:18	8260B	B. Elliott	2035
Styrene	ND		ug/l	2.0	0.7	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
1,1,1,2-Tetrachloroethane	ND		ug/l	2.0	0.4	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
1,1,2,2-Tetrachloroethane	ND		ug/l	2.0	0.3	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
Tetrachloroethene	ND		ug/l	2.0	0.1	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
Toluene	ND		ug/l	2.0	0.3	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
1,2,4-Trichlorobenzene	ND		ug/l	2.0	0.6	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
1,1,1-Trichloroethane	ND		ug/l	2.0	0.1	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
1,1,2-Trichloroethane	ND		ug/l	2.0	0.4	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
Trichloroethene	ND		ug/l	2.0	0.5	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
1,2,3-Trichloropropane	ND		ug/l	2.0	0.4	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
Vinyl acetate	ND		ug/l	2.0	1.6	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
Vinyl chloride	ND		ug/l	2.0	1.4	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
Xylenes	ND		ug/l	2.0	0.8	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
Dichloroisopropylether	ND		ug/l	5.0	2.0	1.0	11/ 5/99	20:18	8260B	B. Elliott	2035
Bromodichloromethane	ND		ug/l	2.0	0.6	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651
Trichlorofluoromethane	ND		ug/l	2.0	0.2	1.0	11/ 5/99	20:18	8260B	B. Elliott	1651

ND = Not detected at the limit of quantitation

Surrogate	% Recovery	Target Range
VOA Surrogate, 1,2-Dichloroethane, d4	103.	60. - 138.
VOA Surr, 1,2-DCA, d4	101.	60. - 138.
VOA Surrogate, Toluene d8	102.	80. - 123.
VOA Surr, Toluene d8	91.	80. - 123.
VOA Surrogate, 4-Bromofluorobenzene	104.	73. - 122.
VOA Surr, 4-BFB	95.	73. - 122.

HH 1/6/00

SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

U3U

ANALYTICAL REPORT

Laboratory Number: 99-A163237
Sample ID: LAFBCLFMW-501

Authorized by: _____

Theodore J. Duello, Ph.D., QA Officer
Michael H. Dunn, M.S., Technical Dir.
Danny B. Hale, M.S., Laboratory Mgr.
Johnny A. Mitchell, Technical Serv. Dir.

1/6/00

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2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

U31

ANALYTICAL REPORT

CRC & ASSOCIATES, INC 8311
JOHN STATHAM
916 W. 23RD STREET
TULSA, OK 74107

Project:
Project Name: LAREDO AIR FORCE BASE
Sampler: GREG SNIDER

Lab Number: 99-A163238
Sample ID: LAFBCLFMW-105
Sample Type: Ground water
Site ID:

Date Collected: 10/23/99
Time Collected: 7:00
Date Received: 10/26/99
Time Received: 9:00

TB

Parameter	Result	Flag	Units	Limit of Quantitation	Limit of Detection	Dilution Factor	Date	Time	Method	Analyst	Batch
**Volatile Organics											
Acetone	ND		ug/l	10.0	4.9	1.0	11/ 5/99	20:52	8260B	B. Elliott 1651	
Acetonitrile	ND		ug/l	5.0	5.0	1.0	11/ 5/99	20:52	8260B	B. Elliott 2035	
Acrolein	ND		ug/l	10.0	2.5	1.0	11/ 5/99	20:52	8260B	B. Elliott 1651	
Acrylonitrile	ND		ug/l	10.0	0.6	1.0	11/ 5/99	20:52	8260B	B. Elliott 1651	
Allyl chloride	ND		ug/l	10.0	5.0	1.0	11/ 5/99	20:52	8260B	B. Elliott 2035	
Benzene	ND		ug/l	2.0	0.4	1.0	11/ 5/99	20:52	8260B	B. Elliott 1651	
Bromoform	ND		ug/l	2.0	0.2	1.0	11/ 5/99	20:52	8260B	B. Elliott 1651	
Bromomethane	ND		ug/l	2.0	0.2	1.0	11/ 5/99	20:52	8260B	B. Elliott 1651	
2-Butanone	ND		ug/l	10.0	0.6	1.0	11/ 5/99	20:52	8260B	B. Elliott 1651	
Carbon disulfide	ND		ug/l	2.0	0.7	1.0	11/ 5/99	20:52	8260B	B. Elliott 1651	
Carbon tetrachloride	ND		ug/l	2.00	0.4	1.0	11/ 5/99	20:52	8260B	B. Elliott 1651	
Chlorobenzene	ND		ug/l	2.0	0.4	1.0	11/ 5/99	20:52	8260B	B. Elliott 1651	
Chloroethane	ND		ug/l	2.0	0.5	1.0	11/ 5/99	20:52	8260B	B. Elliott 1651	
Chloroform	ND		ug/l	2.0	0.4	1.0	11/ 5/99	20:52	8260B	B. Elliott 1651	
Chloromethane	ND		ug/l	2.0	0.5	1.0	11/ 5/99	20:52	8260B	B. Elliott 1651	
Chloroprene	ND		ug/l	5.0	5.0	1.0	11/ 5/99	20:52	8260B	B. Elliott 2035	
1,2-Dibromo-3-chloropropane	ND		ug/l	10.0	0.5	1.0	11/ 5/99	20:52	8260B	B. Elliott 1651	
Dibromochloromethane	ND		ug/l	2.0	0.1	1.0	11/ 5/99	20:52	8260B	B. Elliott 1651	
1,2-Dibromoethane	ND		ug/l	2.0	0.4	1.0	11/ 5/99	20:52	8260B	B. Elliott 1651	
Dibromomethane	ND		ug/l	2.0	0.4	1.0	11/ 5/99	20:52	8260B	B. Elliott 1651	
1,4-Dichloro-2-butene	ND		ug/l	2.0	1.6	1.0	11/ 5/99	20:52	8260B	B. Elliott 1651	
1,2-Dichlorobenzene	ND		ug/l	2.0	0.5	1.0	11/ 5/99	20:52	8260B	B. Elliott 1651	
1,3-Dichlorobenzene	ND		ug/l	2.0	0.2	1.0	11/ 5/99	20:52	8260B	B. Elliott 1651	
1,4-Dichlorobenzene	ND		ug/l	2.0	0.3	1.0	11/ 5/99	20:52	8260B	B. Elliott 1651	
Dichlorodifluoromethane	ND		ug/l	2.0	0.2	1.0	11/ 5/99	20:52	8260B	B. Elliott 1651	
1,1-Dichloroethane	ND		ug/l	2.0	0.2	1.0	11/ 5/99	20:52	8260B	B. Elliott 1651	
1,2-Dichloroethane	ND		ug/l	2.0	0.1	1.0	11/ 5/99	20:52	8260B	B. Elliott 1651	
1,1-Dichloroethene	ND		ug/l	2.0	0.6	1.0	11/ 5/99	20:52	8260B	B. Elliott 1651	
1,2-Dichloroethene (total)	ND		ug/l	2.0	0.5	1.0	11/ 5/99	20:52	8260A	B. Elliott 1651	
1,2-Dichloropropane	ND		ug/l	2.0	0.4	1.0	11/ 5/99	20:52	8260B	B. Elliott 1651	
cis-1,3-Dichloropropene	ND		ug/l	2.0	0.5	1.0	11/ 5/99	20:52	8260B	B. Elliott 1651	
trans-1,3-Dichloropropene	ND		ug/l	2.0	0.5	1.0	11/ 5/99	20:52	8260B	B. Elliott 1651	
1,4-Dioxane	ND		ug/l	10.0	2.0	1.0	11/ 5/99	20:52	8260B	B. Elliott 2035	
Ethylbenzene	ND		ug/l	2.0	0.2	1.0	11/ 5/99	20:52	8260B	B. Elliott 1651	
Ethyl methacrylate	ND		ug/l	10.0	0.5	1.0	11/ 5/99	20:52	8260B	B. Elliott 2035	

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Nashville, TN 37204-0566
Phone 1-615-726-0177

U32

ANALYTICAL REPORT

Laboratory Number: 99-A163238
Sample ID: LAFBCLFMW-105

TB

Parameter	Result	Flag	Units	Limit of Quantitation	Limit of Detection	Dilution Factor	Date	Time	Method	Analyst	Batch
Hexachlorobutadiene	ND		ug/l	2.0	0.9	1.0	11/ 5/99	20:52	8260B	B. Elliott	1651
2-Hexanone	ND		ug/l	10.0	2.4	1.0	11/ 5/99	20:52	8260B	B. Elliott	1651
Iodomethane	ND		ug/l	2.0	0.2	1.0	11/ 5/99	20:52	8260B	B. Elliott	1651
Isobutyl alcohol	ND		ug/l	10.0	10.0	1.0	11/ 5/99	20:52	8260B	B. Elliott	2035
Methacrylonitrile	ND		ug/l	5.0	5.0	1.0	11/ 5/99	20:52	8260B	B. Elliott	2035
Methyl methacrylate	ND		ug/l	5.0	5.0	1.0	11/ 5/99	20:52	8260B	B. Elliott	2035
4-Methyl-2-pentanone	ND		ug/l	10.0	0.6	1.0	11/ 5/99	20:52	8260B	B. Elliott	1651
Methylene chloride	ND		ug/l	10.0	0.4	1.0	11/ 5/99	20:52	8260B	B. Elliott	1651
Pentachloroethane	ND		ug/l	5.0	2.0	1.0	11/ 5/99	20:52	8260B	B. Elliott	2035
Propionitrile	ND		ug/l	5.0	5.0	1.0	11/ 5/99	20:52	8260B	B. Elliott	2035
Styrene	ND		ug/l	2.0	0.7	1.0	11/ 5/99	20:52	8260B	B. Elliott	1651
1,1,1,2-Tetrachloroethane	ND		ug/l	2.0	0.4	1.0	11/ 5/99	20:52	8260B	B. Elliott	1651
1,1,2,2-Tetrachloroethane	ND		ug/l	2.0	0.3	1.0	11/ 5/99	20:52	8260B	B. Elliott	1651
Tetrachloroethene	ND		ug/l	2.0	0.1	1.0	11/ 5/99	20:52	8260B	B. Elliott	1651
Toluene	ND		ug/l	2.0	0.3	1.0	11/ 5/99	20:52	8260B	B. Elliott	1651
1,2,4-Trichlorobenzene	ND		ug/l	2.0	0.6	1.0	11/ 5/99	20:52	8260B	B. Elliott	1651
1,1,1-Trichloroethane	ND		ug/l	2.0	0.1	1.0	11/ 5/99	20:52	8260B	B. Elliott	1651
1,1,2-Trichloroethane	ND		ug/l	2.0	0.4	1.0	11/ 5/99	20:52	8260B	B. Elliott	1651
Trichloroethene	ND		ug/l	2.0	0.5	1.0	11/ 5/99	20:52	8260B	B. Elliott	1651
1,2,3-Trichloropropane	ND		ug/l	2.0	0.4	1.0	11/ 5/99	20:52	8260B	B. Elliott	1651
Vinyl acetate	ND		ug/l	2.0	1.6	1.0	11/ 5/99	20:52	8260B	B. Elliott	1651
Vinyl chloride	ND		ug/l	2.0	1.4	1.0	11/ 5/99	20:52	8260B	B. Elliott	1651
Xylenes	ND		ug/l	2.0	0.8	1.0	11/ 5/99	20:52	8260B	B. Elliott	1651
Dichloroisopropylether	ND		ug/l	5.0	2.0	1.0	11/ 5/99	20:52	8260B	B. Elliott	2035
Dromodichloromethane	ND		ug/l	2.0	0.6	1.0	11/ 5/99	20:52	8260B	B. Elliott	1651
Trichlorofluoromethane	ND		ug/l	2.0	0.2	1.0	11/ 5/99	20:52	8260B	B. Elliott	1651

ND = Not detected at the limit of quantitation.

Surrogate	% Recovery	Target Range
VOA Surrogate, 1,2-Dichloroethane, d4	100.	60. - 138.
VOA Surr, 1,2-DCA, d4	99.	60. - 138.
VOA Surrogate, Toluene d8	103.	80. - 123.
VOA Surr, Toluene d8	92.	80. - 123.
VOA Surrogate, 4-Bromofluorobenzene	100.	73. - 122.
VOA Surr, 4-BFB	91.	73. - 122.

HH 1/6/00

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SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

Laboratory Number: 99-A163238
Sample ID: LAFBCLFMW-105

TB

Authorized by: _____

Theodore J. Duello, Ph.D., QA Officer
Michael H. Dunn, M.S., Technical Dir.
Danny B. Hale, M.S., Laboratory Mgr.
Johnny A. Mitchell, Technical Serv. Dir.

