SCS FIELD SERVICES

City of Albuquerque

San Pedro Landfill Gas Probe Monitoring Report

Presented To:

City of Albuquerque

City of Albuquerque
Environmental Health Department
1 Civic Plaza, NW
Albuquerque, NM 87103
(505) 768-2633

Presented By:

SCS FIELD SERVICES
3351 Candelaria Rd, NE
Albuquerque, NM 87107
(505) 349-8060

November 2013
File No. 07209112.06

City of Albuquerque

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Table of Contents

List of Tables

List of Figures

Appendices

1 INTRODUCTION

This report summarizes landfill gas probe monitoring at the former San Pedro Landfill (Landfill) to determine landfill gas (LFG) concentrations from five existing gas probes that were installed within the north-bound lane of San Pedro Road NE.

2 BACKGROUND

The dates the San Pedro Landfill operated are unknown. The Landfill was a privately owned landfill and the owner of the landfill is also unknown at this time. From previous investigations performed by others, conducted at the Landfill and surrounding area, the solid waste materials appeared to be municipal solid waste. The estimated depth of the solid waste is unknown, but during excavation of the landfill materials in the south bound lane near San Francisco Road NE, the depth of the solid waste appeared to be in excess of ten (10) feet deep (previous direct observation). The size and extent of the former Landfill is unknown. Figure 1- Site Plan shows the location of the gas probes.

There were six (6) LFG probes that were placed in the north-bound lane of San Pedro Road during previous years as part of landfill gas investigations for development in and around the former Landfill. Presently only five (5) gas probes exist in the north-bound lane. The sixth gas probe (furthest north) was removed prior to this gas probe monitoring investigation. It is believed these gas probes have not been monitored since they were installed in the approximate time period of 2005 to 2006.

Because of the public use associated with this Landfill (the north-bound lane of San Pedro Road) and the adjacent homes along the roadway, the City of Albuquerque's (City) Environmental Health Department (EHD) commissioned SCS to obtain gas readings from the five remaining gas probes.

3 LANDFILL GAS PROBE MONITORING

Prior to obtaining gas probe readings, SCS prepared a site specific health and safety plan (see Appendix A). Also prior to the field monitoring, a traffic control plan was prepared by Highway Supply, LLC. The traffic control plan was prepared, as required by the City' Department of Municipal Development – Construction Services/Permit Section, so that an Excavation/Barricade Permit Application could be submitted to the City (see Appendix B for a copy of the permit application) in order to enter the roadway to monitor the gas probes.

On July 26, 2013, SCS performed the gas probe monitoring. Highway Supply provided a "shadow truck" that remained behind SCS' field technician as he opened and monitored each gas probe. The work proceeded from south to north. The gas probes were read using a GEM 5000 and a four-gas monitor, the MX-4. Both instruments were calibrated prior to obtaining the readings from the gas probe. The GEM 5000 was calibrated using 2.5 percent methane, 35 percent carbon dioxide, and 20.9 percent oxygen (gas in volume). The MX-4 was calibrated using a calibration gas containing: 100 ppm of carbon monoxide; 25 ppm of hydrogen sulfide; lower explosive limit (LEL) of 25 percent; and 15 percent oxygen.

The locations of the gas probes were documented using a Topcon GPS unit. The coordinates of the gas probes are shown in Table 2.

All field readings were noted in a field book (see Appendix C).

4 RESULTS

Table 1 shows the results of the LFG monitoring at each probe. No methane or hydrogen sulfides were encountered in any of the gas probes during the field monitoring event. Carbon dioxide ranged from 0.3 to 2.5 percent.

5 CONCLUSIONS

Based on the field investigation, no LFG was encountered during this field monitoring event.

6 RECOMMENDATIONS

Since LFG concentrations can vary by season and time of day, SCS recommends that the five gas probes be monitored on a quarterly basis for a minimum of one year.

TABLES

TABLE 1 - SAN PEDRO GAS PROBE READINGS

DATE: 7/26/2013

WEATHER: Clear; temp: 73.9 0F; barometric pressure: 29.84 and steady; wind direction: west at 6.7mph

INSTRUMENT USED: GEM 5000
MX4 (four gas monitor)

Probe #	Time	Methane	Carbon Dioxide	Oxygen	Balance Gas	Hydrogen Sulfide	Comments
		(% in vol)	(% in vol)	(% in vol)	(% in vol)	(ppm)	
1	10:58	0.0	0.3	18.3	81.3	0.0	cover is cracked
2	11:25	0.0	0.5	18.0	81.4	0.0	2 cover bolts are broken
3	11:49	0.0	0.8	16.7	82.5	0.0	cover is broken
4	12:00	0.0	2.5	16.3	81.2	0.0	missing bolt
5	12:31	0.0	1.2	17.8	81.0	0.0	

TABLE 2

San Pedro - Gas Probe Locations

Gas Probe ID	Longitude	Latitude
San Pedro #1	35 09'50.41619	106 34'39.06257
San Pedro #2	35 09'51.84875	106 34'39.06183
San Pedro #3	35 09'53.77934	106 34'39.06479
San Pedro #4	35 09'55.80693	106 34'39.05024
San Pedro #5	35 09'57.86029	106 34'39.05836

FIGURES

N

0 60 120

SCALE IN FEET

REV	DATE	DESCRIPTION	BY
1			
2			
3			
4			
5			
6			
7			
8			

DRAWING TITLE
SITE PLAN - GAS PROBE LOCATIONS

PROJECT TITLE
SAN PEDRO

CLIENT

SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT
CONSULTING ENGINEERS
3351 CANDELARIA NE SUITE D, ALBUQUERQUE, NM 87107
PH (505) 349-9060 FAX NO. (505) 349-9061

PROJ. NO.	DWN. BY:	Q/A RVW BY:
07209112.06	JLJ	DJM
DSN. BY:	CHK. BY:	APP. BY:
MP	MP	DJM

CADD FILE:
SITE LAYOUT

DATE:
11/2013

SCALE:
AS SHOWN

DRAWING NO.
1

11/2/2013 4:10 PM G:\SAN PEDRO\SITE LAYOUT

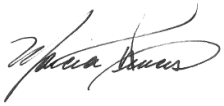
APENDIX A

Site Specific Health and Safety Plan

Site-Specific Health and Safety Plan

Albuquerque, San Pedro Dr. Gas Probe Monitoring

Rev. 0 – May 14, 2013

REQUIRED APPROVAL			
SCS OSHC or designee:		Date:	5/16/13
SCS PM:		Date:	5/17/13

Project No.:	07209112.06
Project Name:	City of Albuquerque, San Pedro Drive, Gas Probe Monitoring
Site Address:	Intersection of San Francisco Road and San Pedro Drive, Albuquerque NM 87109
Client Contact:	Suzanne Busch, 505-768-2633

EMERGENCY TELEPHONE NUMBERS	
Fire:	Albuquerque Fire Department, Station 15, 505-821-0725
Police:	Albuquerque Police Department, 505-823-4455
Hospital	University of New Mexico Hospital, 505-272-2111
Ambulance:	911
The directions and information on the nearest hospital are found on Page 2/3.	

ACKNOWLEDGEMENT PAGE

"I have read the attached Health and Safety Plan for the San Pedro Dr., Gas Probe Monitoring Project dated May 14, 2013. I have discussed any questions and/or concerns that I have regarding the contents of this document with the designated SCS project safety representative, and I understand its requirements."

Name	Signature	Company	Date

Table of Contents

1 INTRODUCTION

At SCS, protection of human health and the environment is paramount. This Site-Specific Health and Safety Plan (SSHSP) provides information to identify hazards that may be present and/or introduced by project's activities onto SCS job sites, and details needed precautions that employees should follow to protect themselves. Tasks performed on site or during projects should be analyzed to determine if physical or chemical hazards requiring safeguards or additional Personal Protective Equipment (PPE) exist. This plan will be modified as necessary if any new hazards are identified during the project that require that additional safeguards be put in place.

