



Tetra Tech EM Inc.

1099 18th Street, Suite 1960 ♦ Denver, CO 80202 ♦ (303) 295-1101 ♦ FAX (303) 295-2818

May 25, 2001

Ms. Michelle Gallice Sondrup
Department of the Navy
Southwest Division
Naval Facilities Engineering Command
1230 Columbia Street, Suite 1100
San Diego, California 92101

**Subject: Methane Monitoring Summary at Site 1 Waste Disposal Area
Naval Fuel Depot (NFD) Point Molate, Richmond, California
CLEAN II Contract No. N62474-94-D-7609, Contract Task Order 280**

Dear Ms. Gallice Sondrup:

On May 2, 2001, Tetra Tech EM Inc. (TtEMI) completed the last of four monitoring events for methane at Site 1, Naval Fuel Depot (NFD) Point Molate. Monitoring occurred in January 2000, November 2000, February 2001, and May 2001. Soil gas was monitored for methane to evaluate whether methane venting should be included in the design of the final cover for Site 1. This letter includes the history of the methane investigation, summarizes the results of monitoring, and recommends future approaches to address methane at Site 1.

The initial methane survey for Site 1 was proposed in a letter dated November 18, 1999, submitted by TtEMI to Mr. Timothy Crist of the California Integrated Waste Management Board (CIWMB). In a December 1, 1999, telephone conversation, Ms. Rebecca Ng of Contra Costa Health Services (CCHS, the local enforcement agency) stated that a surface sweep should be added to the planned survey, but that it was otherwise adequate. In a December 14, 1999, telephone conversation, Mr. Crist concurred that the proposed survey would be adequate for identifying future requirements for gas monitoring.

The initial methane survey and surface sweep were conducted in January 2000. TtEMI submitted a letter on April 24, 2000, that summarized the methane survey and the results. The results have been included in Table 1. Based on the results of this survey, the Regional Water Quality Control Board (RWQCB), CCHS, and CIWMB, during a working meeting in August 2000, suggested additional methane monitoring to support the evaluation of soil gas venting in the design of the final cover at Site 1.

On November 1, 2000, TtEMI submitted the Field Activities Plan and Quality Assurance Review Letter. This letter included the sampling approach, summary of future field activities and a quality assurance review of data for three quarters of methane monitoring at Site 1. Field activities included installing temporary soil gas probes and monitoring the probes and the existing wells for methane. This letter also established the criterion for the decision to include methane vents in the final Site 1 design. The criterion for determining the need for methane control in the design of the soil cover for Site 1 was that venting would be included if laboratory results for samples from the existing or proposed soil gas probes (SG02-03 and SG02-04) exceeded 5 percent methane by volume.

In November 2000, the two additional temporary soil gas probes, SG02-03 and SG02-04, were inserted at Site 1 using a direct push method. Probe SG02-03 was located to determine the methane production above the groundwater table in the vicinity of the groundwater monitoring well MW02-06, where methane was previously detected. Probe SG02-04 was located in the middle of the site where the thickness of waste represents an average across the site. The thickness of the waste was measured in the Phase II Remedial Investigation conducted by TtEMI in January-March 1999. The location of the probes can be seen on Figure 1. Construction details have been included as Attachment A.

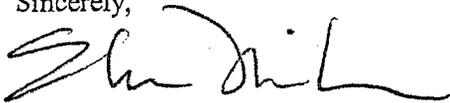
Monitoring occurred at the newly installed soil gas probes and the existing monitoring wells in November 2000, February 2001, and May 2001. The monitored locations are included in Figure 1. All locations were monitored using a handheld methane detection instrument. Laboratory samples were collected during each event at probes SG02-03 and SG02-04 as they were the focus locations set in the criteria for determining the need for methane venting. The high detection in the initial monitoring event, January 2000, in well MW02-06 warranted taking laboratory confirmation samples during the other monitoring events. A laboratory sample was collected at well MW02-22 during the last event to confirm the detections from the handheld methane detection instrument.

The results of soil gas monitoring for methane at Site 1 have been summarized in Table 1. This table reflects the methane monitoring from all four events. The laboratory results are included in Attachment B. There were five detections, confirmed by laboratory analysis, of methane above the lower explosive limit (LEL). Two of these detections were from probe SG02-03. The laboratory results were variable throughout all four events; that is, they did not consistently exceed 5 percent methane by volume. For example, readings at probe SG02-03 did not exceed 5 percent methane by volume in event 2, but exceeded 5 percent by volume in events 3 and 4. In contrast, results for samples from well MW02-06 exceeded 5 percent methane by volume in event 2, but did not exceed 5 percent methane by volume in events 3 and 4. The inconsistencies did not affect the decision for vents in the final cover design.

Analysis of the monitoring results shows that the area where methane generation is occurring seems to be centralized around the southern portion of the site. In light of the results from all four monitoring events, the final cover design for Site 1 at NFD Point Molate will include methane vents to target the southern portion of the site. Details on the design will be included in the final Site 1 final cover design package.

Please call me with any questions at (303) 382-8784.