1/6/00

Data Review and Validation for: GC/MS Semivolatiles

Project Name & Task: Laredo AFB

Project # & Case/SDG: 153479.DV.ZZ 165856

Methods: ☐ OLM03.2 ☑ SW-846 8270C ☐ EPA 625 ☐ Other:

Program: ☐ AFCEE ☐ NFESC ☐ Other **Number of Samples:** 5

Field QC Samples: 402/402 - F.Dup

Reviewed by & Date: N. Kelley 1/16/00

Matrix: ☒ Water ☐ Soil ☐ Other

Quality Control	Form #	Requirements	Check (If No* checked, see comments)	Flags Applied (see comments)
Data Pkg Complete (DP)	Pkg	All required deliverables in pkg.	☑ OK ☐ No* ☐ Not provided	☐ Flags Applied
	COC	All samples on COC reported	☑ OK ☐ No*	☐ Flags Applied
Holding Times (HT)	1	Extraction HT (water 7d, soil 14d)	☑ OK ☐ No*	☐ Flags Applied
	COC	Analysis HT (40d from extraction)	☐ OK ☐ No*	☐ Flags Applied
			☐ OK ☐ No*	☐ Flags Applied
Surrogates (SS)	2	Method surrogates used	☑ OK ☐ No* ☐ Not provided	☐ Flags Applied
		Recovery Limits: ☑ Lab ☐ Meth	☑ OK ☐ No* ☐ Diluted out	
MS/MSD or MS/LD	3	Matrix Spikes Provided	☑ MS/MSD ☐ MS/LD ☐ None*	☒ Flags Applied
		Correct Spike Used	☑ OK ☐ No*	
		Acceptance Limits: ☑ Lab ☐ Meth	☐ OK ☑ No* ☐ Diluted out	
LCS (BS) ☑ LCS only ☐ LCS/LCSD	3	LCS per prep. batch	☑ OK ☐ No*	☒ Flags Applied
		Acceptance criteria met	☐ OK ☑ No*	
Blanks (MB,TB,EB, FB/AB)	1	Detects (> MDL or RL/CRQL)	☑ All ND ☐ see blnk wksht	☐ Flags Applied
Method/Lab Blank (MB)	4	Meth Blnk per prep batch	☑ OK ☐ No*	
Tune - DFTPP (TN) prior to sample analysis	5	Initial & Begin of 12-hr shift	☑ OK ☐ No*	☐ Flags Applied
		Mass Assignment Correct	☑ OK ☐ No*	
		Ion Abundance Criteria met	☑ OK ☐ No*	
Initial Calibration (IC)	6	Minimum of 5 levels	☑ OK ☐ No*	☐ Flags Applied
		Linearity criteria met	☑ OK ☐ No* ☐ see cal wksht	
		Minimum RRF criteria met	☑ OK ☐ No* ☐ see cal wksht	
Continuing Calib. Verif. (CC) prior to sample analysis	7	Analyzed at begin of 12-hr shift	☑ OK ☐ No*	☐ Flags Applied
		%diff or %drift criteria met	☑ OK ☐ No* ☐ see cal wksht	
		Minimum RRF criteria met	☑ OK ☐ No* ☐ see cal wksht	
	8	Int. Std. RT/Area criteria met	☑ OK ☐ No*	
Internal Standards (IS)	8	Sample IS area criteria met	☑ OK ☐ No*	☐ Flags Applied
Sample Evaluation	1	All hits within cal. Range	• OK ☐ No* ☑ All ND	☐ Flags Applied
	5	Samples w/in 12-hr clock	☑ OK ☐ No*	
	raw	Manual Integration performed	☑ No ☐ see comments	
Field Duplicate (FD)	1	Precision of native vs Field Dup	☑ OK ☐ No* ☐ N/A	☐ Flags Applied

This sheet is applicable to multiple methods. All requirement items may not apply to every analytical method.

Case Narrative Comments: COMMENTS ABOUT MS/MSD

QC Item	Comments
MS/MSD	1,4-Dichlorobenzene MS/MSD = 31/28 % (46-108)
	1,2,4-TRICHLOROBENZENE MS/MSD = 37/34 (41-127)
	No Flags Applied
LCS	N-Nitrosodimethylamine - 36% - (37-136) - No Flag
	4-Nitrophenol < 25% (21-116) - OK in MS/MSD - No Flag
	ANILINE < 25% (39-124) } Flag "J/UJ" Both
	3,3'-Dichlorobenzidine < 20% (5-127) } Compounds

U65

SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
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Phone 1-615-726-0177

ANALYTICAL REPORT

CRC & ASSOCIATES, INC 8311
JOHN STATHAM
916 W. 23RD STREET
TULSA, OK 74107

Lab Number: 99-A163233
Sample ID: LAFBCLFMW-101
Sample Type: Ground water
Site ID:

Date Collected: 10/23/99
Time Collected: 8:45
Date Received: 10/26/99
Time Received: 9:00

Project:
Project Name: LAREDO AIR FORCE BASE
Sampler: GREG SNIDER

Parameter	Result	Flag	Units	Limit of Quantitation	Limit of Detection	Dilution Factor	Date	Time	Method	Analyst	Batch
** Extractable Organics											
Acenaphthene	ND		ug/l	10.0	1.8	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
Acenaphthylene	ND		ug/l	10.0	1.8	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
Acetophenone	ND		ug/l	47.6	10.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
2-Acetylaminofluorene	ND		ug/l	47.6	5.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
4-Aminobiphenyl	ND		ug/l	47.6	5.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
Aniline	~~ND~~ UJ BS		ug/l	25.0	1.8	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
Anthracene	ND		ug/l	10.0	0.9	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
Aramite	ND		ug/l	47.6	10.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
Benzo(a)anthracene	ND		ug/l	10.0	1.4	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
Benzo(a)pyrene	ND		ug/l	10.0	1.1	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
Benzo(b)fluoranthene	ND		ug/l	10.0	0.9	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
Benzo(g,h,i)perylene	ND		ug/l	10.0	1.2	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
Benzo(k)fluoranthene	ND		ug/l	10.0	1.4	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
4-Bromophenyl-phenylether	ND		ug/l	10.0	1.1	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
Butylbenzylphthalate	ND		ug/l	10.0	1.2	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
4-Chloro-3-methylphenol	ND		ug/l	10.0	1.2	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
4-Chloroaniline	ND		ug/l	10.0	2.4	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
Chlorobenzilate	ND		ug/l	47.6	5.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
Bis(2-chloroethoxy)methane	ND		ug/l	10.0	1.9	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
Bis(2-chloroethyl)ether	ND		ug/l	10.0	1.9	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
Bis(2-chloroisopropyl)ether	ND		ug/l	10.0	1.9	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
2-Chloronaphthalene	ND		ug/l	10.0	2.5	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
2-Chlorophenol	ND		ug/l	10.0	2.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
4-Chlorophenyl-phenylether	ND		ug/l	10.0	2.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
Chrysene	ND		ug/l	10.0	1.2	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
Diallate	ND		ug/l	47.6	10.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
DibenzoFuran	ND		ug/l	10.0	2.3	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
Dibenz(a,h)anthracene	ND		ug/l	10.0	1.2	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
3,3'-Dichlorobenzidine	~~ND~~ UJ BS		ug/l	20.0	4.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
2,4-Dichlorophenol	ND		ug/l	10.0	1.7	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
2,6-Dichlorophenol	ND		ug/l	47.6	3.6	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
Diethylphthalate	ND		ug/l	10.0	1.3	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
Dimethoate	ND		ug/l	47.6	20.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
p-Dimethylaminoazobenzene	ND		ug/l	47.6	10.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
3,3'-Dimethylbenzidine	ND		ug/l	19.0	10.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656

11/6/00

SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

Laboratory Number: 99-A163233
Sample ID: LAFBCLFMW-101

Parameter	Result	Flag	Units	Limit of Quantitation	Limit of Detection	Dilution Factor	Date	Time	Method	Analyst	Batch
7,12-Dimethylbenz(a)anthrac	ND		ug/l	47.6	10.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
2,4-Dimethylphenol	ND		ug/l	10.0	1.7	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
Dimethylphthalate	ND		ug/l	10.0	1.7	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
a,a-Dimethylphenethylam	ND		ug/l	47.6	10.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
Di-n-Butylphthalate	ND		ug/l	10.0	1.1	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
4,6-Dinitro-2-methylphenol	ND		ug/l	25.0	1.2	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
1,3-Dinitrobenzene	ND		ug/l	47.6	10.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
1,4-Dinitrobenzene	ND		ug/l	47.6	10.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
1,2-Dinitrobenzene	ND		ug/l	47.6	10.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
2,4-Dinitrophenol	ND		ug/l	25.0	1.1	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
2,4-dinitrotoluene	ND		ug/l	10.0	1.2	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
2,6-Dinitrotoluene	ND		ug/l	10.0	4.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
Di-n-octylphthalate	ND		ug/l	10.0	1.2	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
Dinoseb	ND		ug/l	47.6	10.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
Diphenylamine	ND		ug/l	47.6	10.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
isulfoton	ND		ug/l	47.6	10.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
mphur	ND		ug/l	47.6	4.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
luoranthene	ND		ug/l	10.0	0.9	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
Fluorene	ND		ug/l	10.0	1.8	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
Hexachlorobenzene	ND		ug/l	10.0	0.9	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
Hexachlorocyclopentadiene	ND		ug/l	10.0	1.3	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
Hexachloroethane	ND		ug/l	10.0	3.6	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
Hexachlorophene	ND		ug/l	47.6	10.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
Hexachloropropene	ND		ug/l	47.6	10.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
Indeno(1,2,3-cd)pyrene	ND		ug/l	10.0	1.3	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
Isodrin	ND		ug/l	47.6	5.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
Isophorone	ND		ug/l	10.0	2.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
Isosafrole	ND		ug/l	47.6	10.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
Methapyrilene	ND		ug/l	47.6	5.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
3-Methylcholanthrene	ND		ug/l	47.6	10.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
Methylmethanesulfonate	ND		ug/l	47.6	10.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
2-Methylnaphthalene	ND		ug/l	10.0	1.9	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
2-Methylphenol	ND		ug/l	10.0	1.9	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
3 and 4-Methylphenol	ND		ug/l	10.0	2.5	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
Naphthalene	ND		ug/l	10.0	1.9	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
1,4-Napthaquinone	ND		ug/l	47.6	10.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
2-Napthylamine	ND		ug/l	47.6	10.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
1-Napthylamine	ND		ug/l	47.6	10.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
2-Nitroaniline	ND		ug/l	25.0	1.5	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
3-Nitroaniline	ND		ug/l	25.0	1.5	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
4-Nitroaniline	ND		ug/l	25.0	1.2	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
trobenzene	ND		ug/l	10.0	2.2	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
-Nitro-o-toluidine	ND		ug/l	47.6	10.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
2-Nitrophenol	ND		ug/l	10.0	2.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
4-Nitrophenol	ND		ug/l	25.0	0.7	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
N-nitrosodibutylamine	ND		ug/l	47.6	10.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656

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SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

Laboratory Number: 99-A163233
Sample ID: LAFBCLFMW-101

Parameter	Result	Flag	Units	Limit of Quantitation	Limit of Detection	Dilution Factor	Date	Time	Method	Analyst	Batch
N-nitrosodiethylamine	ND		ug/l	47.6	5.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
N-Nitroso-Di-n-Propylamine	ND		ug/l	10.0	3.4	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
N-Nitrosodiphenylamine	ND		ug/l	10.0	1.1	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
N-nitrosodimethylamine	ND		ug/l	10.0	1.4	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
N-nitrosomethylethylamine	ND		ug/l	47.6	10.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
N-nitrosomorpholine	ND		ug/l	47.6	10.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
N-nitrosopiperidine	ND		ug/l	47.6	5.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
N-nitrosopyrrolidine	ND		ug/l	47.6	5.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
Pentachlorobenzene	ND		ug/l	47.6	10.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
Pentachloronitrobenzene	ND		ug/l	47.6	5.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
Pentachlorophenol	ND		ug/l	25.0	0.4	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
Phenacetin	ND		ug/l	47.6	5.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
Phenanthrene	ND		ug/l	10.0	0.8	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
Phenol	ND		ug/l	10.0	1.2	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
1,4-Phenylenediamine	ND		ug/l	47.6	10.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
Phorate	ND		ug/l	47.6	10.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
2-Picoline	ND		ug/l	47.6	10.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
Pronamide	ND		ug/l	47.6	10.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
Pyrene	ND		ug/l	10.0	1.7	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
Pyridine	ND		ug/l	10.0	3.5	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
Safrole	ND		ug/l	47.6	10.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
1,2,4,5-Tetrachlorobenzene	ND		ug/l	47.6	5.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
Bis(2-ethylhexyl)phthalate	ND		ug/l	10.0	2.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
2,3,4,6-Tetrachlorophenol	ND		ug/l	47.6	10.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
Tetraethyldithiopyrophosphate	ND		ug/l	95.2	5.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
Thionazine	ND		ug/l	47.6	5.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
o-Toluidine	ND		ug/l	47.6	10.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
1,2,4-Trichlorobenzene	ND		ug/l	10.0	2.8	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
2,4,5-Trichlorophenol	ND		ug/l	25.0	1.6	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
2,4,6-Trichlorophenol	ND		ug/l	10.0	1.9	1.0	11/ 2/99	23:57	8270C	M.Goodrich	785
o,o,o-Triethylphosphorothio	ND		ug/l	47.6	10.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
1,3,5-Trinitrobenzene	ND		ug/l	47.6	10.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
Benzyl alcohol	ND		ug/l	47.6	1.5	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
Ethylmethane sulfonate	ND		ug/l	47.6	5.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656
4-Nitroquinoline N-oxide	ND		ug/l	47.6	10.0	1.0	11/ 2/99	23:57	8270C	M.Goodrich	4656

ND = Not detected at the limit of quantitation

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Analyst	Method

SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

Laboratory Number: 99-A163233
Sample ID: LAFBCLFMW-101

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Analyst	Method
BNA's	1050 ml	1.0 ml	10/28/99	C. Terry	3510

Surrogate	% Recovery	Target Range
surr-Nitrobenzene-d5	31.	15. - 105.
surr-2-Fluorobiphenyl	31.	17. - 110.
surr-Terphenyl d14	24.	10. - 116.
surr-Phenol d5	19.	10. - 100.
surr-2-Fluorophenol	26.	9. - 100.
surr-2,4,6-Tribromophenol	37.	15. - 134.