PROJECT ORGANIZATION

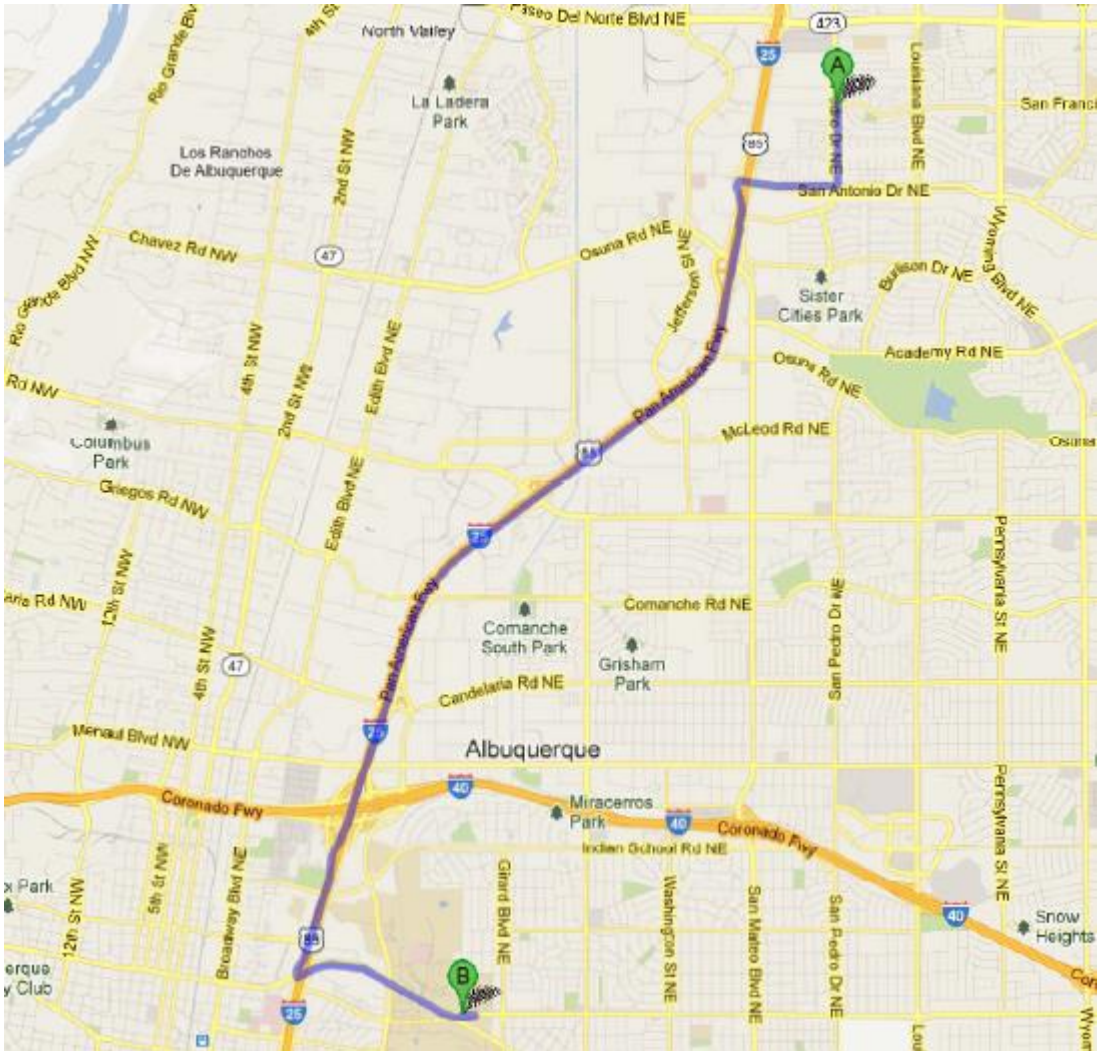
Project or Site Team Leader:	Marcia Pincus	505-514-8759
Primary Health and Safety Representative:	Ken Kampfen	209-345-2678
On-site Health and Safety Representative:	Mike Ferryman	505-249-6234
Project Manager/Director:	Ron Wilks	817-235-4608
Client Representative:	Suzanne Busch	505-331-6677

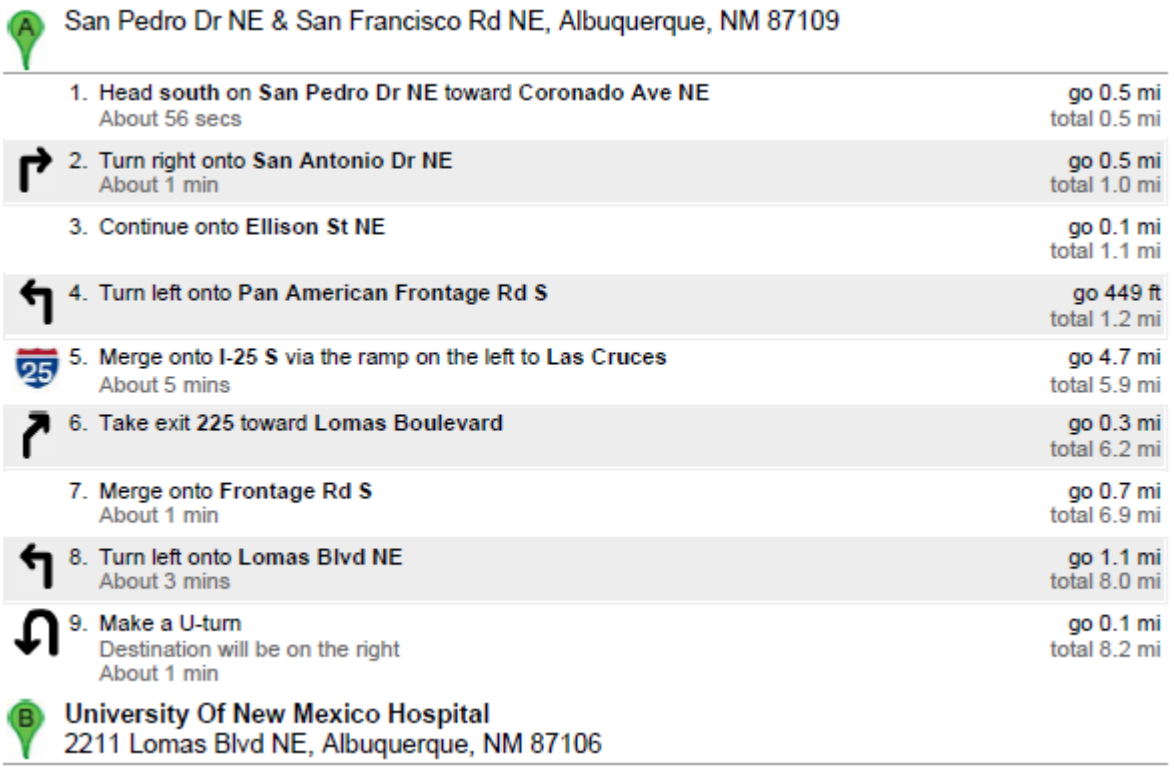
SCOPE OF WORK

Perform routine gas probe monitoring. Gas probes are located in the north bound lane of San Pedro Drive. A subcontractor truck with appropriate traffic lights will be utilized that will be behind the SCS truck as the technician will read the gas probes. In addition, every effort will be made to perform this work during NON-RUSH/DRIVE TIME hours. This will depend on the availability of the subcontractor truck. There are only 5-6 gas probes that will need to be read.

2 EMERGENCY RESPONSE AND MEDICAL TREATMENT PROCEDURES

EMERGENCY CONTACT AND NOTIFICATION INFORMATION





San Pedro Dr NE & San Francisco Rd NE, Albuquerque, NM 87109

1.	Head **south** on **San Pedro Dr NE** toward **Coronado Ave NE** About 56 secs	go 0.5 mi total 0.5 mi
2.	Turn right onto **San Antonio Dr NE** About 1 min	go 0.5 mi total 1.0 mi
3.	Continue onto **Ellison St NE**	go 0.1 mi total 1.1 mi
4.	Turn left onto **Pan American Frontage Rd S**	go 449 ft total 1.2 mi
5.	Merge onto **I-25 S** via the ramp on the left to **Las Cruces** About 5 mins	go 4.7 mi total 5.9 mi
6.	Take exit **225** toward **Lomas Boulevard**	go 0.3 mi total 6.2 mi
7.	Merge onto **Frontage Rd S** About 1 min	go 0.7 mi total 6.9 mi
8.	Turn left onto **Lomas Blvd NE** About 3 mins	go 1.1 mi total 8.0 mi
9.	Make a U-turn Destination will be on the right About 1 min	go 0.1 mi total 8.2 mi

University Of New Mexico Hospital
2211 Lomas Blvd NE, Albuquerque, NM 87106

Nearest Hospital Address:

University of New Mexico Hospital
2211 Lomas Blvd NE
Albuquerque, NM 87106
505-272-2111

ACCIDENT OR INCIDENT REPORTING SYSTEM

In the event of an emergency at the site, project personnel should call 911 for emergency assistance. After the immediate emergency situation has been addressed by emergency personnel, SCS project personnel should call the SCS Project Manager and the Client Representative and inform them of the situation. The Project Manager should evaluate the nature of the emergency and direct project personnel actions from that point.