Sincerely,



Ellen Miller
Project Manager

Attachments

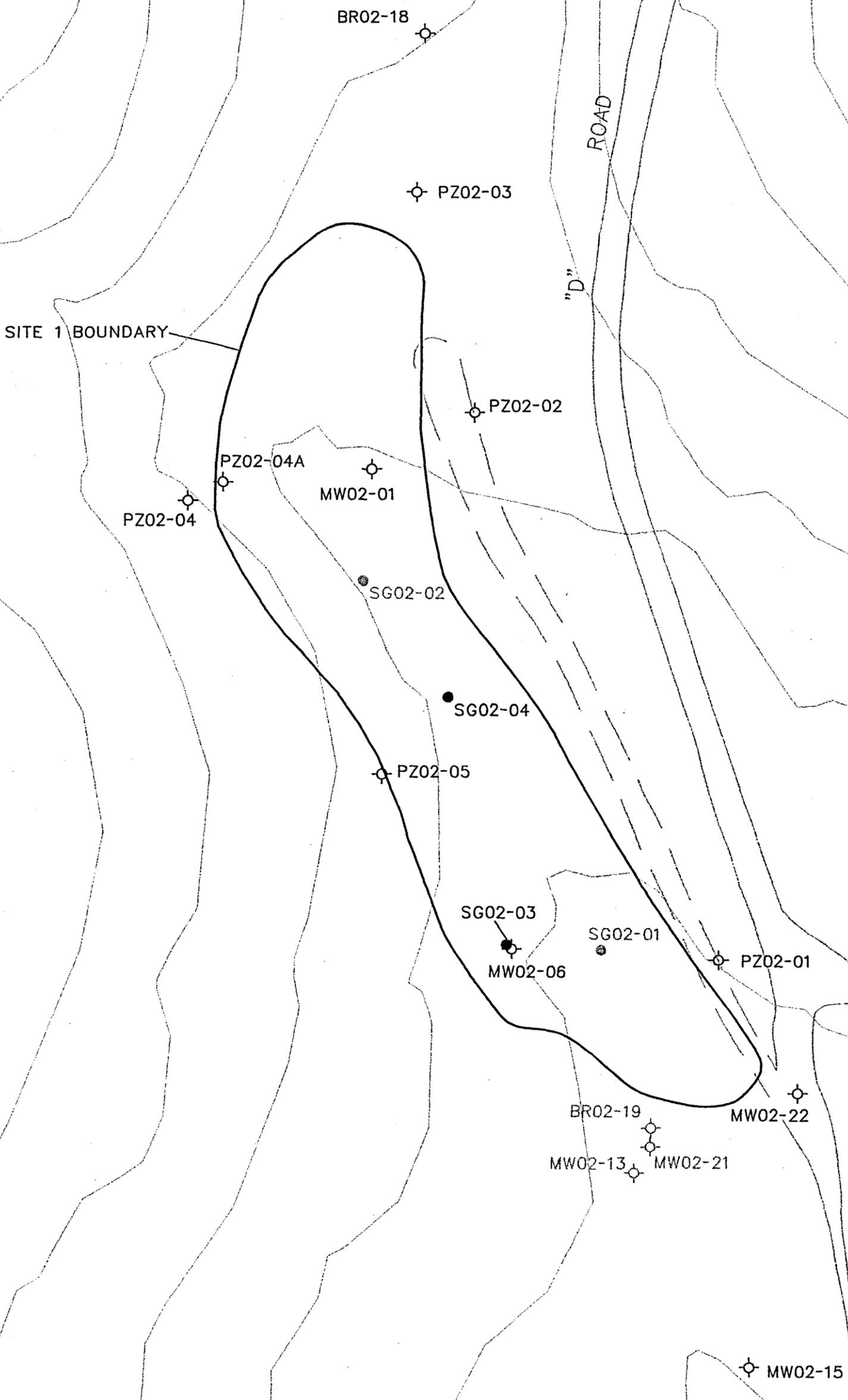
cc: Transmittal Form Distribution List

TABLE 1
SUMMARY OF RESULTS
METHANE MONITORING
SITE 1
WASTE DISPOSAL AREA

Sample Location	January 17-18, 2000 EVENT 1		November 10, 2000 EVENT 2		February 6, 2001 EVENT 3		May 2, 2001 EVENT 4	
	Screening Results for Methane	Laboratory Results for Methane	Screening Results for Methane	Laboratory Results for Methane	Screening Results for Methane	Laboratory Results for Methane	Screening Results for Methane	Laboratory Results for Methane
BR02-18	ND	---	ND	---	ND	---	---	---
BR02-19 ^a	ND	---	---	---	ND	---	ND	---
ERM-EW1 ^b	8.5%	---	---	---	---	---	---	---
MW02-01	ND	---	ND	---	ND	---	---	---
MW02-06 [*]	21.6%	---	6.5%	8.7%	ND	.053%	5.20%	3.5%
MW02-13 [†]	ND	---	---	---	---	---	---	---
MW02-15	ND	---	ND	---	---	---	ND	---
MW02-21	---	---	---	---	ND	---	ND	---
MW02-22 [*]	---	---	18.3%	---	5.0%	---	1.0%	0.36%
PZ02-01	ND	---	ND	---	ND	---	ND	---
PZ02-02	ND	---	ND	---	ND	---	ND	---
PZ02-03	ND	---	ND	---	ND	---	ND	---
PZ02-04	ND	---	ND	---	---	---	---	---
PZ02-04A	0.2%	---	ND	---	ND	---	ND	---
PZ02-05	ND	---	ND	---	ND	---	ND	---
SG02-01 ^{*x}	---	ND	---	---	---	---	---	---
SG02-02 ^{*x}	---	ND	---	---	---	---	---	---
SG02-03 ^{*y}	---	---	2.4%	4.20%	12.4%	6.9%	11.5%	8.6%
SG02-04 ^{*y}	---	---	ND	0.0076%	ND	ND	ND	ND
Site1AS001 ^{*z}	ND	ND	ND	---	ND	---	ND	---

Notes:

- ^a No reading was taken during November 2000 sampling event due to artesian conditions in well
- ^b Well was abandoned Spring 2000
- ^x Temporary soil gas probes inserted in January 2000
- ^y Temporary soil gas probes inserted in November 2000
- ^z Surface sweep sample
- ^{*} Summa canister sample taken for laboratory analysis
- Not sampled
- ND Non detect



LEGEND

- SG02-01 ● PUSH PROBE SAMPLE LOCATION (JANUARY 2000)
- SG02-03 ● SOIL GAS PROBE LOCATION
- MW02-06 ⊕ GROUNDWATER MONITORING WELL
- BR02-19 ⊕ WELLS WILL NOT BE SAMPLED FOR SOIL GAS DUE TO ARTESIAN CONDITIONS

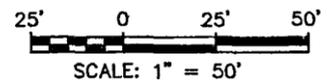


FIGURE 1
NFD POINT MOLATE
SITE 1 METHANE MONITORING
LOCATIONS

ATTACHMENT A

SOIL GAS PROBE CONSTRUCTION DETAILS

PRECISION

WELL CONSTRUCTION DETAILS

BORING DESIGNATION: SG-02-03

INSTALLATION

DATE: 11-7-2000 BY: Juan Morales

DIMENSIONS

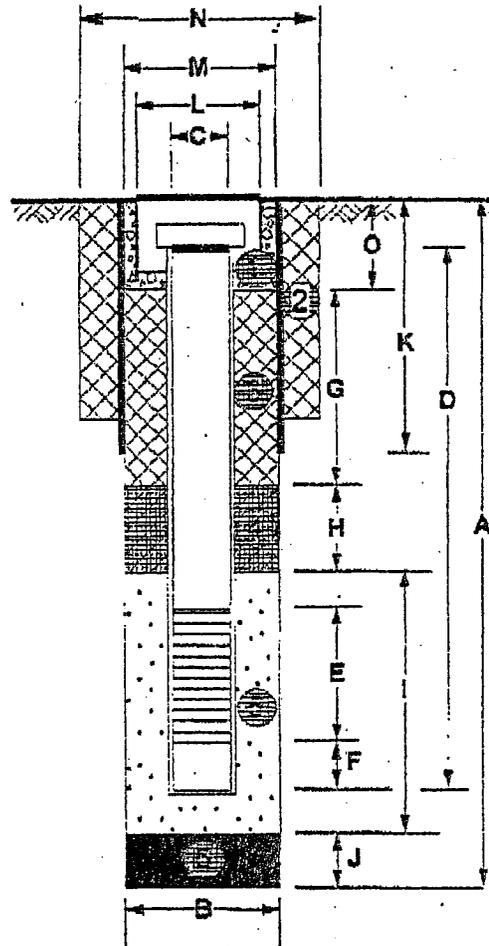
A Total Depth of Boring (ft.)	<u>18'</u>
B Borehole Diameter (in.)	<u>1"</u>
C Well Casing Diameter (in.)	<u>5/8" od 1/4" id</u>
D Well Casing Length (ft.)	<u>17'-6"</u>
E Well Casing Slotted Interval (ft.)	<u>6"</u>
F Well Casing End Cap or Sump (ft.)	<u>2"</u>
G Annular Seal Interval (ft.)	<u>N/A</u>
H Annular Seal Interval (ft.)	<u>0-1 BGS</u>
I Sand Pack Interval (ft.)	<u>1-8' BGS</u>
J Bottom Material Interval (ft.)	<u>N/A</u>
K Conductor Casing Interval (ft.)	<u>N/A</u>
L Protective Cover Diameter (in.)	<u>3/4 PVL</u>
M Conductor Casing Diameter (in.)	<u>N/A</u>
N Upper Borehole Diameter (in.)	<u>N/A</u>
O Monument Footing Interval (ft.)	<u>N/A</u>
Well Centralizer Depth(s) (ft.)	<u>N/A</u>

MATERIALS DATA

Monument Footing		<u>N/A</u>
Annular Seal		<u>N/A</u>
Annular Seal		<u>N/A</u>
Annular Seal		<u>Dentomite crumbles</u>
Sand Pack		<u>2-12 sand</u>
Bottom Material		<u>Native soil</u>
Conductor Casing		
Slotted Casing		
Well Casing		
Well Centralizers		
Protective Cover		

WELL DESIGNATION

DEPTH/HEIGHT (FT)
ELEV. (FT MSL)



SECTION VIEW (not to scale)

NOTES:



WELL CONSTRUCTION DETAILS

BORING DESIGNATION: SG-02-04

INSTALLATION

DATE: 11-7-2000 BY: Juan Morales

DIMENSIONS

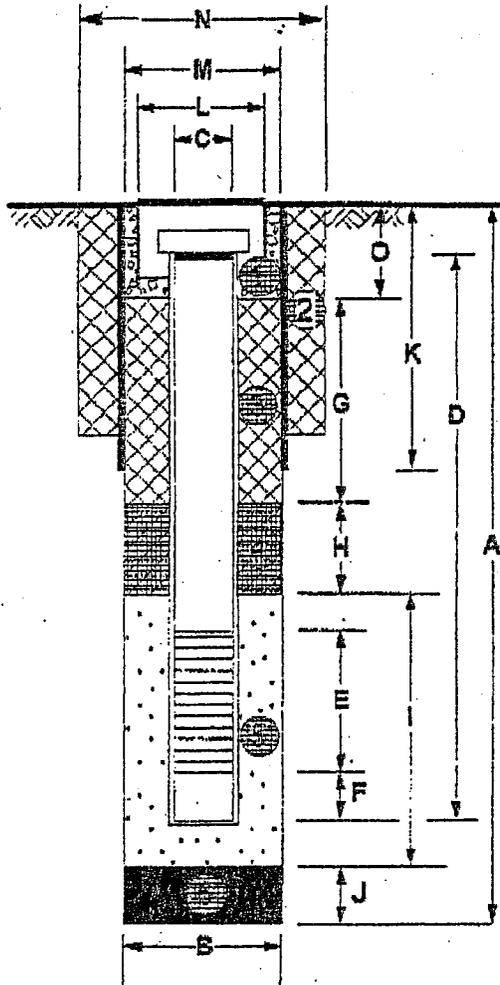
A Total Depth of Boring (ft.)	<u>17.6'</u>
B Borehole Diameter (in.)	<u>1"</u>
C Well Casing Diameter (in.)	<u>3/8 O.D. 1/4 I.D.</u>
D Well Casing Length (ft.)	<u>17.</u>
E Well Casing Slotted Interval (ft.)	<u>6"</u>
F Well Casing End Cap or Sump (ft.)	<u>2"</u>
G Annular Seal Interval (ft.)	<u>N/A</u>
H Annular Seal Interval (ft.)	<u>0-1 BGS</u>
I Sand Pack Interval (ft.)	<u>1-6 BGS</u>
J Bottom Material Interval (ft.)	<u>N/A</u>
K Conductor Casing Interval (ft.)	<u>N/A</u>
L Protective Cover Diameter (in.)	<u>3/4 PVC</u>
M Conductor Casing Diameter (in.)	<u>N/A</u>
N Upper Borehole Diameter (in.)	<u>N/A</u>
O Monument Footing Interval (ft.)	<u>N/A</u>
Well Centralizer Depth(s) (ft.)	<u>N/A</u>

MATERIALS DATA

Monument Footing		<u>N/A</u>
Annular Seal		<u>N/A</u>
Annular Seal		<u>N/A</u>
Annular Seal		<u>Dentomite crumbles</u>
Sand Pack		<u>2/12 sand</u>
Bottom Material		<u>Native soil</u>
Conductor Casing		
Slotted Casing		
Well Casing		
Well Centralizers		
Protective Cover		

WELL DESIGNATION

DEPTH/HEIGHT (FT)
ELEV. (FT MSL)



SECTION VIEW (not to scale)

NOTES:

ATTACHMENT B

LABORATORY SUMMARY REPORTS

@AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0001171

Work Order Summary

CLIENT: Mr. Ted Wall
 Tetra Tech
 1099 18th Street, Suite 1960
 Denver, CO 80202

BILL TO: Accounts Payable
 Tetra Tech
 135 Main Street, Suite 1800
 San Francisco, CA 94105

PHONE: 303-312-8812
FAX: 303-295-2818
DATE RECEIVED: 1/18/00
DATE COMPLETED: 2/1/00

P.O. # 992064
PROJECT # C0069112B0404 PL Molate Site 1 CH4 Gas

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT</u> <u>VAC./PRES.</u>
01A	SG02-01AS001	Mod. Method 3C	150 mm Hg
02A	SG02-02AS001	Mod. Method 3C	0.0 mm Hg
03A	Site 1 AS001	Mod. Method 3C	10 mm Hg
04A	Lab Blank	Mod. Method 3C	NA

CERTIFIED BY: 
 Laboratory Director

DATE: 2/1/00

Certification numbers: CA ELAP - 1149, NY ELAP - 11291, UT ELAP - E-217

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA 95630
 (916) 985-1000 • (800) 985-5955 • FAX (916) 985-1020

AIR TOXICS LTD.

ID#: 0001171-01A

**Modified EPA Method 3C
GC/TCD**Sample Name: SG02-01AS001
Dil. Factor: 1.58Date of Collection: 1/17/00
Date of Analysis: 1/25/00

Compound	Det. Limit (%)	Amount (%)
Methane	0.17	Not Detected

Notes:

Initial Canister Pressure (P_{i1}) = 0.005 mm Hg (absolute)
Canister Pressure after Sampling (P_s) = 150 mm Hg (gauge)
Canister Pressure after Pressurization (P_{i2}) = 258 mm Hg (gauge)

Canisters are leak-checked according to Section 4.1 of the method.

AIR TOXICS LTD.

ID#: 0001171-02A

Modified EPA Method 3C
GC/TCD

Sample Name: SQ02-02AS001

Date of Collection: 1/17/00

Dil. Factor: 1.34

Date of Analysis: 1/25/00

Compound	Det. Limit (%)	Amount (%)
Methane	0.13	Not Detected

Notes:

Initial Canister Pressure (P_{i1}) = 0.005 mm Hg (absolute)
Canister Pressure after Sampling (P_1) = 0.0 mm Hg (gauge)
Canister Pressure after Pressurization (P_{i2}) = 258 mm Hg (gauge)

Canisters are leak-checked according to Section 4.1 of the method.

AIR TOXICS LTD.

ID#: 0001171-03A

Modified EPA Method 3C
GC/TCD

Sample Name: AS001
Dil. Factor: 1.32

Date of Collection: 1/17/00
Date of Analysis: 1/25/00

Compound	Det. Limit (%)	Amount (%)
Methane	0.13	Not Detected

Notes:

Initial Canister Pressure (P_1) = 0.005 mm Hg (absolute)
 Canister Pressure after Sampling (P_2) = 10 mm Hg (gauge)
 Canister Pressure after Pressurization (P_3) = 258 mm Hg (gauge)

Canisters are leak-checked according to Section 4.1 of the method.

AIR TOXICS LTD.