Authorized by: _____
Theodore J. Duello, Ph.D., QA Officer
Michael H. Dunn, M.S., Technical Dir.
Danny B. Hale, M.S., Laboratory Mgr.
Johnny A. Mitchell, Technical Serv. Dir.

11/6/00

SPECIALIZED ASSAYS, INC.
2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

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ANALYTICAL REPORT

CRC & ASSOCIATES, INC 8311
JOHN STATHAM
916 W. 23RD STREET
TULSA, OK 74107

Lab Number: 99-A163234
Sample ID: LAFBCLFMW-201
Sample Type: Ground water
Site ID:

Date Collected: 10/23/99
Time Collected: 9:48
Date Received: 10/26/99
Time Received: 9:00

Project:
Project Name: LAREDO AIR FORCE BASE
Sampler: GREG SNIDER

Parameter	Result	Flag	Units	Limit of Quantitation	Limit of Detection	Dilution Factor	Date	Time	Method	Analyst	Batch
** Extractable Organics											
Acenaphthene	ND		ug/l	10.0	1.8	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
Acenaphthylene	ND		ug/l	10.0	1.8	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
Acetophenone	ND		ug/l	47.2	10.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
2-Acetylaminofluorene	ND		ug/l	47.2	5.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
-Aminobiphenyl	ND		ug/l	47.2	5.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
iline	~~ND~~ UJ BS		ug/l	25.0	1.8	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
Anthracene	ND		ug/l	10.0	0.9	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
Aramite	ND		ug/l	47.2	10.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
Benzo(a)anthracene	ND		ug/l	10.0	1.4	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
Benzo(a)pyrene	ND		ug/l	10.0	1.1	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
Benzo(b)fluoranthene	ND		ug/l	10.0	0.9	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
Benzo(g,h,i)perylene	ND		ug/l	10.0	1.2	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
Benzo(k)fluoranthene	ND		ug/l	10.0	1.4	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
4-Bromophenyl-phenylether	ND		ug/l	10.0	1.1	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
Butylbenzylphthalate	ND		ug/l	10.0	1.2	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
4-Chloro-3-methylphenol	ND		ug/l	10.0	1.2	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
4-Chloroaniline	ND		ug/l	10.0	2.4	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
Chlorbenzilate	ND		ug/l	47.2	5.6	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
Bis(2-chloroethoxy)methane	ND		ug/l	10.0	1.9	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
Bis(2-chloroethyl)ether	ND		ug/l	10.0	1.9	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
Bis(2-chloroisopropyl)ether	ND		ug/l	10.0	1.9	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
2-Chloronaphthalene	ND		ug/l	10.0	2.5	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
2-Chlorophenol	ND		ug/l	10.0	2.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
4-Chlorophenyl-phenylether	ND		ug/l	10.0	2.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
Chrysene	ND		ug/l	10.0	1.2	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
Diallate	ND		ug/l	47.2	10.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
Dibenzofuran	ND		ug/l	10.0	2.3	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
Dibenz(a,h)anthracene	ND		ug/l	10.0	1.2	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
3,3'-Dichlorobenzidine	~~ND~~ UJ BS		ug/l	20.0	4.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
4-Dichlorophenol	ND		ug/l	10.0	1.7	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
-Dichlorophenol	ND		ug/l	47.2	3.6	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
iethylphthalate	ND		ug/l	10.0	1.3	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
Dimethoate	ND		ug/l	47.2	20.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
p-Dimethylaminoazobenzene	ND		ug/l	47.2	10.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
3,3'-Dimethylbenzidine	ND		ug/l	18.9	10.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656

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SPECIALIZED ASSAYS, INC.
2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

U/O

ANALYTICAL REPORT

Laboratory Number: 99-A163234
Sample ID: LAFBCLFMW-201

Parameter	Result	Flag	Units	Limit of Quantitation	Limit of Detection	Dilution Factor	Date	Time	Method	Analyst	Batch
7,12-Dimethylbenz(a)anthrac	ND		ug/l	47.2	10.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
2,4-Dimethylphenol	ND		ug/l	10.0	1.7	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
Dimethylphthalate	ND		ug/l	10.0	1.7	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
a,a-Dimethylphenethylam	ND		ug/l	47.2	10.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
Di-n-Butylphthalate	ND		ug/l	10.0	1.1	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
4,6-Dinitro-2-methylphenol	ND		ug/l	25.0	1.2	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
1,3-Dinitrobenzene	ND		ug/l	47.2	10.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
1,4-Dinitrobenzene	ND		ug/l	47.2	10.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
1,2-Dinitrobenzene	ND		ug/l	47.2	10.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
2,4-Dinitrophenol	ND		ug/l	25.0	1.1	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
2,4-dinitrotoluene	ND		ug/l	10.0	1.2	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
2,6-Dinitrotoluene	ND		ug/l	10.0	4.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
Di-n-octylphthalate	ND		ug/l	10.0	1.2	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
Dinoseb	ND		ug/l	47.2	10.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
Diphenylamine	ND		ug/l	47.2	10.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
sulfoton	ND		ug/l	47.2	10.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
phur	ND		ug/l	47.2	4.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
luoranthene	ND		ug/l	10.0	0.9	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
Fluorene	ND		ug/l	10.0	1.8	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
Hexachlorobenzene	ND		ug/l	10.0	0.9	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
Hexachlorocyclopentadiene	ND		ug/l	10.0	1.3	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
Hexachloroethane	ND		ug/l	10.0	3.6	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
Hexachlorophene	ND		ug/l	47.2	10.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
Hexachloropropene	ND		ug/l	47.2	10.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
Indeno(1,2,3-cd)pyrene	ND		ug/l	10.0	1.3	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
Isodrin	ND		ug/l	47.2	5.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
Isophorone	ND		ug/l	10.0	2.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
Isosafrole	ND		ug/l	47.2	10.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
Methapyrilene	ND		ug/l	47.2	5.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
3-Methylcholanthrene	ND		ug/l	47.2	10.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
Methylmethanesulfonate	ND		ug/l	47.2	10.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
2-Methylnaphthalene	ND		ug/l	10.0	1.9	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
2-Methylphenol	ND		ug/l	10.0	1.9	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
3 and 4-Methylphenol	ND		ug/l	10.0	2.5	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
Naphthalene	ND		ug/l	10.0	1.9	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
1,4-Napthaquinone	ND		ug/l	47.2	10.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
2-Napthylamine	ND		ug/l	47.2	10.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
1-Napthylamine	ND		ug/l	47.2	10.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
2-Nitroaniline	ND		ug/l	25.0	1.5	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
3-Nitroaniline	ND		ug/l	25.0	1.5	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
4-Nitroaniline	ND		ug/l	25.0	1.2	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
robenzene	ND		ug/l	10.0	2.2	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
-Nitro-o-toluidine	ND		ug/l	47.2	10.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
2-Nitrophenol	ND		ug/l	10.0	2.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
4-Nitrophenol	ND		ug/l	25.0	0.7	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
N-nitrosodibutylamine	ND		ug/l	47.2	10.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656

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SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

U/1

ANALYTICAL REPORT

Laboratory Number: 99-A163234
Sample ID: LAFBCLFMW-201

Parameter	Result	Flag	Units	Limit of Quantitation	Limit of Detection	Dilution Factor	Date	Time	Method	Analyst	Batch
N-nitrosodiethylamine	ND		ug/l	47.2	5.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
N-Nitroso-Di-n-Propylamine	ND		ug/l	10.0	3.4	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
N-Nitrosodiphenylamine	ND		ug/l	10.0	1.1	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
N-nitrosodimethylamine	ND		ug/l	10.0	1.4	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
N-nitrosomethylethylamine	ND		ug/l	47.2	10.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
N-nitrosomorpholine	ND		ug/l	47.2	10.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
N-nitrosopiperidine	ND		ug/l	47.2	5.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
N-nitrosopyrrolidine	ND		ug/l	47.2	5.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
Pentachlorobenzene	ND		ug/l	47.2	10.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
Pentachloronitrobenzene	ND		ug/l	47.2	5.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
Pentachlorophenol	ND		ug/l	25.0	0.4	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
Phenacetin	ND		ug/l	47.2	5.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
Phenanthrene	ND		ug/l	10.0	0.8	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
Phenol	ND		ug/l	10.0	1.2	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
1,4-Phenylenediamine	ND		ug/l	47.2	10.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
Phorate	ND		ug/l	47.2	10.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
2-Picoline	ND		ug/l	47.2	10.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
Pronamide	ND		ug/l	47.2	10.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
Pyrene	ND		ug/l	10.0	1.7	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
Pyridine	ND		ug/l	10.0	3.5	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
Safrole	ND		ug/l	47.2	10.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
1,2,4,5-Tetrachlorobenzene	ND		ug/l	47.2	5.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
Bis(2-ethylhexyl)phthalate	ND		ug/l	10.0	2.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
2,3,4,6-Tetrachlorophenol	ND		ug/l	47.2	10.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
Tetraethyldithiopyrophosphate	ND		ug/l	94.3	5.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
Thionazine	ND		ug/l	47.2	5.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
o-Toluidine	ND		ug/l	47.2	10.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
1,2,4-Trichlorobenzene	ND		ug/l	10.0	2.8	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
2,4,5-Trichlorophenol	ND		ug/l	25.0	1.6	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
2,4,6-Trichlorophenol	ND		ug/l	10.0	1.9	1.0	11/ 3/99	0:33	8270C	M.Goodrich	785
O,O,O-Triethylphosphorothio	ND		ug/l	47.2	10.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
1,3,5-Trinitrobenzene	ND		ug/l	47.2	10.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
Benzyl alcohol	ND		ug/l	47.2	1.5	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
Ethylmethane sulfonate	ND		ug/l	47.2	5.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656
4-Nitroquinoline N-oxide	ND		ug/l	47.2	10.0	1.0	11/ 3/99	0:33	8270C	M.Goodrich	4656

ND = Not detected at the limit of quantitation.

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Analyst	Method

11/16/00

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SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

Laboratory Number: 99-A163234
Sample ID: LAFBCLFMW-201

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Analyst	Method
BNA's	1060 ml	1.0 ml	10/28/99	C. Terry	3510

Surrogate	% Recovery	Target Range
surr-Nitrobenzene-d5	39.	15. - 105.
surr-2-Fluorobiphenyl	37.	17. - 110.
surr-Terphenyl d14	41.	10. - 116.
surr-Phenol d5	23.	10. - 100.
surr-2-Fluorophenol	33.	9. - 100.
surr-2,4,6-Tribromophenol	51.	15. - 134.

Authorized by: _____

Theodore J. Duello, Ph.D., QA Officer
Michael H. Dunn, M.S., Technical Dir.
Danny B. Hale, M.S., Laboratory Mgr.
Johnny A. Mitchell, Technical Serv. Dir.