NOTIFICATION PROCEDURES FOR INCIDENTS (CLIENT, LOCAL, STATE, OR FEDERAL)

Site personnel should contact their supervisor immediately when an accident or injury occurs, and provide any needed information so that additional notifications can be determined and completed as needed.

METHODS TO SUMMON EMERGENCY RESPONSE TEAM

Emergency services can be summoned through 911, as this service is active in the area.

RESCUE AND MEDICAL TREATMENT REQUIREMENTS

Stop work authority should be exercised when an injury or accident occurs. The appropriate emergency agency should be contacted and first aid administered, if possible. Contact Project Manager – Marcia Pincus as soon as possible as well. If the injury is not life-threatening and does not require emergency response, contact WorkCare at (800) 455-6155. First aid kits and fire extinguishers are available in each SCS work truck.

SITE EMERGENCIES

In the event of an emergency at the site, project personnel should call 911 for emergency assistance. After the immediate emergency situation has been addressed by emergency personnel, SCS project personnel should call the SCS Project Manager and the Client Representative and inform them of the situation. The Project Manager should evaluate the nature of the emergency and direct project personnel actions from that point.

Call Suzanne Busch; 505-768-2633 Office, 505-331-6677 Cell

Call Billy Gallegos, Supervisor Environmental Srvcs; 505-768-1958 Office, 505-228-5328 Cell

3 SITE DESCRIPTION

LOCATION DESCRIPTION

The facility is located in the north bound lane of San Pedro Drive between San Antonio Blvd. and San Francisco Drive, Albuquerque, NM.

4 GENERAL FIELD SAFETY PROCEDURES

General Standard Operating Procedures (SOPs) and additional SCS Health and Safety procedures and requirements are included in the current SCS Injury Illness Protection Program (IIPP) and on the SCS intranet. These documents are considered a part of this plan.

APPLICABLE STANDARD OPERATING PROCEDURES (SOPS) AND PROGRAMS

	SOP Number and Name		SOP Number and Name
X	01 - General Code of Safe Work Practices		22 - Safe Procedures for Working with Sites That Contain Hydrogen Sulfide
X	04 - JTSA and PPE Assessment Procedures	X	24 - Avoidance of Slips, Trips, and Falls

	SOP Number and Name		SOP Number and Name
	05 - Work Permits	X	25 - Avoidance and Prevention of Heat and Cold Stress, and Other Weather-Related Hazards
	06 - Forklift and Heavy Machinery Operations		26 - All-Terrain Vehicles and Watercraft
	07 - Compressed Air and Compressed Gas Cylinders		27 - OSHA and Other Regulatory Inspections
	08 - Drilling and Well Installation Procedures		
	09 - Electrical Safety		**Appendix Letter and Program Name**
	10 - Fall Protection		B - Hazard Communication
	11 - Fire Extinguishers		C - HAZWOPER
	12 - Hand and Power Tools		D - Exposure Assessment
	13 - Working Safely with Ladders		E - PPE Other Than Respiratory Protection
	14 - Landfill Leachate and Condensate Safe Procedures		F - Respiratory Protection
	15 - Lockout and Tagout	X	G - Motor Vehicle and Fleet Safety
	17 - Materials Use and Handling		H - Hearing Conservation
	18 - Polyethylene (PE) Pipe Work Safe Procedures		I - Bloodborne Pathogens
	19 - Site Sanitation Procedures		J - Excavation and Construction Earthwork Program
	20 - Safe Work Practices for Scaffolds		K - Confined Space Entry
	21 - Safe Procedures for Biological Hazards (Snakes, Insects, Vegetation, Bacteria)		L - Ergonomics Program

JOB TASK SAFETY ANALYSIS (JTSA) AND PPE ASSESSMENT

JTSAs for activities performed at this site have been completed as indicated below and are included in **Appendix 1**. A completed JTSA is required for all work tasks performed at the site. **JTSAs are designed to identify steps which involve potential hazards to employees and should be reviewed and understood (and signed providing evidence of understanding) before performing any task at the site. If additional steps or hazards are present, the JTSA should be revised (and the revision signed by all affected staff) to indicate that all items have been appropriately addressed and are understood before proceeding with the task.**

Unless identified in an attached Job Task Safety Analysis (JTSA) form, all project tasks are anticipated to only require **Level D** PPE, as defined by the Occupational Safety and Health Administration (OSHA). Prior to working in a Level C or B environment, each employee is required to be medically qualified (by an approved SCS medical provider) and properly fit-tested for the needed respiratory protection defined in this plan. The projects designated will ensure that this is completed per SCS policy, with assistance, as needed, from the SCS Corporate Health and Safety Director (CHSD). IN ADDITION, ANY EMPLOYEE WORKING AT A SITE AS DEFINED IN 29 CFR 1910.120 (or applicable state OSHA standard) OR REQUIRED BY CONTRACT SHALL BE TRAINED IN ACCORDANCE WITH 29 CFR 1910.120(e) (24-hour or 40-hour HAZWOPER, as appropriate). Each employee will only perform tasks that they have been properly trained to perform. A copy of each employee's training record is available through the SCS OSHC or designee.

Site-Specific JTSA List

	JTSA-1 Drain Liquid from Laterals		JTSA-17 Sump or Condensate Sump Pump Repair
	JTSA-2 Excavation & Backfilling		JTSA-18 Surface Emissions Monitoring
	JTSA-3 Extrusion Welding		JTSA-19 Use of Down-Well Cameras
	JTSA-4 Flame Arrestor and Flare Repairs	X	JTSA-20 Vehicle Operations
	JTSA-5 Flare System Monitoring		JTSA-21 Well Drilling
	JTSA-6 Heavy Equipment Use		JTSA-22 Confined Space Entry
	JTSA-7 Leachate Tank Cleaning		JTSA-23 Troubleshoot/Repair Electrical Panels
X	JTSA-8 LFG Extraction Well/Probe/ Structure Monitoring		JTSA-24 Flare Installation/Replacement
	JTSA-9 Liquid Measurements in LFG Extraction/Leachate		JTSA-25 Sump Installation/Replacement
	JTSA-10 Non-Routine LFG Collection System Piping Repairs		JTSA-26 Blower Installation/Replacement
	JTSA-11 Perform Draeger Tube Sampling		JTSA-27 Pump Installation/Replacement
	JTSA-12 Raise/Lower LFG Collection System Extraction Wells		JTSA-28 Header/Lateral Install/Replacement
	JTSA-13 Remove/Install Dewatering Pump in Extraction Well		JTSA-29 Gas Sensor Installation/Repair
	JTSA-14 Repair Dewatering Pumps in LFG Extraction Wells		JTSA-30 Mowing/Landscaping Activities
	JTSA-15 Sample Collection (Groundwater/ Leachate)		JTSA-32 Leachate Tank Pump Station Monitoring
	JTSA-16 Sample Collection (Summa Canisters, Tedlar Bags)		JTSA-33 Flare Station SCADA System Precautions

SAFE OBSERVATIONS

The SCS SAFE Observation Checklist will be used by field and project personnel. The goal is to make at least one (1) documented observation per quarter during site activities.

OTHER INSPECTION PROCEDURES

Periodic site inspections may be made by the CHSD, Project Supervisor, Project Manager, and Regional Compliance Auditor or Safety Specialist. There is also the potential for the client or regulatory agencies to visit and inspect the site. SCS personnel are to perform tasks in compliance with all contractual, regulatory, and company requirements at all times.

PPE/SAFETY EQUIPMENT

Hard hat, leather gloves, and steel toed boots are required.

TAILGATE HEALTH AND SAFETY MEETINGS

A short tailgate meeting will be performed prior to the activity to go over traffic safety and subcontractor traffic procedures.

SITE CONTROL

Review of traffic safety with all personnel at site.

Our clients are responsible for providing SCS employees with safe site access, which includes sites that are free of threats from transients or other aggressive people or dogs. If an SCS employee encounters an aggressive person or dog, they should withdraw from the site and contact the Site Representative and their SCS supervisor. The Site Owner is responsible for removing the threats, and SCS employees should not take any affirmative action of their own.

AIR MONITORING

Monitoring Equipment and Exposure Limits

A direct-read multi-gas-monitor that measures combustible gas, oxygen, hydrogen sulfide, and carbon monoxide is required for SCS employees performing work at landfills. Additional monitoring may be required when confined space entry work is being performed. If the atmosphere at any area is unsafe, entry into that area will not be permitted until the area is ventilated such that the atmosphere becomes safe.

Monitoring for toxic gases other than hydrogen sulfide and carbon monoxide will not be performed at this project site unless there is reason to believe that toxic compounds or materials may be present in unsafe concentrations. It is expected that toxic gas levels at this project site will be below action levels if the measured atmospheric parameters stated in **Table 1, Chemical Hazards and Air Monitoring Plan**, are tested and determined to be safe.

