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Alameda County  
Environmental Health

October 14, 2010

Ms. Donna Drogos  
Alameda County Environmental Health  
1131 Harbor Parkway, Suite 250  
Oakland, CA 94502-6577

Subject: Quarterly Monitoring Report  
Stop N Save Inc.  
20570 Stanton Avenue, Castro Valley, Alameda County, California  
RO #0000179  
ECG # SNS.18281

Dear Ms. Drogos:

Enclosed please find a copy of the October 4, 2010 Quarterly Monitoring Report for the above referenced site prepared by our consultant Environmental Compliance Group, LLC.

I declare, under penalty and perjury, that the information and/or recommendations contained in this report are true and correct to the best of my knowledge.

Respectfully,

  
Sean Kapoor

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## THIRD QUARTER 2010 MONITORING REPORT

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STOP N SAVE INC. FACILITY  
20570 STANTON AVENUE  
CASTRO VALLEY, CALIFORNIA

Prepared for: Stop N Save Inc.

ECG Project Number: SNS.18281  
Alameda County Fuel Leak Case No. RO0000179

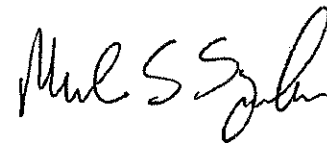
October 4, 2010





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Drew Van Allen  
Senior Project Manager



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Michael S. Sgourakis  
Principal Geologist  
CA P.G. No. 7194

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## INTRODUCTION

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Environmental Compliance Group (ECG) has been authorized by Stop N Save, Inc. to provide this Results Report for the Valley Gas & Food Mart facility (the site).

This report provides details on the Third Quarter 2010 groundwater monitoring event. Site information is as follows:

Site Location:	20570 Stanton Avenue Castro Valley, California
Geotracker Global ID:	T0600183405

## LIMITATIONS

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This report has been prepared for use by Stop N Save, Inc. and the relevant regulatory agencies. The conclusions in this report are professional opinions based on the data presented in this report. This report was prepared in general accordance with hydrogeologic and engineering methods and standards. No other warranties are made as to the findings or conclusions presented in this report. The work described in this report was performed under the direct supervision of the professional geologist whose signature and State of California registration are shown above.

## SITE DESCRIPTION AND HYDROGEOLOGIC CONDITIONS

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### SITE DESCRIPTION

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The site occupies a parcel on the southeast corner of Stanton Avenue and San Carlos Avenue in, Castro Valley, California (Figure 1). The site is situated in a commercial and residential area in central Castro Valley and is currently operated as a gasoline station. The area of interest at the site is the former location of two 10,000 gallon underground storage tanks (USTs) and fuel dispensers where impacted soil and groundwater was first identified in 2000. A detailed site plan is shown on Figure 2.

### HYDROGEOLOGIC CONDITIONS

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The site is underlain by Quaternary-aged alluvium. Mapped bedrock outcrops near the site include the Penocha Formation, a conglomerate, and the Knoxville Formation, a micaceous shale. The site is located in the Castro Valley Groundwater Basin (designated 2.8), which is approximately 4 miles square and drains into San Lorenzo Creek.

Based on boring logs from the installation of the three groundwater monitoring wells and the advancement of one soil boring, the stratigraphy of the site and vicinity consists of sandy clay to silty clay from the surface to 23-feet below ground surface (bgs). Discontinuous thin intervals of sands and/or gravels appear to be present in the area at minor thicknesses.

Groundwater monitoring has been ongoing for 10 years. Depth to groundwater is shallow, ranging between 4- to 9-feet bgs. The groundwater flow direction has been consistently toward the northeast generally following the surface topography.

## CLEANUP GOALS

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It is prudent to establish cleanup goals for soil and groundwater based upon reaching the residential Environmental Screening Levels (ESLs) established by Region II for sites where shallow soil has been impacted and groundwater is a current or potential drinking water source. The San Francisco Bay Regional Water Quality Board's Water Quality Plan lists Municipal and Domestic Water Supply, Industrial Process Water Supply, Industrial Service Water Supply, and Agricultural Water supply as Potential Beneficial Uses for the Castro Valley Groundwater Basin. The primary constituents of concern relative to the site appear to be total petroleum hydrocarbons as gasoline (TPHg) and benzene, toluene, ethylbenzene, and xylenes (BTEX), methyl tertiary butyl ether (MTBE), tertiary amyl ether (TAME), and tertiary butyl alcohol (TBA). Accordingly, the following cleanup goals are proposed:

Constituent	Soil (mg/kg)	Groundwater (ug/L)
TPHg	83	100
Benzene	0.044	1.0
Toluene	2.9	40
Ethylbenzene	3.3	30
Xylenes	2.3	20
MTBE	0.023	5.0
TBA	0.075	12

## PROJECT BACKGROUND

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### INVESTIGATIONS

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In February 2000, two 10,000-gallon USTs and associated dispensers were removed. Results are detailed in Enviro Soil Tech Consultants' (ETSC) *Soil Sampling Beneath Removed USTs Report*, dated March 8, 2000.