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2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

CRC & ASSOCIATES, INC 8311
JOHN STATHAM
916 W. 23RD STREET
TULSA, OK 74107

Lab Number: 99-A163235
Sample ID: LAFBCLFMW-401
Sample Type: Ground water
Site ID:

Date Collected: 10/23/99
Time Collected: 12:43
Date Received: 10/26/99
Time Received: 9:00

Project:
Project Name: LAREDO AIR FORCE BASE
Sampler: GREG SNIDER

Parameter	Result	Flag	Units	Limit of Quantitation	Limit of Detection	Dilution Factor	Date	Time	Method	Analyst	Batch
** Extractable Organics											
Acenaphthene	ND		ug/l	10.0	1.8	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
Acenaphthylene	ND		ug/l	10.0	1.8	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
Acetophenone	ND		ug/l	47.2	10.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
2-Acetylaminofluorene	ND		ug/l	47.2	5.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
Aminobiphenyl	ND		ug/l	47.2	5.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
Iline	~~ND~~ UJ BS		ug/l	25.0	1.3	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
nthracene	ND		ug/l	10.0	0.9	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
Aramite	ND		ug/l	47.2	10.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
Benzo(a)anthracene	ND		ug/l	10.0	1.4	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
Benzo(a)pyrene	ND		ug/l	10.0	1.1	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
Benzo(b)fluoranthene	ND		ug/l	10.0	0.9	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
Benzo(g,h,i)perylene	ND		ug/l	10.0	1.2	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
Benzo(k)fluoranthene	ND		ug/l	10.0	1.4	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
4-Bromophenyl-phenylether	ND		ug/l	10.0	1.1	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
Butylbenzylphthalate	ND		ug/l	10.0	1.2	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
4-Chloro-3-methylphenol	ND		ug/l	10.0	1.2	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
4-Chloroaniline	ND		ug/l	10.0	2.4	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
Chlorbenzilate	ND		ug/l	47.2	5.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
Bis(2-chloroethoxy)methane	ND		ug/l	10.0	1.9	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
Bis(2-chloroethyl)ether	ND		ug/l	10.0	1.9	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
Bis(2-chloroisopropyl)ether	ND		ug/l	10.0	1.9	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
2-Chloronaphthalene	ND		ug/l	10.0	2.5	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
2-Chlorophenol	ND		ug/l	10.0	2.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
4-Chlorophenyl-phenylether	ND		ug/l	10.0	2.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
Chrysene	ND		ug/l	10.0	1.2	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
Diallate	ND		ug/l	47.2	10.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
DibenzoFuran	ND		ug/l	10.0	2.3	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
Dibenz(a,h)anthracene	ND		ug/l	10.0	1.2	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
3,3'-Dichlorobenzidine	~~ND~~ UJ BS		ug/l	20.0	4.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
4-Dichlorophenol	ND		ug/l	10.0	1.7	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
-Dichlorophenol	ND		ug/l	47.2	3.6	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
ethylphthalate	ND		ug/l	10.0	1.3	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
Dimethoate	ND		ug/l	47.2	20.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
p-Dimethylaminoazobenzene	ND		ug/l	47.2	10.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
3,3'-Dimethylbenzidine	ND		ug/l	18.9	10.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656

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SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

Laboratory Number: 99-A163235
Sample ID: LAFBCLFMW-401

Parameter	Result	Flag	Units	Limit of Quantitation	Limit of Detection	Dilution Factor	Date	Time	Method	Analyst	Batch
7,12-Dimethylbenz(a)anthrac	ND		ug/l	47.2	10.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
2,4-Dimethylphenol	ND		ug/l	10.0	1.7	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
Dimethylphthalate	ND		ug/l	10.0	1.7	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
a,a-Dimethylphenethylam	ND		ug/l	47.2	10.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
Di-n-Butylphthalate	ND		ug/l	10.0	1.1	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
4,6-Dinitro-2-methylphenol	ND		ug/l	25.0	1.2	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
1,3-Dinitrobenzene	ND		ug/l	47.2	10.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
1,4-Dinitrobenzene	ND		ug/l	47.2	10.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
1,2-Dinitrobenzene	ND		ug/l	47.2	10.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
2,4-Dinitrophenol	ND		ug/l	25.0	1.1	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
2,4-dinitrotoluene	ND		ug/l	10.0	1.2	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
2,6-Dinitrotoluene	ND		ug/l	10.0	4.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
Di-n-octylphthalate	ND		ug/l	10.0	1.2	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
Dinoseb	ND		ug/l	47.2	10.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
Diphenylamine	ND		ug/l	47.2	10.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
sulfoton	ND		ug/l	47.2	10.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
mphur	ND		ug/l	47.2	4.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
.luoranthene	ND		ug/l	10.0	0.9	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
Fluorene	ND		ug/l	10.0	1.8	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
Hexachlorobenzene	ND		ug/l	10.0	0.9	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
Hexachlorocyclopentadiene	ND		ug/l	10.0	1.3	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
Hexachloroethane	ND		ug/l	10.0	3.6	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
Hexachlorophene	ND		ug/l	47.2	10.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
Hexachloropropene	ND		ug/l	47.2	10.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
Indeno(1,2,3-cd)pyrene	ND		ug/l	10.0	1.3	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
Isodrin	ND		ug/l	47.2	5.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
Isophorone	ND		ug/l	10.0	2.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
Isosafrole	ND		ug/l	47.2	10.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
Methapyrilene	ND		ug/l	47.2	5.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
3-Methylcholanthrene	ND		ug/l	47.2	10.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
MethylMethanesulfonate	ND		ug/l	47.2	10.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
2-Methylnaphthalene	ND		ug/l	10.0	1.9	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
2-Methylphenol	ND		ug/l	10.0	1.9	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
3 and 4-Methylphenol	ND		ug/l	10.0	2.5	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
Naphthalene	ND		ug/l	10.0	1.9	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
1,4-Naphthaquinone	ND		ug/l	47.2	10.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
2-Naphylamine	ND		ug/l	47.2	10.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
1-Naphylamine	ND		ug/l	47.2	10.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
2-Nitroaniline	ND		ug/l	25.0	1.5	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
3-Nitroaniline	ND		ug/l	25.0	1.5	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
4-Nitroaniline	ND		ug/l	25.0	1.2	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
trobenzene	ND		ug/l	10.0	2.2	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
Nitro-o-toluidine	ND		ug/l	47.2	10.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
2-Nitrophenol	ND		ug/l	10.0	2.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
4-Nitrophenol	ND		ug/l	25.0	0.7	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
N-Nitrosodibutylamine	ND		ug/l	47.2	10.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656

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SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

U/O

ANALYTICAL REPORT

Laboratory Number: 99-A163235
Sample ID: LAFBCLFMW-401

Parameter	Result	Flag	Units	Limit of Quantitation	Limit of Detection	Dilution Factor	Date	Time	Method	Analyst	Batch
N-nitrosodiethylamine	ND		ug/l	47.2	5.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
N-Nitroso-Di-n-Propylamine	ND		ug/l	10.0	3.4	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
N-Nitrosodiphenylamine	ND		ug/l	10.0	1.1	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
N-nitrosodimethylamine	ND		ug/l	10.0	1.4	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
N-nitrosomethylethylamine	ND		ug/l	47.2	10.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
N-nitrosomorpholine	ND		ug/l	47.2	10.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
N-nitrosopiperidine	ND		ug/l	47.2	5.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
N-nitrosopyrrolidine	ND		ug/l	47.2	5.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
Pentachlorobenzene	ND		ug/l	47.2	10.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
Pentachloronitrobenzene	ND		ug/l	47.2	5.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
Pentachlorophenol	ND		ug/l	25.0	0.4	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
Phenacetin	ND		ug/l	47.2	5.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
Phenanthrene	ND		ug/l	10.0	0.8	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
Phenol	ND		ug/l	10.0	1.2	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
1,4-Phenylenediamine	ND		ug/l	47.2	10.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
Norate	ND		ug/l	47.2	10.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
Picoline	ND		ug/l	47.2	10.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
ronamide	ND		ug/l	47.2	10.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
Pyrene	ND		ug/l	10.0	1.7	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
Pyridine	ND		ug/l	10.0	3.5	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
Safrole	ND		ug/l	47.2	10.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
1,2,4,5-Tetrachlorobenzene	ND		ug/l	47.2	5.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
Bis(2-ethylhexyl)phthalate	ND		ug/l	10.0	2.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
2,3,4,6-Tetrachlorophenol	ND		ug/l	47.2	10.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
Tetraethyldithiopyrophosphate	ND		ug/l	94.3	5.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
Thionazine	ND		ug/l	47.2	5.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
o-Toluidine	ND		ug/l	47.2	10.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
1,2,4-Trichlorobenzene	ND		ug/l	10.0	2.8	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
2,4,5-Trichlorophenol	ND		ug/l	25.0	1.6	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
2,4,6-Trichlorophenol	ND		ug/l	10.0	1.9	1.0	11/ 3/99	1:10	8270C	M.Goodrich	785
o,o,o-Triethylphosphorothio	ND		ug/l	47.2	10.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
1,3,5-Trinitrobenzene	ND		ug/l	47.2	10.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
Benzyl alcohol	ND		ug/l	47.2	1.5	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
Ethylmethane sulfonate	ND		ug/l	47.2	5.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656
4-Nitroquinoline N-oxide	ND		ug/l	47.2	10.0	1.0	11/ 3/99	1:10	8270C	M.Goodrich	4656

ND = Not detected at the limit of quantitation.

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Analyst	Method

#1 1/6/00

00281

SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

Laboratory Number: 99-A163235
Sample ID: LAFBCLFMW-401

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Analyst	Method
BNA's	1060 ml	1.0 ml	10/28/99	C. Terry	3510

Surrogate	% Recovery	Target Range
surr-Nitrobenzene-d5	31.	15. - 105.
surr-2-Fluorobiphenyl	30.	17. - 110.
surr-Terphenyl d14	34.	10. - 116.
surr-Phenol d5	17.	10. - 100.
surr-2-Fluorophenol	24.	9. - 100.
surr-2,4,6-Tribromophenol	41.	15. - 134.

Authorized by: _____

Theodore J. Duello, Ph.D., QA Officer
Michael H. Dunn, M.S., Technical Dir.
Danny B. Hale, M.S., Laboratory Mgr.
Johnny A. Mitchell, Technical Serv. Dir.

1/6/00

SPECIALIZED ASSAYS, INC.
2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

CRC & ASSOCIATES, INC 8311
JOHN STATHAM
916 W. 23RD STREET
TULSA, OK 74107

Lab Number: 99-A163236
Sample ID: LAFBCLFMW-402
Sample Type: Ground water
Site ID:

Date Collected: 10/23/99
Time Collected: 12:43
Date Received: 10/26/99
Time Received: 9:00

Project:
Project Name: LAREDO AIR FORCE BASE
Sampler: GREG SNIDER

Parameter	Result	Flag	Units	Limit of Quantitation	Limit of Detection	Dilution Factor	Date	Time	Method	Analyst	Batch
** Extractable Organics											
Acenaphthene	ND		ug/l	10.0	1.8	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
Acenaphthylene	ND		ug/l	10.0	1.6	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
Acetophenone	ND		ug/l	48.5	10.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
2-Acetylaminofluorene	ND		ug/l	48.5	5.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
Aminobiphenyl	ND		ug/l	48.5	5.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
iline	ND US BS		ug/l	25.0	1.6	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
Anthracene	ND		ug/l	10.0	0.9	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
Aramite	ND		ug/l	48.5	10.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
Benzo(a)anthracene	ND		ug/l	10.0	1.4	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
Benzo(a)pyrene	ND		ug/l	10.0	1.1	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
Benzo(b)fluoranthene	ND		ug/l	10.0	0.9	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
Benzo(g,h,i)perylene	ND		ug/l	10.0	1.2	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
Benzo(k)fluoranthene	ND		ug/l	10.0	1.4	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
4-Bromophenyl-phenylether	ND		ug/l	10.0	1.1	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
Butylbenzylphthalate	ND		ug/l	10.0	1.2	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
4-Chloro-3-methylphenol	ND		ug/l	10.0	1.2	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
4-Chloroaniline	ND		ug/l	10.0	2.4	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
Chlorobenzilate	ND		ug/l	48.5	5.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
Bis(2-chloroethoxy)methane	ND		ug/l	10.0	1.9	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
Bis(2-chloroethyl)ether	ND		ug/l	10.0	1.9	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
Bis(2-chloroisopropyl)ether	ND		ug/l	10.0	1.9	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
2-Chloronaphthalene	ND		ug/l	10.0	2.5	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
2-Chlorophenol	ND		ug/l	10.0	2.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
4-Chlorophenyl-phenylether	ND		ug/l	10.0	2.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
Chrysene	ND		ug/l	10.0	1.2	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
Diallate	ND		ug/l	48.5	10.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
DibenzoFuran	ND		ug/l	10.0	2.3	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
Dibenz(a,h)anthracene	ND		ug/l	10.0	1.2	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
3,3'-Dichlorobenzidine	ND US BS		ug/l	20.0	4.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
,4-Dichlorophenol	ND		ug/l	10.0	1.7	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
6-Dichlorophenol	ND		ug/l	48.5	3.6	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
Diethylphthalate	ND		ug/l	10.0	1.3	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
Dimethoate	ND		ug/l	48.5	20.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
p-Dimethylaminoazobenzene	ND		ug/l	48.5	10.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
3,3'-Dimethylbenzidine	ND		ug/l	19.4	10.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656