Table 1. Chemical Hazards and Air Monitoring Plan

Chemical/ Parameter	PEL	TLV	IDLH	Action Level	Monitoring Equipment	Sample Location and Frequency	Procedures When Action Levels Exceeded
Oxygen	19.5% to 23.5% accepted range	NA	NA	NA	Four-gas personal monitor	Before entry, at breathing level, in each space where potential for chemical hazards exist. Examples include manholes, vaults, enclosed flares, trenches and in the vicinity of open piping or wells. **Use the personal four-gas meter at all times while on site.**	Exit the area in an upwind direction and/or ventilate until levels fall below Action Level before reentering. **Warning:** Follow Confined Space Entry procedures where appropriate. **Caution:** Follow respiratory protection procedures to include fit testing and required medical exams when respiratory protection is used.
Methane	NA	1,000 ppm TWA (for aliphatic hydrocarbon gases)	50,000 ppm (100% of LEL)		Four-gas personal monitor		
Carbon Monoxide	25 ppm TWA 200 ppm CEILING	125 ppm STEL	1,200 ppm	25 ppm	Four-gas personal monitor		
Hydrogen Sulfide	20 ppm CEILING	1 ppm TWA 5 ppm STEL	100 ppm	5 ppm	Four-gas personal monitor		
Flammable and explosive gases	NA	NA	100% of LEL	10% LEL	Four-gas personal monitor		
Methyl Mercaptan	0.5 ppm TWA 10 ppm CEILING	0.5 ppm TWA	150 ppm	NA			
Benzene	1 ppm TWA 5 ppm STEL	0.5 ppm TWA 2.5 ppm STEL	500 ppm	NA			
Chloroethene (Vinyl Chloride)	1 ppm TWA 5 ppm STEL	1 ppm TWA		NA			
1,2 Dibromomethane (Ethylene Dibromide)	20 ppm TWA 30 ppm CEILING 50 ppm maximum peak above ceiling for 5-minute period in 8 hours	A3 carcinogen	100 ppm	NA			
Dichloromethane (Methylene Chloride)	25 ppm TWA 125 ppm STEL	50 ppm TWA	2,300 ppm	NA			

Chemical/ Parameter	PEL	TLV	IDLH	Action Level	Monitoring Equipment	Sample Location and Frequency	Procedures When Action Levels Exceeded
Tetrachloroethylene (Perchloroethylene)	100 ppm TWA 200 ppm CEILING 300 ppm maximum peak above ceiling for 5-minute period in any 3 hours)	25 ppm TWA 100 ppm STEL	150 ppm	NA			
Tetrachloromethane (Carbon Tetrachloride)	10 ppm TWA 25 ppm CEILING 200 ppm maximum peak above ceiling for 5-minute period in any 3 hours)	5 ppm TWA 10 ppm STEL	200 ppm	NA			
1,1,1-Trichloroethane (Methyl Chloroform)	350 ppm TWA	350 ppm TWA 450 ppm STEL	700 ppm	NA			
Trichloroethylene	100 ppm TWA 200 ppm CEILING 300 ppm maximum peak above ceiling for 5-minute period in any 2 hours	10 ppm TWA 25 ppm STEL	1,000 ppm	NA			
Trichloromethane (Chloroform)	50 ppm CEILING	10 ppm TWA	500 ppm	NA			

Table Key:

PEL: OSHA (most stringent state OSHA value). Permissible Exposure Limits are specified legal employee exposure limits based on specified lengths of time (see Ceiling, TWA, and STEL).
TLV: Threshold Limit Values (TLV's) are guidelines (not standards) prepared by the American Conference of Governmental Industrial Hygienists, Inc. (ACGIH), to assist industrial hygienists in making decisions regarding safe levels of exposure to various hazards found in the workplace.
IDLH: An atmosphere that poses an immediate threat to life would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.
TWA: Time-Weighted Averages are the upper limit of a toxic material to which an average person in average health may be exposed on a day-to-day basis (40-hour work week, 8-hour work periods) with no adverse health effects.
STEL: Short-Term Exposure Limit is the maximum average chemical concentration in which an employee can be exposed for up to 15 minutes. At no time can the employee exposure concentration exceed the "Ceiling" limit.
Ceiling: The maximum instantaneous chemical concentration in which an employee can be exposed to at any time.
%: Percent gas by volume.
% LEL: Percent of the lower explosive limit.
PPM: Parts per million.

Note: Instrument alarm levels and required responses are defined in TSOP 207.

5 SITE HAZARDS

Chemical and Physical Agent Hazards

The following chemical and physical hazards should be considered before performing any task or work at the site. The analysis will depend on a thorough understanding of the site's physical characteristics and the task(s) being performed.

Landfill Gas: Landfill gas (LFG) varies from one site to another. LFG consists primarily of methane (about 55 percent) and carbon dioxide (about 45 percent). Other components that may be present include water vapor, nitrogen, carbon monoxide, hydrogen sulfide, and other toxic compounds. LFG is flammable and potentially explosive.

Methane (CH_4): Methane gas is produced at landfills from the decomposition of waste. Methane is a colorless, odorless, flammable, and potentially explosive gas. The flammable range of methane is 5 to 15 percent by volume. Methane is a simple asphyxiate as it is capable of displacing oxygen. Personnel should wear an oxygen monitor when working in any area where gas may be present. **Table 1, Chemical Hazards and Air Monitoring Plan** (below), contains additional information about specific chemicals of concern at this site.

Toxic Compounds: Non-Methane Organic Compounds (NMOCs), as well as inorganic toxic contaminants such as mercury, and sometimes even radioactive contaminants such as tritium, may be present on a site. NMOCs include such toxic compounds as benzene, toluene, chloroform, vinyl chloride, carbon tetrachloride, and trichloroethane, which, although less than 1 percent by weight, are hazardous. These potential hazards should be evaluated on a case-by-case basis. Additional precautions will be established as needed in this plan.

Hydrogen Sulfide (H_2S): Varies by site, but is typically present between 10 and 200 parts per million (ppm). Hydrogen sulfide can accumulate in low areas such as sumps, holes, ditches, or depressions. Hydrogen sulfide is a primary hazard in confined space entry. Personnel should wear an H_2S monitor to alarm when working in any area where gas may be present.

Physical Hazards

The following physical hazards should be considered before performing any task or work at the landfill. Depending on the task(s) being performed, any or all of these hazards may be present.

Heavy Equipment: Landfill closed – no heavy equipment traffic on landfill.

Electrical: No electrical lines at the site, closed abandoned landfill.

Lightning: The danger of lightning strike is increased when work occurs on the elevated surface of a landfill. Lightning can strike miles ahead of a storm when no rain is present. All operations should be stopped immediately when lightning is visible or thunder is audible. All personnel should seek shelter off the elevated surface of the landfill and remain inside a building (primary) or vehicle (secondary) until the danger passes. Do not take shelter near tall objects such as power lines, trees, antennas, or the flare stack. Work can resume when the lightning is no longer visible and the thunder cannot be heard.

Heat-Related Injuries: Elevated body temperatures can cause serious injury or death. Working outdoors or in the sun increases the chance of heat-related injuries. This hazard is especially critical when PPE (such as coveralls or rain gear) is worn, since heat from the body becomes trapped inside clothing. Personnel should drink plenty of liquids and take breaks as needed. The following describes the various **Heat Disorders and Health Effects**:

- **Heat Stroke:** This disorder occurs when the body's system of temperature regulation (e.g., sweating and evaporation) fails and body temperature rises to critical levels. The condition is caused by a combination of highly variable factors, and its occurrence is difficult to predict. Heat stroke is a serious hazard, however. Primary signs and symptoms are confusion, irrational behavior, loss of consciousness, convulsions, a lack of sweating (usually), hot, dry skin, and an abnormally high body temperature. If a worker shows signs of possible heat stroke, call 911 to obtain **immediate** medical assistance. The worker should be placed in a shady area, and his or her outer clothing should be removed. The worker's skin should also be wetted and air movement around the body increased to improve evaporative cooling until professional methods of cooling are initiated and the seriousness of the condition can be assessed. Fluids should be replaced as soon as possible--by mouth only if the worker is conscious. The medical outcome of an episode of heat stroke depends on the victim's physical fitness and the timing and effectiveness of first aid treatment. Regardless of the worker's protests, **no** employee suspected of being ill from heat stroke should be sent home or left unattended unless a physician has specifically approved such an order.