ID#: 0001171-04A

Modified EPA Method 3C
GC/TCD

Sample Name: Lab Blank Date of Collection: NA
 Dil. Factor: 1.00 Date of Analysis: 1/25/00

Compound	Det. Limit (%)	Amount (%)
Methane	0.10	Not Detected

Notes:

Initial Canister Pressure (P_0) = 0.005 mm Hg (absolute)
 Canister Pressure after Sampling (P_1) = NA (gauge)
 Canister Pressure after Pressurization (P_2) = 258 mm Hg (gauge)

Canisters are leak-checked according to Section 4.1 of the method.

@ AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0011238

Work Order Summary

CLIENT: Ms. Mary Lou Gonzales
Tetra Tech
1099 18th Street
Suite 1960
Denver, CO 80202

BILL TO: Ms. Karen Kaiser
Tetra Tech
1099 18th Street
Suite 1960
Denver, CO 80202

PHONE: 303-295-1101 **P.O. #** 002313

FAX: 303-295-2818 **PROJECT #** G0069-28000201 Point Molate

DATE RECEIVED: 11/13/00

DATE COMPLETED: 11/28/00

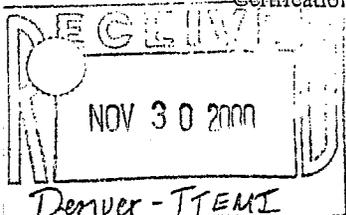
<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>
01A	MW0206G	ASTM D-1945	0.5 "Hg
02A	SG0203	ASTM D-1945	0.5 "Hg
03A	SG0204	ASTM D-1945	1.0 "Hg
03AA	SG0204 Duplicate	ASTM D-1945	1.0 "Hg
04A	TB-11-00	ASTM D-1945	28.0 "Hg
05A	Method Spike	ASTM D-1945	NA
06A	Lab Blank	ASTM D-1945	NA

CERTIFIED BY: *Florida Gonzalez*
Laboratory Director

DATE: 11-28-00

Certification numbers: CA ELAP - 1149, NY ELAP - 11291, UT ELAP - E-217, AZ ELAP - AZ0567

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020



LABORATORY NARRATIVE

ASTM D-1945

Tetra Tech

Workorder# 0011238

Four 1 Liter Summa Canister samples were received on November 13, 2000. The laboratory performed analysis via Modified ASTM Method D-1945 for Methane in air using GC/FID. The method involves direct injection of up to 1.0 mL of air. See the data sheets for the reporting limits for Methane.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

- B - Compound present in laboratory blank greater than reporting limit.
- J - Estimated value.
- E - Exceeds instrument calibration range.
- S - Saturated peak.
- Q - Exceeds quality control limits.
- T - Compound analyzed for but not detected above the detection limit.
- M - Reported value may be biased due to apparent matrix interferences.

AIR TOXICS LTD.

SAMPLE NAME: MW0206G

ID#: 0011238-01A

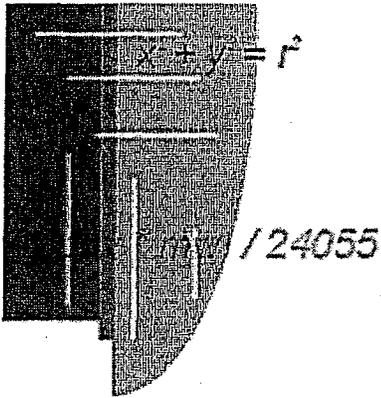
NATURAL GAS ANALYSIS BY ASTM D-1945 GC/FID

File Name:	3112206	Date of Collection:	11/10/00
Dil. Factor:	2.05	Date of Analysis:	11/22/00

Compound	Det. Limit (ppbv)	Amount (ppbv)
Methane	20000	87000000

Container Type: 1 Liter Summa Canister

Units Conversion Calculator



Amount

87000000

Calculate

Clear

Units

ppbv

Compounds

Methane

Molecular Weight

16.04

ppbv	87000000
ppmv	87000
ug/L	58012.06
ug/m ³	58012055.71
mg/m ³	58012.06
%	8.7

AIR TOXICS LTD.

SAMPLE NAME: SG0203

ID#: 0011238-02A

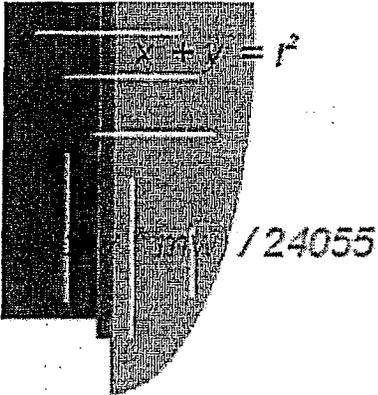
NATURAL GAS ANALYSIS BY ASTM D-1945 GC/FID

File Name:	3112207	Date of Collection:	11/10/00
Dil. Factor:	2.05	Date of Analysis:	11/22/00

Compound	Det. Limit (ppbv)	Amount (ppbv)
Methane	20000	42000000

Container Type: 1 Liter Summa Canister

Units Conversion Calculator



Amount

42000000

Calculate

Clear

Units

ppbv

Compounds

Methane

Molecular Weight

16.04

ppbv	42000000
ppmv	42000
ug/L	28005.82
ug/m ³	28005820
mg/m ³	28005.82
%	4.2

AIR TOXICS LTD.