00283 #2 11/6/00

SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

Laboratory Number: 99-A163236
Sample ID: LAFBCLFMW-402

Parameter	Result	Flag	Units	Limit of Quantitation	Limit of Detection	Dilution Factor	Date	Time	Method	Analyst	Batch
7,12-Dimethylbenz(a)anthrac	ND		ug/l	48.5	10.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
2,4-Dimethylphenol	ND		ug/l	10.0	1.7	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
Dimethylphthalate	ND		ug/l	10.0	1.7	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
a,a-Dimethylphenethylam	ND		ug/l	48.5	10.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
Di-n-Butylphthalate	ND		ug/l	10.0	1.1	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
4,6-Dinitro-2-methylphenol	ND		ug/l	25.0	1.2	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
1,3-Dinitrobenzene	ND		ug/l	48.5	10.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
1,4-Dinitrobenzene	ND		ug/l	48.5	10.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
1,2-Dinitrobenzene	ND		ug/l	48.5	10.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
2,4-Dinitrophenol	ND		ug/l	25.0	1.1	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
2,4-dinitrotoluene	ND		ug/l	10.0	1.2	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
2,6-Dinitrotoluene	ND		ug/l	10.0	4.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
Di-n-octylphthalate	ND		ug/l	10.0	1.2	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
Dinoseb	ND		ug/l	48.5	10.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
Diphenylamine	ND		ug/l	48.5	10.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
isulfoton	ND		ug/l	48.5	10.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
mphur	ND		ug/l	48.5	4.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
luoranthene	ND		ug/l	10.0	0.9	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
Fluorene	ND		ug/l	10.0	1.8	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
Hexachlorobenzene	ND		ug/l	10.0	0.9	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
Hexachlorocyclopentadiene	ND		ug/l	10.0	1.3	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
Hexachloroethane	ND		ug/l	10.0	3.6	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
Hexachlorophene	ND		ug/l	48.5	10.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
Hexachloropropene	ND		ug/l	48.5	10.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
Indeno(1,2,3-cd)pyrene	ND		ug/l	10.0	1.3	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
Isodrin	ND		ug/l	48.5	5.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
Isophorone	ND		ug/l	10.0	2.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
Isosafrole	ND		ug/l	48.5	10.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
Methapyrilene	ND		ug/l	48.5	5.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
3-Methylcholanthrene	ND		ug/l	48.5	10.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
Methylmethanesulfonate	ND		ug/l	48.5	10.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
2-Methylnaphthalene	ND		ug/l	10.0	1.9	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
2-Methylphenol	ND		ug/l	10.0	1.9	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
3 and 4-Methylphenol	ND		ug/l	10.0	2.5	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
Naphthalene	ND		ug/l	10.0	1.9	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
1,4-Napthaquinone	ND		ug/l	48.5	10.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
2-Napthylamine	ND		ug/l	48.5	10.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
1-Napthylamine	ND		ug/l	48.5	10.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
2-Nitroaniline	ND		ug/l	25.0	1.5	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
3-Nitroaniline	ND		ug/l	25.0	1.5	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
4-Nitroaniline	ND		ug/l	25.0	1.2	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
trobenzene	ND		ug/l	10.0	2.2	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
-Nitro-o-toluidine	ND		ug/l	48.5	10.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
2-Nitrophenol	ND		ug/l	10.0	2.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
4-Nitrophenol	ND		ug/l	25.0	0.7	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
N-nitrosodibutylamine	ND		ug/l	48.5	10.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656

SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

Laboratory Number: 99-A163236
Sample ID: LAFBCLFMW-402

Parameter	Result	Flag	Units	Limit of Quantitation	Limit of Detection	Dilution Factor	Date	Time	Method	Analyst	Batch
N-nitrosodiethylamine	ND		ug/l	48.5	5.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
N-Nitroso-Di-n-Propylamine	ND		ug/l	10.0	3.4	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
N-Nitrosodiphenylamine	ND		ug/l	10.0	1.1	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
N-nitrosodimethylamine	ND		ug/l	10.0	1.4	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
N-nitrosomethylethylamine	ND		ug/l	48.5	10.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
N-nitrosomorpholine	ND		ug/l	48.5	10.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
N-nitrosopiperidine	ND		ug/l	48.5	5.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
N-nitrosopyrrolidine	ND		ug/l	48.5	5.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
Pentachlorobenzene	ND		ug/l	48.5	10.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
Pentachloronitrobenzene	ND		ug/l	48.5	5.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
Pentachlorophenol	ND		ug/l	25.0	0.4	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
Phenacetin	ND		ug/l	48.5	5.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
Phenanthrene	ND		ug/l	10.0	0.8	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
Phenol	ND		ug/l	10.0	1.2	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
1,4-Phenylenediamine	ND		ug/l	48.5	10.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
Phorate	ND		ug/l	48.5	10.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
2-Picoline	ND		ug/l	48.5	10.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
Pronamide	ND		ug/l	48.5	10.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
Pyrene	ND		ug/l	10.0	1.7	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
Pyridine	ND		ug/l	10.0	3.5	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
Safrole	ND		ug/l	48.5	10.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
1,2,4,5-Tetrachlorobenzene	ND		ug/l	48.5	5.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
Bis(2-ethylhexyl)phthalate	ND		ug/l	10.0	2.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
2,3,4,6-Tetrachlorophenol	ND		ug/l	48.5	10.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
Tetraethyldithiopyrophosphate	ND		ug/l	97.1	5.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
Thionazine	ND		ug/l	48.5	5.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
o-Toluidine	ND		ug/l	48.5	10.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
1,2,4-Trichlorobenzene	ND		ug/l	10.0	2.8	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
2,4,5-Trichlorophenol	ND		ug/l	25.0	1.6	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
2,4,6-Trichlorophenol	ND		ug/l	10.0	1.9	1.0	11/ 3/99	1:46	8270C	M.Goodrich	785
o,o,o-Triethylphosphorothio	ND		ug/l	48.5	10.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
1,3,5-Trinitrobenzene	ND		ug/l	48.5	10.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
Benzyl alcohol	ND		ug/l	48.5	1.5	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
Ethylmethane sulfonate	ND		ug/l	48.5	5.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656
4-Nitroquinoline N-oxide	ND		ug/l	48.5	10.0	1.0	11/ 3/99	1:46	8270C	M.Goodrich	4656

ND = Not detected at the limit of quantitation.

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Analyst	Method

COPY 1

00285

SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

Laboratory Number: 99-A163236
Sample ID: LAFBCLFMW-402

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Analyst	Method
BNA's	1030 ml	1.0 ml	10/28/99	C. Terry	3510

Surrogate	% Recovery	Target Range
surr-Nitrobenzene-d5	42.	15. - 105.
surr-2-Fluorobiphenyl	40.	17. - 110.
surr-Terphenyl d14	38.	10. - 116.
surr-Phenol d5	24.	10. - 100.
surr-2-Fluorophenol	33.	9. - 100.
surr-2,4,6-Tribromophenol	50.	15. - 134.

Authorized by: _____

Theodore J Duello, Ph.D., QA Officer
Michael H. Dunn, M.S., Technical Dir.
Danny B. Hale, M.S., Laboratory Mgr.
Johnny A. Mitchell, Technical Serv. Dir.

HA 1/6/00

SPECIALIZED ASSAYS, INC.
2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

CRC & ASSOCIATES, INC 8311
JOHN STATHAM
916 W. 23RD STREET
TULSA, OK 74107

Lab Number: 99-A163237
Sample ID: LAFBCLFMW-501
Sample Type: Ground water
Site ID:

Date Collected: 10/23/99
Time Collected: 14:41
Date Received: 10/26/99
Time Received: 9:00

Project:
Project Name: LAREDO AIR FORCE BASE
Sampler: GREG SNIDER

Parameter	Result	Flag	Units	Limit of Quantitation	Limit of Detection	Dilution Factor	Date	Time	Method	Analyst	Batch
** Extractable Organics											
Acenaphthene	ND		ug/l	10.0	1.8	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
Acenaphthylene	ND		ug/l	10.0	1.8	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
Acetophenone	ND		ug/l	47.2	10.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
2-Acetylaminofluorene	ND		ug/l	47.2	5.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
Aminobiphenyl	ND		ug/l	47.2	5.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
iline	~~ND~~ UJ BS		ug/l	25.0	1.8	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
Anthracene	ND		ug/l	10.0	0.9	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
Aramite	ND		ug/l	47.2	10.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
Benzo(a)anthracene	ND		ug/l	10.0	1.4	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
Benzo(a)pyrene	ND		ug/l	10.0	1.1	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
Benzo(b)fluoranthene	ND		ug/l	10.0	0.9	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
Benzo(g,h,i)perylene	ND		ug/l	10.0	1.2	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
Benzo(k)fluoranthene	ND		ug/l	10.0	1.4	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
4-Bromophenyl-phenylether	ND		ug/l	10.0	1.1	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
Butylbenzylphthalate	ND		ug/l	10.0	1.2	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
4-Chloro-3-methylphenol	ND		ug/l	10.0	1.2	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
4-Chloroaniline	ND		ug/l	10.0	2.4	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
Chlorobenzilate	ND		ug/l	47.2	5.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
Bis(2-chloroethoxy)methane	ND		ug/l	10.0	1.9	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
Bis(2-chloroethyl)ether	ND		ug/l	10.0	1.9	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
Bis(2-chloroisopropyl)ether	ND		ug/l	10.0	1.9	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
2-Chloronaphthalene	ND		ug/l	10.0	2.5	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
2-Chlorophenol	ND		ug/l	10.0	2.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
4-Chlorophenyl-phenylether	ND		ug/l	10.0	2.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
Chrysene	ND		ug/l	10.0	1.2	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
Diallate	ND		ug/l	47.2	10.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
Dibenzofuran	ND		ug/l	10.0	2.3	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
Dibenz(a,h)anthracene	ND		ug/l	10.0	1.2	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
3,3'-Dichlorobenzidine	~~ND~~ UJ BS		ug/l	20.0	4.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
2,4-Dichlorophenol	ND		ug/l	10.0	1.7	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
2,6-Dichlorophenol	ND		ug/l	47.2	3.6	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
Diethylphthalate	ND		ug/l	10.0	1.3	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
Dimethoate	ND		ug/l	47.2	20.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
p-Dimethylaminoazobenzene	ND		ug/l	47.2	10.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
3,3'-Dimethylbenzidine	ND		ug/l	18.9	10.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656

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ANALYTICAL REPORT

Laboratory Number: 99-A163237
Sample ID: LAFBCLFMW-501

Parameter	Result	Flag	Units	Limit of Quantitation	Limit of Detection	Dilution Factor	Date	Time	Method	Analyst	Batch
7,12-Dimethylbenz(a)anthrac	ND		ug/l	47.2	10.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
2,4-Dimethylphenol	ND		ug/l	10.0	1.7	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
Dimethylphthalate	ND		ug/l	10.0	1.7	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
a,a-Dimethylphenethylam	ND		ug/l	47.2	10.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
Di-n-Butylphthalate	ND		ug/l	10.0	1.1	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
4,6-Dinitro-2-methylphenol	ND		ug/l	25.0	1.2	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
1,3-Dinitrobenzene	ND		ug/l	47.2	10.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
1,4-Dinitrobenzene	ND		ug/l	47.2	10.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
1,2-Dinitrobenzene	ND		ug/l	47.2	10.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
2,4-Dinitrophenol	ND		ug/l	25.0	1.1	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
2,4-dinitrotoluene	ND		ug/l	10.0	1.2	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
2,6-Dinitrotoluene	ND		ug/l	10.0	4.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
Di-n-octylphthalate	ND		ug/l	10.0	1.2	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
Dinoseb	ND		ug/l	47.2	10.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
Diphenylamine	ND		ug/l	47.2	10.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
sulfoton	ND		ug/l	47.2	10.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
phur	ND		ug/l	47.2	4.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
fluoranthene	ND		ug/l	10.0	0.9	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
Fluorene	ND		ug/l	10.0	1.8	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
Hexachlorobenzene	ND		ug/l	10.0	0.9	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
Hexachlorocyclopentadiene	ND		ug/l	10.0	1.3	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
Hexachloroethane	ND		ug/l	10.0	3.6	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
Hexachlorophene	ND		ug/l	47.2	10.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
Hexachloropropene	ND		ug/l	47.2	10.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
Indeno(1,2,3-cd)pyrene	ND		ug/l	10.0	1.3	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
Isodrin	ND		ug/l	47.2	5.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
Isophorone	ND		ug/l	10.0	2.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
Isosafrole	ND		ug/l	47.2	10.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
Methapyrilene	ND		ug/l	47.2	5.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
3-Methylcholanthrene	ND		ug/l	47.2	10.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
Methylmethanesulfonate	ND		ug/l	47.2	10.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
2-Methylnaphthalene	ND		ug/l	10.0	1.9	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
2-Methylphenol	ND		ug/l	10.0	1.9	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
3 and 4-Methylphenol	ND		ug/l	10.0	2.5	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
Naphthalene	ND		ug/l	10.0	1.9	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
1,4-Napthaquinone	ND		ug/l	47.2	10.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
2-Napthylamine	ND		ug/l	47.2	10.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
1-Napthylamine	ND		ug/l	47.2	10.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
2-Nitroaniline	ND		ug/l	25.0	1.5	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
3-Nitroaniline	ND		ug/l	25.0	1.5	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
4-Nitroaniline	ND		ug/l	25.0	1.2	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
trobenzene	ND		ug/l	10.0	2.2	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
-Nitro-o-toluidine	ND		ug/l	47.2	10.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
2-Nitrophenol	ND		ug/l	10.0	2.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
4-Nitrophenol	ND		ug/l	25.0	0.7	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
N-nitrosodibutylamine	ND		ug/l	47.2	10.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656