- **Heat Exhaustion:** The signs and symptoms of heat exhaustion include clammy skin, headache, nausea, vertigo, weakness, thirst, and giddiness. Fortunately, heat exhaustion responds readily to prompt treatment. This condition, however, should not be dismissed lightly, for several reasons. One is that fainting associated with heat exhaustion can be dangerous because the victim may be operating machinery or controlling an operation that should not be left unattended. The victim could also be injured when he or she faints. While the signs and symptoms associated with heat exhaustion are similar to those of heat stroke, the notable difference (with heat exhaustion) is clammy skin. Workers suffering from heat exhaustion should be removed from hot environments and given fluid replacement, by mouth only if the workers are conscious. They should also be encouraged to get adequate rest.

- **Heat Rashes:** The most common problem occurring in hot work environments is heat rash. Prickly heat is manifested as red papules and usually appears in areas where the clothing is restrictive. As sweating increases, the papules give rise to a prickling sensation. Prickly heat occurs in skin that is persistently wetted by unevaporated sweat, and papules may become infected if they are not treated. In most cases, heat rash will disappear when the affected individual returns to a cool environment.

- **Heat Fatigue:** One factor that predisposes individuals to heat fatigue is the lack of acclimatization. Use of a program of acclimatization and training for work in hot environments are advisable. The signs and symptoms of heat fatigue include impaired performance of skilled sensorimotor, high-concentration, or high-vigilance

activities. The sole treatment available for heat fatigue is to remove heat stress and increase fluid replacement before a more serious heat-related condition develops.

Cold-Related Injuries: In winter weather conditions, there is a potential for injury from cold, including dehydration, frostbite, heavy shivering, excessive fatigue, drowsiness, irritability, and euphoria. If workers show these symptoms, work should cease and affected personnel rest in heated buildings or vehicles.

Biological Hazards

Rodents, poisonous insects, snakes, other animals and/or plants are a natural part of any ecosystem. They are sometimes difficult to eliminate or avoid on some landfill sites because those sites are rural and remote. Employees should be aware of the potential for encountering these types of animals and plants. Where possible, nesting places should be removed or access to them should be limited. If several infestations occur, remedies should be discussed with a supervisor and the client (see **SCS IIPP, SOP-21**, for precautions and treatment for biological hazards). The following could be encountered in performance of the operation, maintenance, and monitoring functions of a project:

Hantavirus: Infection typically occurs by the inhalation of tiny airborne droplets of fresh or dried rodent excretions. Transmission to humans may also occur through direct contact with rodents or rodent-contaminated materials, and ingestion of contaminated food or water is also a possible route of transmission. Sweeping or "shaking out" rodent-contaminated materials should be avoided unless performed using respiratory protection. The early symptoms of hantavirus disease are flu-like (fever, chills, muscle aches). For a very short period of time, the infected person starts to feel better. Then, within 1 to 2 days, he or she may develop shortness of breath. The disease gets worse quickly and leads to respiratory failure, a condition known as Hantavirus Pulmonary Syndrome (HPS). About half of all HPS patients experience these symptoms, which usually occur 1 to 5 weeks from contracting the illness.

Lyme Disease: A tick-borne bacteria that causes a range of debilitating symptoms (i.e., flu-like discomfort, joint pain, fatigue, headache, lack of concentration, facial paralysis). The most outstanding symptom of the disease is a bulls-eye rash from the tick bite. Personnel should avoid areas known to harbor ticks, and use insect repellant containing DEET to limit the possibility of being bitten.

Africanized Honey Bees: This species of bee is aggressive and unpredictable. It responds quickly and stings in large numbers; senses threats from people or animals 50 feet or more from the nest; senses vibrations from power equipment 100 feet or more from the nest; swarms frequently to establish new nests; pursues an enemy 3 miles or more; and nests in small cavities and sheltered areas. Avoid areas known to contain bees.

Snakes: Rattlesnakes, vipers, and coral snakes are poisonous. Not all rattlesnakes give audible warning before they strike. Extra caution should be taken if tools or other materials are dropped in highly vegetated areas, around rocks, into stockpiles of pipe or other objects, or when walking through highly vegetated areas where visibility (of the ground) is limited. The most active times for rattlesnakes are morning, late afternoon, and early evening; however, encounters could

happen at any time of the day. Walking loudly, shuffling feet, or making noise while working is recommended. Boots that reach mid-calf or snake guards are recommended, and all personnel should have leather work gloves.

Confined Spaces

Confined space entry is not included in the scope of work for this project. SCS-FS shall avoid confined spaces while performing the gas probe and structures monitoring. Excavation Hazards

Excavations are not included in the scope of work for this project. SCS-FS shall avoid excavations while performing the gas probe and structures monitoring.

6 ADDITIONAL REQUIREMENTS

APPENDICES (AS APPROPRIATE)

Job Task Safety Analyses and PPE Assessments

Job Task Safety Analysis and PPE Assessment Form-20

Job Task Safety Analysis Form			
Task Type (Check all that apply) ☒ **OM&M** ☐ **Construction** ☐ **Energy** ☐ **Engineering**	**Task Description (include estimate of task duration in hours/day):** Vehicle operation; Up to 8 hrs/day	**Location or Project:** San Pedro Drive Landfill **Date Revised:** 05/16/13 **Project #/Revision #:** PN: 07209112.06/Rev. 0	
Analysis Team Members	**Position Title**	**Reviewed By:**	**Position Title**
Marcia Pincus	Project Manager		
Ken Kampfen	Region H&S Specialist		
Special Training/Certification Required (In Addition to IIPP and Site Specific Health & Safety Plan)	1) Valid driver's license *Note: This JTSA does not address DOT-regulated vehicle operation*		
Applicable SAFE Checklist(s): Specify type and category number	OM&M SAFE Observation Report & Employee Suggestions		

This form is the certification that the hazard assessment has been performed for the workplace as required by 29 CFR 1910.132.

Job Task Safety Analysis and PPE Assessment Form-20 Cont.			
Job Task Step	**Potential Environmental and Personnel Hazards[1,2]**	**Critical Actions**	**PPE Required**
1. Review & Sign SSHSP/JTSA		• None	None
2. Perform vehicle safety inspection	• Do not pinch fingers/hands in hood • Do not smoke near flammable liquids • Use caution/watch for traffic	• Do not have keys in the ignition while checking under the hood	Head: None Body: None Foot: None Hand: None Respiratory: None Hearing: None Eye/Face: None
3. Ensure all equipment and materials are properly secured	• Slip/trip/fall hazards • Sharp corners/items • Crush hazards	• Watch for unstable equipment/items	Head: None Body: None Foot: ANSI/ASTM Rated Hand: Leather Gloves Respiratory: None Hearing: None Eye/Face: None
4. Adjust seat, mirrors and fasten seat belt	• Pinch hazards	• Do not pinch hands or skin in seat belt	Head: None Body: None Foot: None Hand: None Respiratory: None Hearing: None Eye/Face: None
5. Activate “hands-free” & cell phone and GPS devices	• Set volume at appropriate level so that driver will not be startled	• Perform these actions before starting and moving vehicle	Head: None Body: None Foot: None Hand: None Respiratory: None Hearing: None Eye/Face: None

Job Task Safety Analysis and PPE Assessment Form-20 Cont.			
Job Task Step	**Potential Environmental and Personnel Hazards[1,2]**	**Critical Actions**	**PPE Required**
6. Start vehicle	• Ensure hood is closed and that no foreign objects are in engine compartment • Keep others away from outside of vehicle	• Ensure personnel are clear of vehicle and exhaust when starting	Head: None Body: None Foot: None Hand: None Respiratory: None Hearing: None Eye/Face: None
7. Drive/operate vehicle	• Follow speed limit, road signs and traffic laws • If driving off-road, pay attention to tilt angles and terrain conditions • Drive straight up and down slopes • Avoid mud and water • If lost, pull into safe area to ask for directions or revise route	• Check blind spots • When in doubt, get out and look to ensure safe passage is possible • Increase following distances as needed for load and road and weather conditions	Head: None Body: None Foot: None Hand: None Respiratory: None Hearing: None Eye/Face: None
8. Stop and park vehicle	• Do not park in the road or in a manner that blocks other needed access points/areas • Set parking brake • Turn off lights and lock all compartments as needed	• Park in safe, well lighted and designated area	Head: None Body: None Foot: None Hand: None Respiratory: None Hearing: None Eye/Face: None

Job Task Safety Analysis and PPE Assessment Form-20 Cont.			
Job Task Step	**Potential Environmental and Personnel Hazards[1,2]**	**Critical Actions**	**PPE Required**
9. Properly store valuables (computer, GPS, GEM, etc.)	• Use proper lifting techniques	• Do not carry too much at one time • Do not leave items in plain view	Head: None Body: None Foot: None Hand: None Respiratory: None Hearing: None Eye/Face: None
End of Form 20			

[1] See SCS Injury Illness and Prevention Plan *Table SOP 4-1* for examples of Environmental Hazards.
[2] See SCS Injury Illness and Prevention Plan Table SOP 4-2 for examples of Personal Hazards.