SAMPLE NAME: SG0204

ID#: 0011238-03A

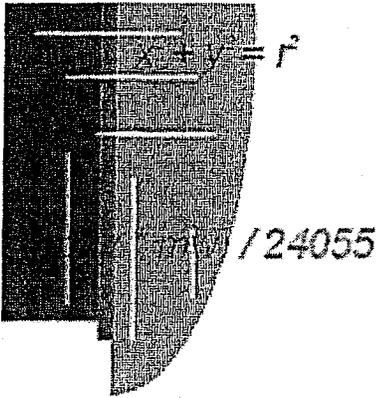
NATURAL GAS ANALYSIS BY ASTM D-1945 GC/FID

File Name:	3112210	Date of Collection:	11/10/00
Dil. Factor:	2:09	Date of Analysis:	11/22/00

Compound	Det. Limit (ppbv)	Amount (ppbv)
Methane	21000	76000

Container Type: 1 Liter Summa Canister

Units Conversion Calculator



Amount

76000

Calculate

Clear

Units

ppbv

Compounds

Methane

Molecular Weight

16.04

ppbv	76000
ppmv	76
ug/L	50.68
ug/m ³	50677.2
mg/m ³	50.68
%	0.0076

AIR TOXICS LTD.

SAMPLE NAME: SG0204 Duplicate

ID#: 0011238-03AA

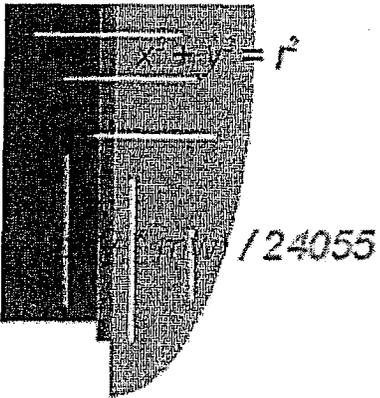
NATURAL GAS ANALYSIS BY ASTM D-1945 GC/FID

File Name:	3112212	Date of Collection:	11/10/00
Dil. Factor:	2.09	Date of Analysis:	11/22/00

Compound	Det. Limit (ppbv)	Amount (ppbv)
Methane	21000	64000

Container Type: 1 Liter Summa Canister

Units Conversion Calculator



Amount

64000

Calculate

Clear

Units

ppbv

Compounds

Methane

Molecular Weight

16.04

ppbv	64000
ppmv	64
ug/L	42.68
ug/m ³	42675.54
mg/m ³	42.68
%	0.0064

AIR TOXICS LTD.

SAMPLE NAME: TB-11-00

ID#: 0011238-04A

NATURAL GAS ANALYSIS BY ASTM D-1945 GC/FID

File Name:	3112213	Date of Collection:	11/10/00
Dil. Factor:	1.00	Date of Analysis:	11/22/00

Compound	Det. Limit (ppbv)	Amount (ppbv)
Methane	10000	Not Detected

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: Method Spike

ID#: 0011238-05A

NATURAL GAS ANALYSIS BY ASTM D-1945 GC/FID

File Name:	3112201	Date of Collection:	NA
Dil. Factor:	1:00	Date of Analysis:	11/22/00

Compound	Det. Limit (ppbv)	%Recovery
Methane	10000	97

Container Type: NA - Not Applicable

AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 0011238-06A

NATURAL GAS ANALYSIS BY ASTM D-1945 GC/FID

File Name:	3112202	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	11/22/00

Compound	Det. Limit (ppbv)	Amount (ppbv)
Methane	10000	Not Detected

Container Type: NA - Not Applicable



AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0102128

Work Order Summary

CLIENT: Ms. Mary Lou Gonzales
Tetra Tech
1099 18th Street
Suite 1960
Denver, CO 80202

BILL TO: Mr. Matt Miller
Tetra Tech
135 Main Street, Suite 1800
San Francisco, CA 94105

PHONE: 303-295-1101

P.O. # 002319

FAX: 303-295-2818

PROJECT # G0069280C0801 NFD PT MOLATE

DATE RECEIVED: 2/7/01

DATE COMPLETED: 2/21/01

FRACTION #

NAME

TEST

RECEIPT
VAC./PRES.

01A	SG0203-201	ASTM D-1945	1.0 "Hg
02A	SG0204-201	ASTM D-1945	0.5 "Hg
03A	MW0206-201	ASTM D-1945	0.2psi
04A	TR-201	ASTM D-1945	27.0 "Hg
05A	Lab Blank	ASTM D-1945	NA

CERTIFIED BY:

Bentill Sanchez
for Laboratory Director

DATE:

2-21-01

Certification numbers: CA ELAP - 1149, NY ELAP - 11291, UT ELAP - E-217, AZ ELAP - AZ0567

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE

ASTM D-1945

Tetra Tech

Workorder# 0102128

Four 1 Liter Summa Canister samples were received on February 07, 2001. The laboratory performed analysis via Modified ASTM Method D-1945 for Methane in air using GC/FID. The method involves direct injection of up to 1.0 mL of air. See the data sheets for the reporting limit for Methane.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

B - Compound present in laboratory blank greater than reporting limit.

J - Estimated value.

E - Exceeds instrument calibration range.

Saturated peak.

Exceeds quality control limits.

U - Compound analyzed for but not detected above the detection limit.

M - Reported value may be biased due to apparent matrix interferences.

AIR TOXICS LTD.