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ANALYTICAL REPORT

Laboratory Number: 99-A163237
Sample ID: LAFBCLFMW-501

Parameter	Result	Flag	Units	Limit of Quantitation	Limit of Detection	Dilution Factor	Date	Time	Method	Analyst	Batch
N-nitrosodiethylamine	ND		ug/l	47.2	5.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
N-Nitroso-Di-n-Propylamine	ND		ug/l	10.0	3.4	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
N-Nitrosodiphenylamine	ND		ug/l	10.0	1.1	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
N-nitrosodimethylamine	ND		ug/l	10.0	1.4	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
N-nitrosomethylethylamine	ND		ug/l	47.2	10.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
N-nitrosomorpholine	ND		ug/l	47.2	10.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
N-nitrosopiperidine	ND		ug/l	47.2	5.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
N-nitrosopyrrolidine	ND		ug/l	47.2	5.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
Pentachlorobenzene	ND		ug/l	47.2	10.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
Pentachloronitrobenzene	ND		ug/l	47.2	5.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
Pentachlorophenol	ND		ug/l	25.0	0.4	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
Phenacetin	ND		ug/l	47.2	5.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
Phenanthrene	ND		ug/l	10.0	0.8	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
Phenol	ND		ug/l	10.0	1.2	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
1,4-Phenylenediamine	ND		ug/l	47.2	10.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
[illegible]orate	ND		ug/l	47.2	10.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
[illegible]Picoline	ND		ug/l	47.2	10.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
[illegible]ronamide	ND		ug/l	47.2	10.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
Pyrene	ND		ug/l	10.0	1.7	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
Pyridine	ND		ug/l	10.0	3.5	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
Safrole	ND		ug/l	47.2	10.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
1,2,4,5-Tetrachlorobenzene	ND		ug/l	47.2	5.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
Bis(2-ethylhexyl)phthalate	ND		ug/l	10.0	2.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
2,3,4,6-Tetrachlorophenol	ND		ug/l	47.2	10.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
Tetraethyldithiopyrophosphate	ND		ug/l	94.3	5.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
Thionazine	ND		ug/l	47.2	5.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
o-Toluidine	ND		ug/l	47.2	10.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
1,2,4-Trichlorobenzene	ND		ug/l	10.0	2.8	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
2,4,5-Trichlorophenol	ND		ug/l	25.0	1.6	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
2,4,6-Trichlorophenol	ND		ug/l	10.0	1.9	1.0	11/ 3/99	2:22	8270C	M.Goodrich	785
O,O,O-Triethylphosphorothio	ND		ug/l	47.2	10.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
1,3,5-Trinitrobenzene	ND		ug/l	47.2	10.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
Benzyl alcohol	ND		ug/l	47.2	1.5	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
Ethylmethane sulfonate	ND		ug/l	47.2	5.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656
4-Nitroquinoline N-oxide	ND		ug/l	47.2	10.0	1.0	11/ 3/99	2:22	8270C	M.Goodrich	4656

ND = Not detected at the limit of quantitation.

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Analyst	Method

00289 11/6/00

SPECIALIZED ASSAYS, INC.

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Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

Laboratory Number: 99-A163237
Sample ID: LAFBCLFMW-501

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Analyst	Method
DRO's	1060 ml	1.0 ml	10/20/99	C. Terry	3510

Surrogate	% Recovery	Target Range
surr-Nitrobenzene-d5	41.	15. - 105.
surr-2-Fluorobiphenyl	38.	17. - 110.
surr-Terphenyl d14	36.	10. - 116.
surr-Phenol d5	15.	10. - 100.
surr-2-Fluorophenol	21.	9. - 100.
surr-2,4,6-Tribromophenol	24.	15. - 134.

Authorized by: _____

Theodore J. Duello, Ph.D., QA Officer
Michael H. Dunn, M.S., Technical Dir.
Danny B. Hale, M.S., Laboratory Mgr.
Johnny A. Mitchell, Technical Serv. Dir.

COPY 1

00290

11/6/6

Data Review and Validation for: GC Organochlorine Pesticides and/or PCBs (as aroclors)

Project Name & Task:	LAREDO AFB	
Project # & Case/SDG:	153479.DV.ZZ	165856
Methods:	☐ OLM03.2 ☐ SW-846 8081A ☑ SW846 8082 (aroclors) ☐ EPA 608 ☐ Other:	
Program:	☐ AFCEE ☐ NFESC ☐ Other	**Number of Samples:** 5
Field QC Samples:	401/402, F. dup	
Reviewed by & Date:	D. Kelly	1/6/00
Matrix:	☑ Water ☐ Soil ☐ Other	

Quality Control	Form #	Requirements	Check (If No* checked, see comments)	Flags Applied (see comments)
Data Pkg Complete (DP)	Pkg	All required deliverables in pkg.	☑ OK ☐ No* ☐ Not provided	☐ Flags Applied
	COC	All samples on COC reported	☑ OK ☐ No*	☐ Flags Applied
Holding Times (HT)	1,	Extraction HT (water 7d, soil 14d)	☑ OK ☐ No*	☐ Flags Applied
	COC	Analysis HT (40d from extraction)	☑ OK ☐ No*	☐ Flags Applied
			☐ OK ☐ No*	☐ Flags Applied
Surrogates (SS)	2	Method surrogates used	☑ OK ☐ No* ☐ Not provided	☐ Flags Applied
		Recovery Limits: ☑ Lab ☐ Meth	☑ OK ☐ No* ☐ Diluted out	
MS/MSD or MS/LD	3	Matrix Spikes Provided	☑ MS/MSD ☐ MS/LD ☐ None*	☐ Flags Applied
		Correct Spike Used	☑ OK ☐ No*	
		Acceptance Limits: ☑ Lab ☐ Meth	☑ OK ☐ No* ☐ Diluted out	
LCS (BS) ☑ LCS only ☐ LCS/LCSD	3	LCS per prep. batch	☑ OK ☐ No*	☐ Flags Applied
		Acceptance criteria met	☑ OK ☐ No*	
Blanks (MB,TB,EB, FB/AB)	1	Detects (> MDL or RL/CRQL)	☑ All ND ☐ see blnk wksht	☐ Flags Applied
Method/Lab Blank (MB)	4	MB per prep batch or 20 samples	☑ OK ☐ No*	
Resolution	6/raw	Resolution met for IC	☐ OK ☐ No* ☑ N/A	☐ Flags Applied
	7/raw	Resolution met for CC	☐ OK ☐ No* ☑ N/A	
Initial Calibration (IC)	6, 8	Minimum levels per method	☑ OK ☐ No*	☐ Flags Applied
(primary & confirmation)	6	Linearity criteria met	☑ OK ☐ No* ☐ see cal wksht	
	"7"	Degradation criteria met	☐ OK ☐ No* ☑ N/A	
Continuing Calib. Verif. (CC)	8	Analyzed at proper frequency	☑ OK ☐ No*	☐ Flags Applied
including degradation	7	%diff or %drift criteria met	☑ OK ☐ No* ☐ see cal wksht	
(primary & confirmation)	"7"	Degradation criteria met	☐ OK ☐ No* ☑ N/A	
	"8"	Int. Std. RT/Area criteria met	☐ OK ☐ No* ☑ N/A	
Cleanup Criteria	9	All cleanup criteria met	☐ OK ☐ No* ☐ N/A	☐ Flags Applied
Internal Standards (IS)		Internal Standards used	☐ Yes ☑ No ☐ see comments	☐ Flags Applied
	"8"	Sample IS area criteria met	☐ OK ☐ No* ☑ N/A	
Sample Evaluation	1	All hits within cal. Range	☐ OK ☐ No* ☑ All ND	☐ Flags Applied
	8	Samples bracketed by CCV & Deg.	☑ OK ☐ No*	
	10	Hits w/in RT windows	☐ OK ☐ No* ☑ N/A	
	10	Confirmation %D criteria met	☐ OK ☐ No* ☑ N/A	
	raw	Manual Integration performed	☐ No ☐ N/A ☐ see comments	
Field Duplicate (FD)	1	Precision of native vs Field Dup	☑ OK ☐ No* ☐ N/A	☐ Flags Applied

This sheet is applicable to multiple methods. All requirement items may not apply to every analytical method.

Case Narrative Comments: NO EXCEPTIONS NOTED

QC Item	Comments
	NO FLAGS APPLIED

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Phone 1-615-726-0177

ANALYTICAL REPORT

CRC & ASSOCIATES, INC 8311
JOHN STATHAM
916 W. 23RD STREET
TULSA, OK 74107

Project:
Project Name: LAREDO AIR FORCE BASE
Sampler: GREG SNIDER

Lab Number: 99-A163233
Sample ID: LAFBCLFMW-101
Sample Type: Ground water
Site ID:

Date Collected: 10/23/99
Time Collected: 8:45
Date Received: 10/26/99
Time Received: 9:00

Parameter	Result	Flag	Units	Limit of Quantitation	Limit of Detection	Dilution Factor	Date	Time	Method	Analyst	B
** Pesticides											
Aroclor 1016	ND		ug/l	0.50	0.380	1.0	11/ 6/99	19:20	8082	Carmichael	53
Aroclor 1221	ND		ug/l	0.50	0.410	1.0	11/ 6/99	19:20	8082	Carmichael	53
Aroclor 1232	ND		ug/l	0.50	0.400	1.0	11/ 6/99	19:20	8082	Carmichael	53
Aroclor 1242	ND		ug/l	0.50	0.480	1.0	11/ 6/99	19:20	8082	Carmichael	53
Aroclor 1248	ND		ug/l	0.50	0.480	1.0	11/ 6/99	19:20	8082	Carmichael	53
Aroclor 1254	ND		ug/l	0.50	0.500	1.0	11/ 6/99	19:20	8082	Carmichael	53
Aroclor 1260	ND		ug/l	0.50	0.500	1.0	11/ 6/99	19:20	8082	Carmichael	53

ND = Not detected at the limit of quantitation.

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Analyst	Method
PCB's	500. ml	5.00 ml	10/28/99	C. Terry	3510

Surrogate	% Recovery	Target Range
pcb surr - TCMX	87.	20. - 122.

Authorized by:
Theodore J. Duello, Ph.D., QA Officer
Michael H. Dunn, M.S., Technical Dir.
Danny B. Hale, M.S., Laboratory Mgr.
Johnny A. Mitchell, Technical Serv. Dir.

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2960 Foster Creighton Dr.
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Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

CRC & ASSOCIATES, INC 8311
JOHN STATHAM
916 W. 23RD STREET
TULSA, OK 74107

Project:
Project Name: LAREDO AIR FORCE BASE
Sampler: GREG SNIDER

Lab Number: 99-A163234
Sample ID: LAFBCLFMW-201
Sample Type: Ground water
Site ID:

Date Collected: 10/23/99
Time Collected: 9:48
Date Received: 10/26/99
Time Received: 9:00

Parameter	Result	Flag	Units	Limit of Quantitation	Limit of Detection	Dilution Factor	Date	Time	Method	Analyst	D
** Pesticides											
Aroclor 1016	ND		ug/l	0.50	0.380	1.0	11/ 6/99	19:44	8082	Carmichael 53	
Aroclor 1221	ND		ug/l	0.50	0.410	1.0	11/ 6/99	19:44	8082	Carmichael 53	
Aroclor 1232	ND		ug/l	0.50	0.400	1.0	11/ 6/99	19:44	8082	Carmichael 53	
Aroclor 1242	ND		ug/l	0.50	0.480	1.0	11/ 6/99	19:44	8082	Carmichael 53	
roclor 1248	ND		ug/l	0.50	0.480	1.0	11/ 6/99	19:44	8082	Carmichael 53	
lor 1254	ND		ug/l	0.50	0.500	1.0	11/ 6/99	19:44	8082	Carmichael 53	
...oclor 1260	ND		ug/l	0.50	0.500	1.0	11/ 6/99	19:44	8082	Carmichael 53	

ND = Not detected at the limit of quantitation.

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Analyst	Method
PCB's	500. ml	5.00 ml	10/28/99	C. Terry	3510

Surrogate	% Recovery	Target Range
pcb surr - TCMX	78.	20. - 122.