Job Task Safety Analysis and PPE Assessment Form-08

Job Task Safety Analysis Form			
Task Type (Check all that apply) ☒ **OM&M** ☐ **Construction** ☐ **Energy** ☐ **Engineering**	**Task Description (include estimate of task duration in hours/day):** LFG Well and Probe Monitoring, 4-8 hrs/day; on monthly basis.	**Location or Project:** San Pedro Drive Landfill **Date Revised:** 05/16/13 **Project #/Revision #:** PN: 07209112.06/Rev. 0	
Analysis Team Member	**Position Title**	**Reviewed by**	**Position Title**
Marcia Pincus	Project Manager		
Ken Kampfen	Region H&S Specialist		
Special Training/Certification Required (In Addition to IIPP and Site Specific Health & Safety Plan)	1) On-the-job training for operating and calibrating GEM. 2) Training on operating, calibrating and using air monitoring equipment such as the 4 gas monitor, and associated Gas Alarm Action Levels		
Applicable SAFE Checklist(s): Specify type and category number	OM&M General SAFE Observation Report & Employee Suggestions		

This form is the certification that the hazard assessment has been performed for the workplace as required under 29 CFR 1910.132.

Job Task Safety Analysis and PPE Assessment Form-08 Cont.			
Job Task Step	**Potential Environmental and Personnel Hazards[1,2]**	**Critical Actions**	**PPE Required**
1. Review & Sign SSHSP/JTSA	• None	• None	• None
2. Calibrate the GEM and charge batteries	• Flammable calibration gas	• Avoid any ignition sources • Calibrate in a well-ventilated area	Head: None Body: None Foot: ANSI/ASTM Rated Hand: None Respiratory: None Hearing: None Eye/Face: Safety Glasses
3. Unlock the entry to wells/probes or get access to wells/probes	• Biological hazards • Slip, trip, fall • Barbed wire • Vehicle traffic • Ergonomic hazards	• Inspect probe and open slowly • Use snake guards for high grass areas • Use gloves and caution when encountering barb wire or spiders • Use DEET for tick infested areas and insect spray for spiders • Use boots that are slip resistant and provide good ankle support • Utilize traffic controls as outlined in the SSHSP	Head: Hardhat Body: Hi Viz Shirt/Vest Foot: ANSI/ASTM Rated Hand: Leather Gloves Respiratory: None Hearing: As-needed Eye/Face: None
4. Zero the GEM pressures	• Biological hazards • Slip, trip, fall • Vehicle traffic	• Inspect probe and open slowly • Use snake guards for high grass areas • Use gloves and caution when encountering barb wire or spiders • Use DEET for tick infested areas and insect spray for spiders • Use boots that are slip resistant and provide good ankle support • Utilize traffic controls as outlined in the SSHSP	Head: Hardhat Body: Hi Viz Shirt/Vest Foot: ANSI/ASTM Rated Hand: None Respiratory: None Hearing: As-needed Eye/Face: None

Job Task Safety Analysis and PPE Assessment Form-08 Cont.			
Job Task Step	**Potential Environmental and Personnel Hazards[1,2]**	**Critical Actions**	**PPE Required**
5. Hook up GEM to monitoring sample port	• Biological hazards • Slip, trip, fall • Hazardous atmosphere • Ergonomic hazards	• Use snake guards for high grass areas • Use gloves and caution when encountering spiders • Use DEET for tick infested areas and insect spray for spiders • Use boots that are slip resistant and provide good ankle support • Wear 4-gas meter within 18 inches of breathing zone • Connect tubing "tail" to GEM exhaust to discharge gas at ground surface • Utilize traffic control as outlined in the SSHSP • Take frequent breaks to avoid body strain caused by kneeling and squatting postures. Avoid kneeling and squatting for more than 4 hrs/day.	Head: Hardhat Body: Hi Viz Shirt/Vest Foot: ANSI/ASTM Rated Hand: Leather Gloves Respiratory: None Hearing: As-needed Eye/Face: None

Job Task Safety Analysis and PPE Assessment Form-08 Cont.			
Job Task Step	**Potential Environmental and Personnel Hazards[1,2]**	**Critical Actions**	**PPE Required**
6. Read the GEM after set run time	• Biological hazards • Slip, trip, fall • Hazardous atmosphere	• Inspect probe and open slowly • Use snake guards for high grass areas • Use gloves and caution when encountering barb wire or spiders • Use DEET for tick infested areas • Wear 4-gas meter within 18 inches of breathing zone • Connect tubing "tail" to GEM exhaust to discharge gas at ground surface • Utilize traffic controls as outlined in the SSHSP	Head: Hardhat Body: Hi Viz Shirt/Vest Foot: ANSI/ASTM Rated Hand: None Respiratory: None Hearing: As-needed Eye/Face: None
7. Store the monitoring data	• Biological hazards • Slip, trip, fall • Hazardous atmosphere	• Inspect probe and open slowly • Use snake guards for high grass areas • Use gloves and caution when encountering barb wire or spiders • Use DEET for tick infested areas • Wear 4-gas meter within 18 inches of breathing zone • Connect tubing "tail" to GEM exhaust to discharge gas at ground surface • Utilize traffic controls as outlined in the SSHSP	Head: Hardhat Body: Hi Viz Shirt/Vest Foot: ANSI/ASTM Rated Hand: None Respiratory: None Hearing: As-needed Eye/Face: None
End of Form 08			

[1] See SCS Injury Illness and Prevention Plan *Table SOP 4-1* for examples of Environmental Hazards.
[2] See SCS Injury Illness and Prevention Plan Table SOP 4-2 for examples of Personal Hazards.

APPENDIX B

City of Albuquerque Excavation/Barricade Permit Application

City of Albuquerque

Excavation/Barricade Permit Application Form

Department of Municipal Development ------ Construction Services/Permit Section

Office: 505-924-3400 . Fax: 505-924-3408 . Website http://www.cabq.gov/construction

Start Work Date: **July 26, 2013** ✓ **End Work Date:** **July 26, 2013** ✓ lcl

Purpose: Monitor gas probes in north bound lane of San Pedro

Address/Intersection/Location: San Pedro and Derickson NE

Contractor Name: SCS Field Services Contact Person: Marcia Pincus

Phone#: 505.349-8060 Fax#: 505.349.8061 Cell#: 505.514.8759

Billing Contact: NA - City EHD/ESD

Barricade Co.: Highway Supply Blue Stake: NA – Gas probes are existing

XX City Funded or NMDOT Project Project Name: San Pedro Gas Probes

Facility Owner: Environmental Health Project Number: _____

Linear Footage of Cut along Street: NA Work Area linear Footage: 700 feet

☐ TOTAL Closure ☐ Double Lane Closure ☒ Single Lane Closure

☐ Shoulder Closure ☐ Sidewalk Closure ☒ Bike Lane Closure

Street: San Pedro NE

From / at: San Francisco to: Derickson

EB / WB / NB / SB Left Parking Lane	EB / WB / NB / SB Left Turn Lane	EB / WB / NB / SB Left Lane	EB / WB / NB / SB Center Lane	EB / WB / NB / SB Right Lane	EB / WB / NB / SB Right Turn Lane	EB / WB / NB / SB Right Parking Lane