SAMPLE NAME: SG0203-201

ID#: 0102128-01A

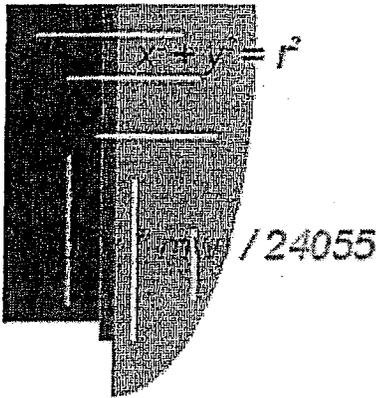
NATURAL GAS ANALYSIS BY ASTM D-1945 GC/FID

File Name:	3020810	Date of Collection:	2/6/01
Dil. Factor:	2:09	Date of Analysis:	2/8/01

Compound	Det. Limit (ppbv)	Amount (ppbv)
Methane	21000	69000000

Container Type: 1 Liter Summa Canister

Units Conversion Calculator



Amount

69000000

Calculate Clear

Units

ppbv

Compounds

Methane

Molecular Weight

16.04

ppbv	69000000
ppmv	69000
ug/L	46009.56
ug/m ³	46009561.42
mg/m ³	46009.56
%	6.9

AIR TOXICS LTD.

SAMPLE NAME: SG0204-201

ID#: 0102128-02A

NATURAL GAS ANALYSIS BY ASTM D-1945 GC/FID

File Name:	3020809	Date of Collection:	2/6/01
Dil. Factor:	2.05	Date of Analysis:	2/8/01

Compound	Det. Limit (ppbv)	Amount (ppbv)
Methane	20000	Not Detected

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW0206-201

ID#: 0102128-03A

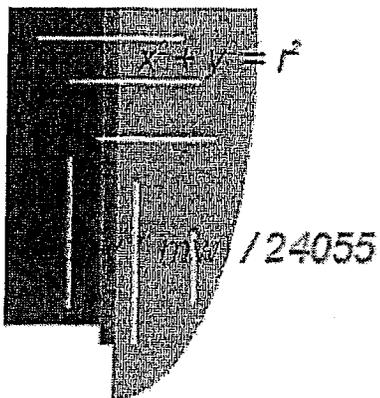
NATURAL GAS ANALYSIS BY ASTM D-1945 GC/FID

File Name:	3020808	Date of Collection:	2/6/01
Dil. Factor:	1.99	Date of Analysis:	2/8/01

Compound	Det. Limit (ppbv)	Amount (ppbv)
Methane	20000	530000

Container Type: 1 Liter Summa Canister

Units Conversion Calculator



Amount

530000

Calculate Clear

Units

ppbv

Compounds

Methane

Molecular Weight

16.04

ppbv	530000
ppmv	530
ug/L	353.41
ug/m ³	353406.78
mg/m ³	353.41
%	0.053

AIR TOXICS LTD.

SAMPLE NAME: TR-201

ID#: 0102128-04A

NATURAL GAS ANALYSIS BY ASTM D-1945 GC/FID

File Name:	3020807	Date of Collection:	2/6/01
Dil. Factor:	1.00	Date of Analysis:	2/8/01

Compound	Det. Limit (ppbv)	Amount (ppbv)
Methane	10000	Not Detected

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 0102128-05A

NATURAL GAS ANALYSIS BY ASTM D-1945 GC/FID

File Name:	3020804	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 2/8/01

Compound	Det. Limit (ppbv)	Amount (ppbv)
Methane	10000	Not Detected

Container Type: NA - Not Applicable

WORK ORDER #: 0105064

Work Order Summary

CLIENT: Ms. Mary Lou Gonzales
 Tetra Tech
 1099 18th Street
 Suite 1960
 Denver, CO 80202

BILL TO: Mr. Matt Miller
 Tetra Tech
 135 Main Street, Suite 1800
 San Francisco, CA 94105

PHONE: 303-295-1101

P.O. # 012330

FAX: 303-295-2818

PROJECT # G0069280C0801 Site 1 NFD Point Molate

DATE RECEIVED: 5/3/01

DATE COMPLETED: 5/16/01

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>
01A	MW0222-501	ASTM D-1945	1.0 "Hg
02A	MW0206-501	ASTM D-1945	1.0 "Hg
03A	SG0203-501	ASTM D-1945	8.5 "Hg
04A	SG0204-501	ASTM D-1945	1.0 "Hg
05A	TB-5-01	ASTM D-1945	28.0 "Hg
05AA	TB-5-01 Duplicate	ASTM D-1945	28.0 "Hg
06A	Lab Blank	ASTM D-1945	NA

ENTERED

CERTIFIED BY:

Sinda J. Freeman

DATE: 05/16/01

Laboratory Director

Certification numbers: CA ELAP - 1149, NY ELAP - 11291, UT ELAP - E-217, AZ ELAP - AZ0567

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
 (916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

DS.0280.15682

LABORATORY NARRATIVE
ASTM D-1945
Tetra Tech
Workorder# 0105064

Five 1 Liter Summa Canister samples were received on May 03, 2001. The laboratory performed analysis via Modified ASTM Method D-1945 for Methane in air using GC/FID. The method involves direct injection of up to 1.0 mL of air. See the data sheets for the reporting limits.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

- B - Compound present in laboratory blank greater than reporting limit.
- J - Estimated value.
- E - Exceeds instrument calibration range.
- S - Saturated peak.
- Q - Exceeds quality control limits.
- U - Compound analyzed for but not detected above the detection limit.
- M - Reported value may be biased due to apparent matrix interferences.

AIR TOXICS LTD.

SAMPLE NAME: MW0222-501

ID#: 0105064-01A

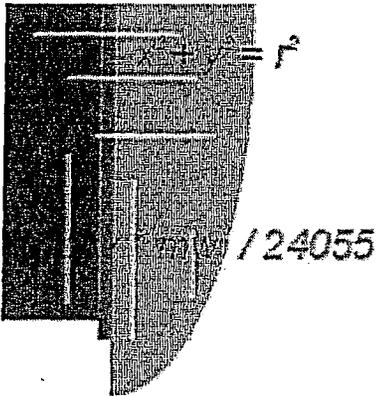
NATURAL GAS ANALYSIS BY ASTM D-1945 GC/FID

File Name	3050815	Date of Collection	5/2/01
Dil Factor	2.09	Date of Analysis	5/8/01

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Methane	21000	3600000

Container Type: 1 Liter Summa Canister

Units Conversion Calculator



Amount

3600000

Calculate Clear

Units

ppbv

Compounds

Methane

Molecular Weight

16.04

ppbv	3600000
ppmv	3600
ug/L	2400.5
ug/m ³	2400498.86
mg/m ³	2400.5
%	0.36

AIR TOXICS LTD.