Authorized by: _____
Theodore J. Duello, Ph.D., QA Officer
Michael H. Dunn, M.S., Technical Dir.
Danny B. Hale, M.S., Laboratory Mgr.
Johnny A. Mitchell, Technical Serv. Dir.

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ANALYTICAL REPORT

CRC & ASSOCIATES, INC 8311
JOHN STATHAM
916 W 23RD STREET
TULSA, OK 74107

Lab Number: 99-A163235
Sample ID: LAFBCLFMW-401
Sample Type: Ground water
Site ID:

Date Collected: 10/23/99
Time Collected: 12:43
Date Received: 10/26/99
Time Received: 9:00

Project:
Project Name: LAREDO AIR FORCE BASE
Sampler: GREG SNIDER

Parameter	Result	Flag	Units	Limit of Quantitation	Limit of Detection	Dilution Factor	Date	Time	Method	Analyst	B.
** Pesticides											
Aroclor 1016	ND		ug/l	0.50	0.380	1.0	11/ 6/99	20:07	8082	Carmichael	SS
Aroclor 1221	ND		ug/l	0.50	0.410	1.0	11/ 6/99	20:07	8082	Carmichael	SS
Aroclor 1232	ND		ug/l	0.50	0.400	1.0	11/ 6/99	20:07	8082	Carmichael	SS
Aroclor 1242	ND		ug/l	0.50	0.460	1.0	11/ 6/99	20:07	8082	Carmichael	SS
Aroclor 1248	ND		ug/l	0.50	0.460	1.0	11/ 6/99	20:07	8082	Carmichael	SS
Aroclor 1254	ND		ug/l	0.50	0.500	1.0	11/ 6/99	20:07	8082	Carmichael	SS
Aroclor 1260	ND		ug/l	0.50	0.500	1.0	11/ 6/99	20:07	8082	Carmichael	SS

ND = Not detected at the limit of quantitation.

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Analyst	Method
PCB's	500. ml	5.00 ml	10/28/99	C. Terry	3510

Surrogate	% Recovery	Target Range
pcb surr - TCMX	84.	20. - 122.

Authorized by: _____
Theodore J. Duello, Ph.D., QA Officer
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ANALYTICAL REPORT

CRC & ASSOCIATES, INC 8311
JOHN STATHAM
916 W. 23RD STREET
TULSA, OK 74107

Project:
Project Name: LAREDO AIR FORCE BASE
Sampler: GREG SNIDER

Lab Number: 99-A163236
Sample ID: LAFBCLFMW-402
Sample Type: Ground water
Site ID:

Date Collected: 10/23/99
Time Collected: 12:43
Date Received: 10/26/99
Time Received: 9:00

Parameter	Result	Flag	Units	Limit of Quantitation	Limit of Detection	Dilution Factor	Date	Time	Method	Analyst	B.
PCB Pesticides											
Aroclor 1016	ND		ug/l	0.50	0.380	1.0	11/ 6/99	20:29	8082	Carmichael 53	
Aroclor 1221	ND		ug/l	0.50	0.410	1.0	11/ 6/99	20:29	8082	Carmichael 53	
Aroclor 1232	ND		ug/l	0.50	0.400	1.0	11/ 6/99	20:29	8082	Carmichael 53	
Aroclor 1242	ND		ug/l	0.50	0.480	1.0	11/ 6/99	20:29	8082	Carmichael 53	
Aroclor 1248	ND		ug/l	0.50	0.480	1.0	11/ 6/99	20:29	8082	Carmichael 53	
Aroclor 1254	ND		ug/l	0.50	0.500	1.0	11/ 6/99	20:29	8082	Carmichael 53	
Aroclor 1260	ND		ug/l	0.50	0.500	1.0	11/ 6/99	20:29	8082	Carmichael 53	

ND = Not detected at the limit of quantitation.

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Analyst	Method
PCB's	500. ml	5.00 ml	10/28/99	C. Terry	3510

Surrogate	% Recovery	Target Range
pcb surr - TCMX	94.	20. - 122.

Authorized by: _____
Theodore J. Duello, Ph.D., QA Officer
Michael H. Dunn, M.S., Technical Dir.
Danny B. Hale, M.S., Laboratory Mgr.
Johnny A. Mitchell, Technical Serv. Dir.

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ANALYTICAL REPORT

CRC & ASSOCIATES, INC 8311
JOHN STATHAM
916 W. 23RD STREET
TULSA, OK 74107

Lab Number: 99-A163237
Sample ID: LAFBCLFMW-501
Sample Type: Ground water
Site ID:

Date Collected: 10/23/99
Time Collected: 14:41
Date Received: 10/26/99
Time Received: 9:00

Project:
Project Name: LAREDO AIR FORCE BASE
Sampler: GREG SNIDER

Parameter	Result	Flag	Units	Limit of Quantitation	Limit of Detection	Dilution Factor	Date	Time	Method	Analyst	B
** Pesticides											
Aroclor 1016	ND		ug/l	0.50	0.380	1.0	11/ 6/99	20:51	8082	Carmichael	53
Aroclor 1221	ND		ug/l	0.50	0.410	1.0	11/ 6/99	20:51	8082	Carmichael	53
Aroclor 1232	ND		ug/l	0.50	0.400	1.0	11/ 6/99	20:51	8082	Carmichael	53
Aroclor 1242	ND		ug/l	0.50	0.480	1.0	11/ 6/99	20:51	8082	Carmichael	53
Aroclor 1248	ND		ug/l	0.50	0.480	1.0	11/ 6/99	20:51	8082	Carmichael	53
Aroclor 1254	ND		ug/l	0.50	0.500	1.0	11/ 6/99	20:51	8082	Carmichael	53
Aroclor 1260	ND		ug/l	0.50	0.500	1.0	11/ 6/99	20:51	8082	Carmichael	53

ND = Not detected at the limit of quantitation.

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Analyst	Method
PCB's	500. ml	5.00 ml	10/28/99	C. Terry	3510

Surrogate	% Recovery	Target Range
pcb surr - TCMX	89.	20. - 122.

Authorized by: _____
Theodore J. Duello, Ph.D., QA Officer
Michael H. Dunn, M.S., Technical Dir.
Danny B. Hale, M.S., Laboratory Mgr.
Johnny A. Mitchell, Technical Serv. Dir.

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Data Review and Validation for: Metals and/or Cyanide

Project Name & Task:	LAREDO AFB	
Project # & Case/SDG:	153479.DV.ZZ	165856
Methods:	☐ ILM04.0 ☑ SW-846 (6010B,7000 Series) ☑ Hg 7470A/71A ☐ 200 series ☐ 300 series ☐ SM 3000 series	
Program:	☐ AFCEE ☐ NFESC ☐ Other:	**Number of Samples:** 5
Field QC Samples:	401/402 - F. Dup.	
Reviewed by & Date:	N. Kelly	1/16/00
Matrix:	☑ Water ☐ Soil ☐ Other	

Quality Control	Form #	Requirements	Check (If No* checked, see comments)	Flags Applied (see comments)
Data Pkg Complete (DP)	Pkg	All required deliverables in pkg.	☑ OK ☐ No* ☐ Not provided	☐ Flags Applied
	COC	All samples on COC reported	☑ OK ☐ No*	☐ Flags Applied
Holding Times (HT)	1, 13, 14, COC	Cyanide 14 day HT met	☐ OK ☐ No*	☐ Flags Applied
		Mercury 28 day HT met	☑ OK ☐ No*	☐ Flags Applied
		Other metals 160 day HT met	☑ OK ☐ No*	☐ Flags Applied
Initial Calibration (IC)	14	Min. initial # of levels per method	☑ OK ☐ No* ☐ Not provided	☐ Flags Applied
	raw	Linearity method criteria	☑ OK ☐ No* ☐ Not provided	
	2	ICV criteria	☑ OK ☐ No*	
Continuing Calibration (CC)	14	CCV frequency	☑ OK ☐ No*	☐ Flags Applied
	2	CCV critieria	☑ OK ☐ No*	
Blanks (PB,EB,FB/AB)	3	Detects (>RL/CRDL)	☐ OK ☑ No* ☐ see blnk wksht	☐ Flags Applied
ICB and CCB	3	ICB, CCB	☑ OK ☐ No* ☐ see blnk wksht	
Prep Blank Frequency (PB)	3	1 PB per batch	☑ OK ☐ No*	
ICP Interference Check (ICS)	4	Method criteria met	☑ OK ☐ No*	☐ Flags Applied
MS/MSD or MS/LD	5	☐ MS/MSD ☑ MS/LD ☐ None*	☐ OK ☑ No*	☑ Flags Applied
	5	Recovery Limits: ☐ Lab ☑ Meth	☐ OK ☑ No*	
	6	Precision criteria	☑ OK ☐ No*	
Post Spike Samp. Recov.	5	Criteria met	☐ OK ☐ No* ☑ N/A	☐ Flags Applied
Duplicate Samples (LD)	6	Criteria met	☑ OK ☐ No* ☐ N/A	☐ Flags Applied
LCS (BS) ☑ LCS only ☐ LCS/LCSD	7	Frequency	☑ OK ☐ No* ☐ N/A	☐ Flags Applied
		Acceptance criteria met	☑ OK ☐ No*	
Standard Addition	8	Criteria met	☐ OK ☐ No* ☐ N/A	☐ Flags Applied
ICP Serial Dilution (SD)	9	Criteria met	☑ OK ☐ No* ☐ N/A	☐ Flags Applied
Internal Standard (IS)		Internal Standards used	☐ OK ☐ No* ☑ N/A	
Sample Evaluations (SAM)	1	All hits within cal. Range	☑ OK ☐ No* ☐ All ND	☐ Flags Applied
	1	Total > Dissolved	☐ OK ☑ No* ☐ N/A	☐ Flags Applied
Field Duplicates (FD)	1	Precision of native vs Field Dup	☑ OK ☐ No* ☐ N/A	☐ Flags Applied

This sheet is applicable to multiple methods. All requirement items may not apply to every analytical method.

Case Narrative Comments: Chromium low in TOTAL + Dissolved MS
Cadmium low in Dissolved MS Not reflected on Forms

QC Item	Comments
BLANKS	All ND
MS/MSD	Chromium - TOTAL = 73.4 % Flag "J UJ" Chromium - Dissolved = 69.9 %
TOT VS Dissolved	Selenium (MW-702) TOTAL = 10 ug/L NO Flags Dissolved = 11 ug/L

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ANALYTICAL REPORT

CRC & ASSOCIATES, INC 8311
JOHN STATHAM
716 W. 23RD STREET
TULSA, OK 74107

Project:
Project Name: LAREDO AIR FORCE BASE
Sampler: GREG SNIDER

Lab Number: 99-A163233
Sample ID: LAFBCLFMW-101
Sample Type: Ground water
Site ID:

Date Collected: 10/23/99
Time Collected: 8:45
Date Received: 10/26/99
Time Received: 9:00

Parameter	Result	Flag	Units	Limit of Quantitation	Limit of Detection	Dilution Factor	Date	Time	Method	Analyst	Ba
**Metals											
Arsenic, Total	ND		ug/l	5.0	2.5	1.0	11/ 9/99	7:08	6010B	R. Kelley	793
Arsenic, Dissolved	ND		ug/l	5.	2.0	1.0	11/ 9/99	7:10	6010B	R. Kelley	793
Barium, Total	27.0		ug/l	10.0	1.5	1.0	11/ 9/99	7:08	6010B	R. Kelley	793
Barium, Dissolved	26.0		ug/l	10.0	0.2	1.0	11/ 9/99	7:10	6010B	R. Kelley	793
Cadmium, total	ND		ug/l	1.0	0.5	1.0	11/ 9/99	7:08	6010B	R. Kelley	793
Cadmium, Dissolved	ND		ug/l	1.0	0.2	1.0	11/ 9/99	7:10	6010B	R. Kelley	793
Chromium, total	HR UJ MS		ug/l	5.0	1.9	1.0	11/ 9/99	7:08	6010B	R. Kelley	793
Chromium, Dissolved	HR UJ MS		ug/l	5.0	0.4	1.0	11/ 9/99	7:10	6010B	R. Kelley	793
Lead	ND		ug/l	3.0	0.5	1.0	11/ 9/99	7:08	6010B	R. Kelley	793
Lead, Dissolved	ND		ug/l	3.0	2.6	1.0	11/ 9/99	7:10	6010B	R. Kelley	793
Mercury, Total	ND		ug/l	0.20	0.1	1.0	11/ 9/99	7:13	7470	G.McCord	793
Mercury, Dissolved	ND		ug/l	0.20	0.1	1.0	11/ 9/99	7:13	7470	G.McCord	793
Selenium, Total	10.0		ug/l	5.0	2.4	1.0	11/ 9/99	7:08	6010B	R. Kelley	793
Selenium, Dissolved	ND		ug/l	5.0	4.7	1.0	11/ 9/99	7:10	6010B	R. Kelley	793
Silver, Total	ND		ug/l	5.0	0.6	1.0	11/ 9/99	7:08	6010B	R. Kelley	793
Silver, Dissolved	ND		ug/l	5.0	1.2	1.0	11/ 9/99	7:10	6010B	R. Kelley	793

ND = Not detected at the limit of quantitation.