Provide sketch or reference TCP Number

See attached # 3276

B A/C slc + TC

E

E

13-02-9 03 ARN

Mobile Operation:
VLC1 + BL, 9.3

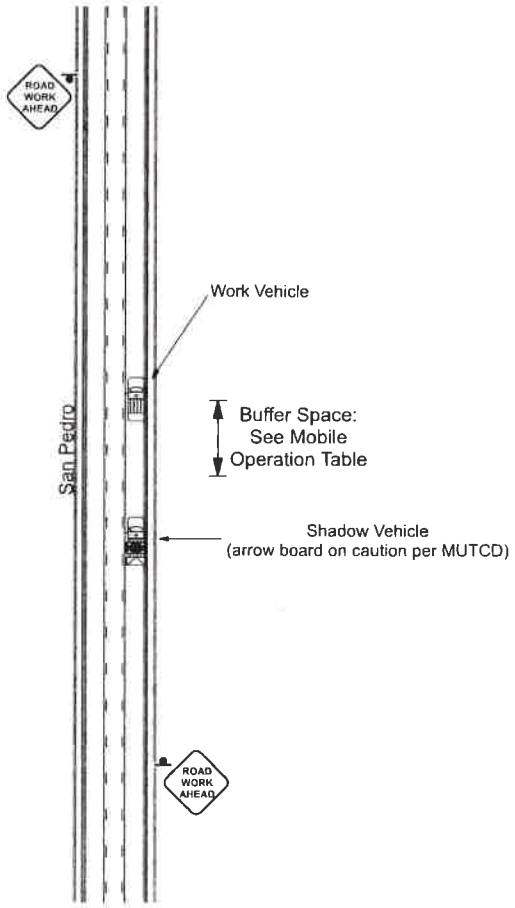
2013005059

TC

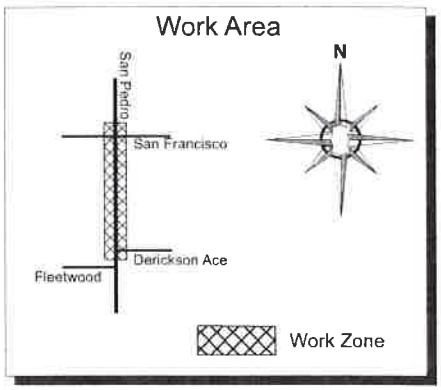
Highway Supply LLC
TRAFFIC CONTROL SOLUTIONS

TCP Index # 3276

SCS Field Services



Per MUTCD figure 6H-17
If an arrow board is used, it shall be in caution mode



Posted Speed Limit:
San Pedro - 35 MPH

NOTE(S):
1. Adjustments to sign spacing & channelization devices, for vertical and horizontal curves, side roads and driveways shall be made in field. All Advanced Warning Signs shall be double indicated when feasible.
2. This typical shadow operation plan to be utilized on San Pedro BT Pino Ave and San Antonio Dr in either direction

TAPER LENGTH, NUMBER OF DEVICES, AND DEVICE SPACING TABLE

POSTED SPEED	TAPER LENGTH "L" 10' LANE	11' LANE	12' LANE	MIN DEVICES NEEDED	MAX DEVICE SPACING TAPER	TANGENT	BUFFER ZONE LENGTH
25	105'	115'	125'	6	25'	50'	155'
30	150'	165'	180'	7	30'	60'	200'
35	205'	225'	245'	8	35'	70'	250'
40	270'	295'	320'	9	40'	80'	305'
45	450'	495'	540'	13	45'	90'	360'
50	500'	550'	600'	13	50'	100'	425'
55	550'	605'	660'	13	55'	110'	495'

Merging Tapers = "L", Shifting Tapers = "L/2" & Shoulder Tapers = "L/3"
Refer to table 6C-3 and 6C-4 from MUTCD for more information
MIN SIGN SPACING = 10X POSTED SPEED LIMIT

Mobile Operations

Posted Speed Limit Prior to Work Starting	Protection Vehicle Roll-Ahead Buffer Distance (with or without TMA)		Shadow Vehicle Following Distance (Buffer Space)	
MPH	Moving (15 MPH Max) Feet	Stopped Feet	Moving (15 MPH Max) Feet	Stopped Feet
0-30	100	100	250	550
35-40	100	100	325	700
45-50	175	125	600	900
55	175	125	750	1200
60-65	225	175	1000	1400
70-75	225	175	1200	1600

Highway Supply LLC
TRAFFIC CONTROL SOLUTIONS

Date: 07/16/2013 **Author:** Eddie Strength (505)345-8295 x102

Comments:
NOT TO SCALE


Approximate end of monitoring - North Bound Lane
San Francisco Rd NE
Coronado Ave NE
Ponderosa
Aspen NE
Manzanita NE
Fleetwood NE
Cottonwood NE
Pinon NE
Fir NE
San Pedro Dr NE
Frank Pl NE
Jade Park Ave NE
Hallmark Ave NE
Juana Ln NE
Ray St NE
Derickson Ave NE
© 2013 Google
Approximate Start of Monitoring - North Bound Lane
Google earth
35°09'55.44" N 106°34'36.57" W elev 5272 ft eye alt 7292 ft

APPENDIX C

Copies of Field Notes

San Pedro Michael Ferryman

7/26/13

Clear Skies / Humid

Cal gas Gem CH4 2.5/CO2 35/O2 20.9 Cal Gas MX4 CO 100ppm/H2S 25ppm O2/5%/N2 Bal Pentane .375% (25%LEL)

Calibrated Gem 5000 & MX4

all Samples taken on 26/July 2013

Probe ID	Time	CH_4	CO_2	O_2	Bal	H_2S
San Pedro 1	10:58	0.0	0.3	18.3	81.3	0.0
San Pedro 2	11:25	0.0	0.5	18.0	81.4	0.0
San Pedro 3	11:49	0.0	0.8	16.7	82.5	0.0
San Pedro 4	12:06	0.0	2.5	16.3	81.2	0.0
San Pedro 5	12:31	0.0	1.2	17.8	81.0	0.0

San Pedro Probe 1 Cover is cracked

San Pedro Probe 2 2 Bolts Broke / Rust

San Pedro 3 Cover Broken

San Pedro 4 missing Bolt

Michael Ferryman

8nw Cedco

Weather on 7/26/13

Temp 81.5 F Calm to 6.7 mph from West

BP = 29.84 " Hg

MAP 10/29/13 400 pm

Windy, Cloudy, Cool

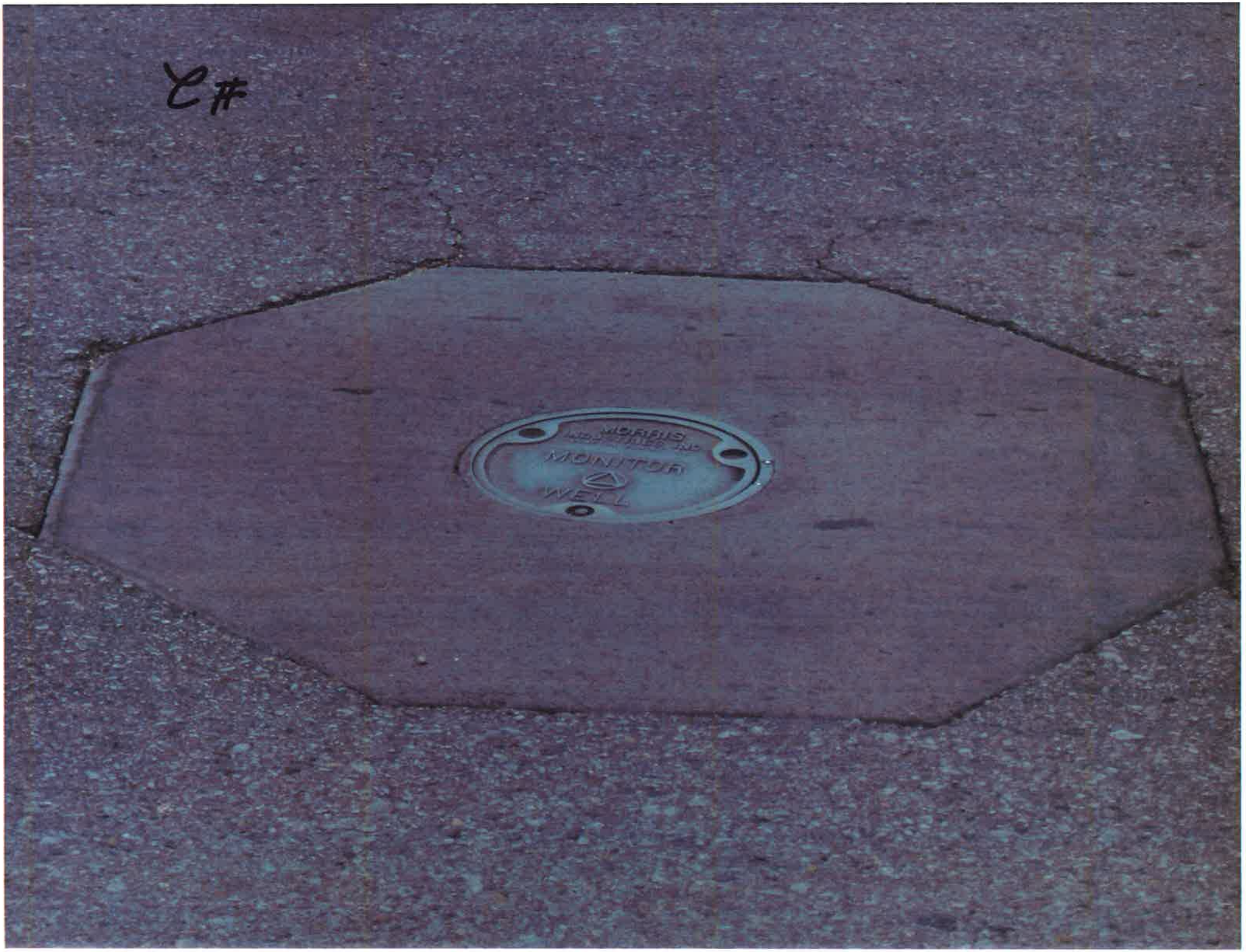
Hi Sire. To get current photos of gas probes + coordinates using Topcon GPS.