SAMPLE NAME: MW0206-501

ID#: 0105064-02A

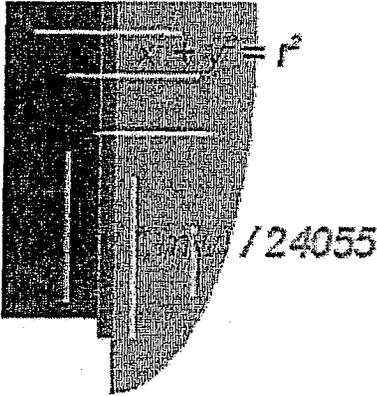
NATURAL GAS ANALYSIS BY ASTM D-1945 GC/FID

File Name:	3050816	Date of Collection:	5/2/01
Dil. Factor:	2.09	Date of Analysis:	5/8/01

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Methane	21000	35000000

Container Type: 1 Liter Summa Canister

Units Conversion Calculator



Amount

35000000

Calculate

Clear

Units

ppbv

Compounds

Methane

Molecular Weight

16.04

ppbv 35000000

ppmv 35000

ug/L 23338.18

ug/m³ 23338183.33

mg/m³ 23338.18

% 3.5

AIR TOXICS LTD.

SAMPLE NAME: SG0203-501

ID#: 0105064-03A

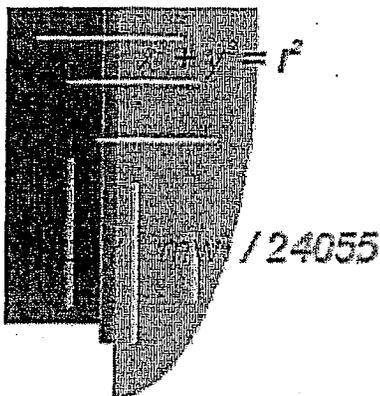
NATURAL GAS ANALYSIS BY ASTM D-1945 GC/FID

File Name	3050817	Date of Collection	5/2/01
Dil Factor	2.82	Date of Analysis	5/8/01

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Methane	28000	86000000

Container Type: 1 Liter Summa Canister

Units Conversion Calculator



Amount

86000000

Calculate Clear

Units

ppbv

Compounds

Methane

Molecular Weight

16.04

ppbv 86000000

ppmv 86000

ug/L 57345.25

ug/m³ 57345250.47

mg/m³ 57345.25

% 8.6

AIR TOXICS LTD.

SAMPLE NAME: SG0204-501

ID#: 0105064-04A

NATURAL GAS ANALYSIS BY ASTM D-1945 GC/FID

File Name	3050849	Date of Collection	5/2/01
Oil Factor	2.09	Date of Analysis	5/8/01

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Methane	21000	Not Detected

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: TB-5-01

ID#: 0105064-05A

NATURAL GAS ANALYSIS BY ASTM D-1945 GC/FID

File Name:	3050813	Date of Collection:	5/2/01
Dilution Factor:	1.00	Date of Analysis:	5/8/01

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Methane	10000	Not Detected

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: TB-5-01 Duplicate

ID#: 0105064-05AA

NATURAL GAS ANALYSIS BY ASTM D-1945 GC/FID

File Name	3050874	Date of Collection	5/2/01
Dil. Factor	1.00	Date of Analysis	5/8/01

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Methane	10000	Not Detected

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 0105064-06A

NATURAL GAS ANALYSIS BY ASTM D-1945 GC/FID

File Name:	3050805	Date of Collection:	NA
Dilution Factor:	1.00	Date of Analysis:	5/8/01

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Methane	10000	Not Detected

Container Type: NA - Not Applicable



TETRA TECH EM INC.

TRANSMITTAL/DELIVERABLE RECEIPT

Contract No. N62474-94-D-7609

Document Control No. DS . 0280 . 15682

TO: Mr. Richard Selby, Code 02R1
Contracting Officer
Naval Facilities Engineering Command
Southwest Division
1230 Columbia Street, Suite 1100
San Diego, CA 92101-8517

DATE: 05/25/01
CTO: 0280
LOCATION: NFD Point Molate, Richmond

FROM: Daniel Chow, Program Manager

DOCUMENT TITLE AND DATE:
Soil Gas Summary Report for Site 1NFD, May 25, 2001

TYPE: [] Contractual Deliverable [x] Technical Deliverable [] Other

VERSION: NA REVISION #: NA
(e.g., Draft, Draft Final, Final)

ADMIN RECORD: Yes [x] No [] CATEGORY: Confidential []

SCHEDULED DELIVERY DATE: 05/31/01 ACTUAL DELIVERY DATE: 05/29/01

NUMBER OF COPIES SUBMITTED TO NAVY: O/10C/11E
O = original transmittal form
C = copy of transmittal form
E = enclosure

COPIES TO: (Include Name, Navy Mail Code, and Number of Copies)

Table with columns: NAVY, TtEMI, OTHER. Rows include recipients like Michelle Gallice-Sondrup, Ellen Miller, Diane Silva with their respective copy counts and Navy mail codes.

Date/Time Received