Authorized by: _____
Theodore J. Duello, Ph.D., QA Officer
Michael H. Dunn, M.S., Technical Dir.
Danny B. Hale, M.S., Laboratory Mgr.
Johnny A. Mitchell, Technical Serv. Dir.

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ANALYTICAL REPORT

CRC & ASSOCIATES, INC 8311
JOHN STATHAM
916 W. 23RD STREET
TULSA, OK 74107

Project:
Project Name: LAREDO AIR FORCE BASE
Sampler: GREG SNIDER

Lab Number: 99-A163234
Sample ID: LAFBCLFMW-201
Sample Type: Ground water
Site ID:

Date Collected: 10/23/99
Time Collected: 9:48
Date Received: 10/26/99
Time Received: 9:00

Parameter	Result	Flag	Units	Limit of Quantitation	Limit of Detection	Dilution Factor	Date	Time	Method	Analyst	Bat
**Metals											
Arsenic, Total	ND		ug/l	5.0	2.5	1.0	11/ 9/99	7:08	6010B	R. Kelley	793
Arsenic, Dissolved	ND		ug/l	5.	2.0	1.0	11/ 9/99	7:10	6010B	R. Kelley	793
Barium, Total	28.0		ug/l	10.0	1.5	1.0	11/ 9/99	7:08	6010B	R. Kelley	793
Barium, Dissolved	27.0		ug/l	10.0	0.2	1.0	11/ 9/99	7:10	6010B	R. Kelley	793
Cadmium, total	1.0		ug/l	1.0	0.5	1.0	11/ 9/99	7:08	6010B	R. Kelley	793
[illegible]mium, Dissolved	1.0		ug/l	1.0	0.2	1.0	11/ 9/99	7:10	6010B	R. Kelley	793
[illegible]ium, total	ND UJ MS		ug/l	5.0	1.9	1.0	11/ 9/99	7:08	6010B	R. Kelley	793
Chromium, Dissolved	ND UJ MS		ug/l	5.0	0.4	1.0	11/ 9/99	7:10	6010B	R. Kelley	793
Lead	ND		ug/l	3.0	0.5	1.0	11/ 9/99	7:08	6010B	R. Kelley	793
Lead, Dissolved	ND		ug/l	3.0	2.6	1.0	11/ 9/99	7:10	6010B	R. Kelley	793
Mercury, Total	ND		ug/l	0.20	0.1	1.0	11/ 9/99	7:13	7470	G.McCord	793
Mercury, Dissolved	ND		ug/l	0.20	0.1	1.0	11/ 9/99	7:13	7470	G.McCord	793
Selenium, Total	ND		ug/l	5.0	2.4	1.0	11/ 9/99	7:08	6010B	R. Kelley	793
Selenium, Dissolved	ND		ug/l	5.0	4.7	1.0	11/ 9/99	7:10	6010B	R. Kelley	793
Silver, Total	ND		ug/l	5.0	0.6	1.0	11/ 9/99	7:08	6010B	R. Kelley	793
Silver, Dissolved	ND		ug/l	5.0	1.2	1.0	11/ 9/99	7:10	6010B	R. Kelley	793

ND = Not detected at the limit of quantitation.

Authorized by: _____

Theodore J. Duello, Ph.D., QA Officer
Michael H. Dunn, M.S., Technical Dir.
Danny B. Hale, M.S., Laboratory Mgr.
Johnny A. Mitchell, Technical Serv. Dir.

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ANALYTICAL REPORT

CRC & ASSOCIATES, INC 8311
JOHN STATHAM
916 W. 23RD STREET
TULSA, OK 74107

Project:
Project Name: LAREDO AIR FORCE BASE
Sampler: GREG SNIDER

Lab Number: 99-A163235
Sample ID: LAFBCLFMW-401
Sample Type: Ground water
Site ID:

Date Collected: 10/23/99
Time Collected: 12:43
Date Received: 10/26/99
Time Received: 9:00

Parameter	Result	Flag	Units	Limit of Quantitation	Limit of Detection	Dilution Factor	Date	Time	Method	Analyst	Ba
**Metals											
Arsenic, Total	ND		ug/l	5.0	2.5	1.0	11/ 9/99	7:08	6010B	R. Kelley	793
Arsenic, Dissolved	ND		ug/l	5.	2.0	1.0	11/ 9/99	7:10	6010B	R. Kelley	793
Barium, Total	44.0		ug/l	10.0	1.5	1.0	11/ 9/99	7:08	6010B	R. Kelley	793
Barium, Dissolved	37.0		ug/l	10.0	0.2	1.0	11/ 9/99	7:10	6010B	R. Kelley	793
Cadmium, total	2.0		ug/l	1.0	0.5	1.0	11/ 9/99	7:08	6010B	R. Kelley	793
Cadmium, Dissolved	ND		ug/l	1.0	0.2	1.0	11/ 9/99	7:10	6010B	R. Kelley	793
Chromium, total	42.0	J ms	ug/l	5.0	1.9	1.0	11/ 9/99	7:08	6010B	R. Kelley	793
Chromium, Dissolved	ND	UJ ms	ug/l	5.0	0.4	1.0	11/ 9/99	7:10	6010B	R. Kelley	793
Lead	6.0		ug/l	3.0	0.5	1.0	11/ 9/99	7:08	6010B	R. Kelley	793
Lead, Dissolved	ND		ug/l	3.0	2.6	1.0	11/ 9/99	7:10	6010B	R. Kelley	793
Mercury, Total	ND		ug/l	0.20	0.1	1.0	11/ 9/99	7:13	7470	G.McCord	793
Mercury, Dissolved	ND		ug/l	0.20	0.1	1.0	11/ 9/99	7:13	7470	G.McCord	793
Selenium, Total	13.0		ug/l	5.0	2.4	1.0	11/ 9/99	7:08	6010B	R. Kelley	793
Selenium, Dissolved	7.0		ug/l	5.0	4.7	1.0	11/ 9/99	7:10	6010B	R. Kelley	793
Silver, Total	ND		ug/l	5.0	0.6	1.0	11/ 9/99	7:08	6010B	R. Kelley	793
Silver, Dissolved	ND		ug/l	5.0	1.2	1.0	11/ 9/99	7:10	6010B	R. Kelley	793

ND = Not detected at the limit of quantitation.

Authorized by: _____
Theodore J. Duello, Ph.D., QA Officer
Michael H. Dunn, M.S., Technical Dir.
Danny B. Hale, M.S., Laboratory Mgr.
Johnny A. Mitchell, Technical Serv. Dir.

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ANALYTICAL REPORT

CRC & ASSOCIATES, INC 8311
JOHN STATHAM
916 W. 23RD STREET
TULSA, OK 7410?

Project
Project Name: LAREDO AIR FORCE BASE
Sampler: GREG SNIDER

Lab Number: 99-A163236
Sample ID: LAFBCLFMW-402
Sample Type: Ground water
Site ID:

Date Collected: 10/23/99
Time Collected: 12:43
Date Received: 10/26/99
Time Received: 9:00

Parameter	Result	Flag	Units	Limit of Quantitation	Limit of Detection	Dilution Factor	Date	Time	Method	Analyst	Ba
exMetals											
Arsenic, Total	ND		ug/l	5.0	2.5	1.0	11/ 9/99	7:08	6010B	R. Kelley	79
Arsenic, Dissolved	ND		ug/l	5.	2.0	1.0	11/ 9/99	7:10	6010B	R. Kelley	79
Barium, Total	46.0		ug/l	10.0	1.5	1.0	11/ 9/99	7:08	6010B	R. Kelley	79
Barium, Dissolved	36.0		ug/l	10.0	0.2	1.0	11/ 9/99	7:10	6010B	R. Kelley	79
Cadmium, total	1.0		ug/l	1.0	0.5	1.0	11/ 9/99	7:08	6010B	R. Kelley	79
Cadmium, Dissolved	ND		ug/l	1.0	0.2	1.0	11/ 9/99	7:10	6010B	R. Kelley	79
mium, total	55.0	J MS	ug/l	5.0	1.9	1.0	11/ 9/99	7:08	6010B	R. Kelley	79
mium, Dissolved	~~ND~~	UJ MS	ug/l	5.0	0.4	1.0	11/ 9/99	7:10	6010B	R. Kelley	79
Lead	6.0		ug/l	3.0	0.5	1.0	11/ 9/99	7:08	6010B	R. Kelley	79
Lead, Dissolved	ND		ug/l	3.0	2.6	1.0	11/ 9/99	7:10	6010B	R. Kelley	79
Mercury, Total	ND		ug/l	0.20	0.1	1.0	11/ 9/99	7:13	7470	G.McCord	79
Mercury, Dissolved	ND		ug/l	0.20	0.1	1.0	11/ 9/99	7:13	7470	G.McCord	79
Selenium, Total	10.0		ug/l	5.0	2.4	1.0	11/ 9/99	7:08	6010B	R. Kelley	79
Selenium, Dissolved	11.0		ug/l	5.0	4.7	1.0	11/ 9/99	7:10	6010B	R. Kelley	79
Silver, Total	ND		ug/l	5.0	0.6	1.0	11/ 9/99	7:08	6010B	R. Kelley	79
Silver, Dissolved	ND		ug/l	5.0	1.2	1.0	11/ 9/99	7:10	6010B	R. Kelley	79

ND = Not detected at the limit of quantitation.

Authorized by: _____

Theodore J. Duello, Ph.D., QA Officer
Michael H. Dunn, M.S., Technical Dir.
Danny B. Hale, M.S., Laboratory Mgr.
Johnny A. Mitchell, Technical Serv. Dir.

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SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

CRC & ASSOCIATES, INC 8311
JOHN STATHAM
916 W. 23RD STREET
TULSA, OK 74107

Lab Number: 99-A163237
Sample ID: LAFBCLFMW-501
Sample Type: Ground water
Site ID:

Date Collected: 10/23/99
Time Collected: 14:41
Date Received: 10/26/99
Time Received: 9:00

Project:
Project Name: LAREDO AIR FORCE BASE
Sampler: GREG SNIDER

Parameter	Result	Flag	Units	Limit of Quantitation	Limit of Detection	Dilution Factor	Date	Time	Method	Analyst	B
**Metals											
Arsenic, Total	ND		ug/l	5.0	2.5	1.0	11/ 9/99	7:08	6010B	R. Kelley	79
Arsenic, Dissolved	ND		ug/l	5.	2.0	1.0	11/ 9/99	7:10	6010B	R. Kelley	79
Barium, Total	20.0		ug/l	10.0	1.5	1.0	11/ 9/99	7:08	6010B	R. Kelley	79
Barium, Dissolved	20.0		ug/l	10.0	0.2	1.0	11/ 9/99	7:10	6010B	R. Kelley	79
Cadmium, total	ND		ug/l	1.0	0.5	1.0	11/ 9/99	7:08	6010B	R. Kelley	79
Cadmium, Dissolved	ND		ug/l	1.0	0.2	1.0	11/ 9/99	7:10	6010B	R. Kelley	79
Chromium, total	~~ND~~ UJ	MS	ug/l	5.0	1.9	1.0	11/ 9/99	7:08	6010B	R. Kelley	79
Chromium, Dissolved	~~ND~~ UJ	MS	ug/l	5.0	0.4	1.0	11/ 9/99	7:10	6010B	R. Kelley	79
Lead	ND		ug/l	3.0	0.5	1.0	11/ 9/99	7:08	6010B	R. Kelley	79
Lead, Dissolved	ND		ug/l	3.0	2.6	1.0	11/ 9/99	7:10	6010B	R. Kelley	79
Mercury, Total	ND		ug/l	0.20	0.1	1.0	11/ 9/99	7:13	7470	G.McCord	79
Mercury, Dissolved	ND		ug/l	0.20	0.1	1.0	11/ 9/99	7:13	7470	G.McCord	79
Selenium, Total	11.0		ug/l	5.0	2.4	1.0	11/ 9/99	7:08	6010B	R. Kelley	79
Selenium, Dissolved	8.0		ug/l	5.0	4.7	1.0	11/ 9/99	7:10	6010B	R. Kelley	79
Silver, Total	ND		ug/l	5.0	0.6	1.0	11/ 9/99	7:08	6010B	R. Kelley	79
Silver, Dissolved	ND		ug/l	5.0	1.2	1.0	11/ 9/99	7:10	6010B	R. Kelley	79

ND = Not detected at the limit of quantitation.

Authorized by: _____
Theodore J. Duello, Ph.D., QA Officer
Michael H. Dunn, M.S., Technical Dir.
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Johnny A. Mitchell, Technical Serv. Dir.

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