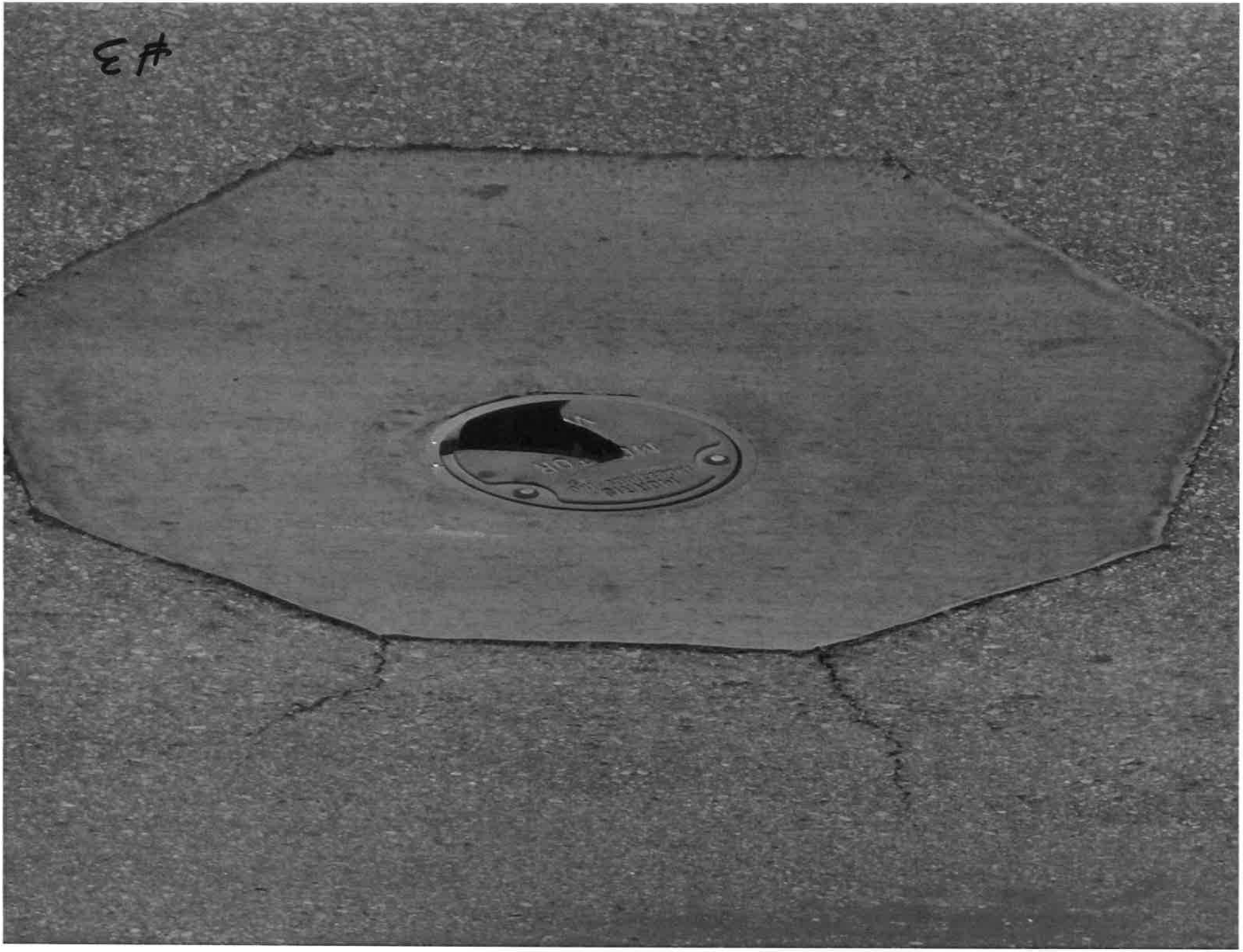
Probe ID	Long	Lat	GPS #
#1	35°09'~~50~~.41619	106 34'39.06257	#116
#2	35°09'51.84875	106 34'39.06183	#117
#3	35°09'53.77934	106 34'39.06479	#118
#4	35°09'55.80693	106 34'39.05029	#119
#5	35°09'57.86629	106 34'39.05836	#120

APPENDIX D

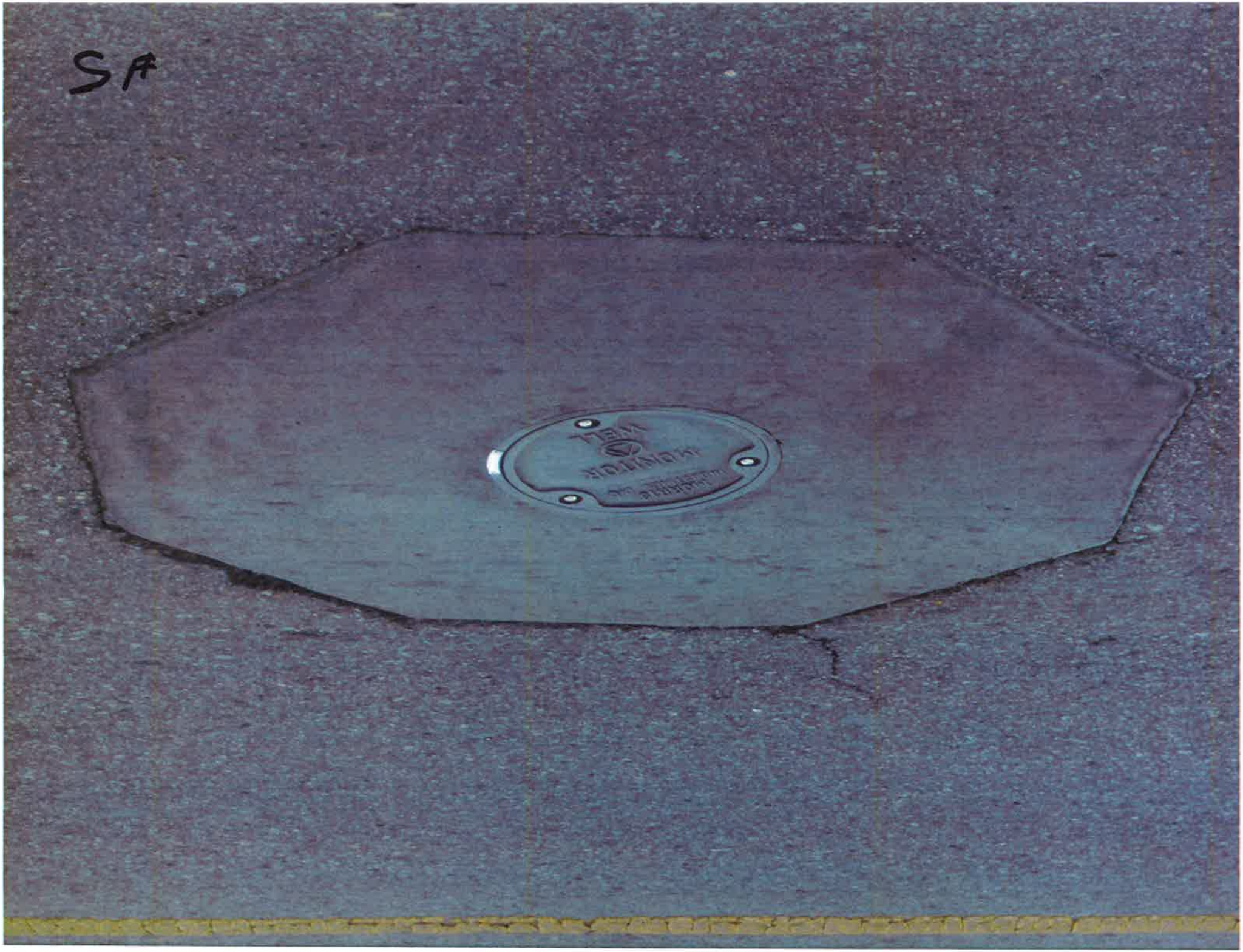
Photos of Gas Probes


1#


MONITOR
WELL


EA

#4


SA
MET
MONITOR