In September 2000, ETSC supervised the installation of three groundwater monitoring wells (STMW-1 through STMW-3) and the advancement of one soil boring (B-4). Results are detailed in ETSC's *Preliminary Soil and Groundwater Assessment Report*, dated October 13, 2000.

Well construction details are provided on Table 1.

### DISTRIBUTION OF MASS CONTAMINANTS

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Five UST removal soil samples, eight over excavation soil samples, three groundwater monitoring wells and one soil boring (Figure 2) have adequately characterized the lateral extent of impacted soil with the exception of the downgradient direction. Soil analytical results are summarized on Tables 2a and 2b and show reported soil concentrations did exceed ESLs for TPHg, BTEX, MTBE and TBA, with the highest reported concentrations at sample locations Pit-7-11 and Pit-8-11. Vertical definition is required as presently no soil samples have been collected from depths greater than 11-feet bgs.

Three groundwater monitoring wells and one groundwater grab sample have not adequately characterized the vertical or lateral extent of impacted groundwater. Groundwater analytical

results are summarized on Tables 3a, 3b, 4a, and 4b and show current reported groundwater concentrations exceed ESLs for MTBE and TBA constituents at location STMW-1.

### RISK ASSESSMENTS

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A preferential pathway study was completed and is detailed in ECG's *Site Investigation Workplan*, dated July 26, 2010.

A sensitive receptor survey has not been completed for the site. A sensitive receptor survey will be completed in conjunction with upcoming field activities and results will be submitted in the site investigation results report.

A soil vapor survey has not been completed for the site.

### CORRECTIVE ACTIONS

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In July 2000, ETSC over-excavated and treated with bioremediation techniques, approximately 150 cubic yards of impacted soil. Results of the sampling, treatment, and disposal activities are detailed in ETSC's *Soil Sampling, Treatment, and Disposal of Stockpiled Soil Report*, dated August 21, 2000.

### RECENT ACTIVITIES

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#### WORK PERFORMED AND PROPOSED

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The following is a summary of work performed and work proposed at the site.

##### **Work Performed**

1. Prepared the *Site Investigation Workplan*, dated July 26, 2010.
2. The third quarter 2010 groundwater monitoring event was performed on September 20, 2010.

##### **Work Scheduled for Next Quarter**

1. Prepare the third quarter 2010 groundwater report.
2. Implement the site investigation approved by Alameda County Environmental Health Services (ACEHS).

#### THIRD QUARTER 2010 GROUNDWATER MONITORING EVENT

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ECG performed the third quarter 2010 groundwater monitoring and sampling event at the site on September 20, 2010. Gauging, development, purging, and sampling were conducted in accordance with ECG's SOPs included in Appendix A. The collected groundwater samples were submitted to Argon Analytical Services, Inc. located in Ceres, California for laboratory analysis under COC protocols

The following is a summary of the current status of the groundwater monitoring program at the site:

Current Phase of Project:	Assessment
Groundwater Sampling Schedule:	Quarterly Wells MW-1 through MW-3
Analysis:	TPHg, BTEX, 5 oxygenates, and 2 lead scavengers by EPA Method 8260B
Is Free Product Present On-Site:	No

The following is a summary of recent field and analytical data:

Average Depth to Groundwater	7.72-feet bgs
Average Groundwater Elevation	91.145-feet above mean sea level
Groundwater Gradient Direction	Northeast
Groundwater Gradient	0.050 feet/foot
MTBE Detected Range	0.6 micrograms per liter (ug/L) in STMW-3 to 51 ug/L in well STMW-1.
TBA Detected	8,100 ug/L (STMW-1)

Laboratory analytical reports and COCs are provided in Appendix B. Field notes are located in Appendix C. Summaries of groundwater monitoring and analytical data are presented in Tables 4a and 4b.

## CONCLUSIONS

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Groundwater isoconcentration maps from the third quarter 2010 are provided as Figures 4 and 5. The lateral extent of impacted soil and groundwater is not defined.

ECG will implement the *Site Investigation Workplan* approved by ACEHS on September 2, 2010 during the Fourth Quarter 2010.



0 1,000 2,000

Approximate Scale In Feet  
1 inch = 1,000 Feet

**FIGURE 1**

Project Number:  
SNS.18281

Date:  
July 21, 2010

**SITE LOCATION MAP**

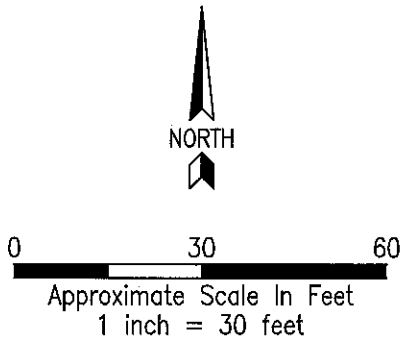
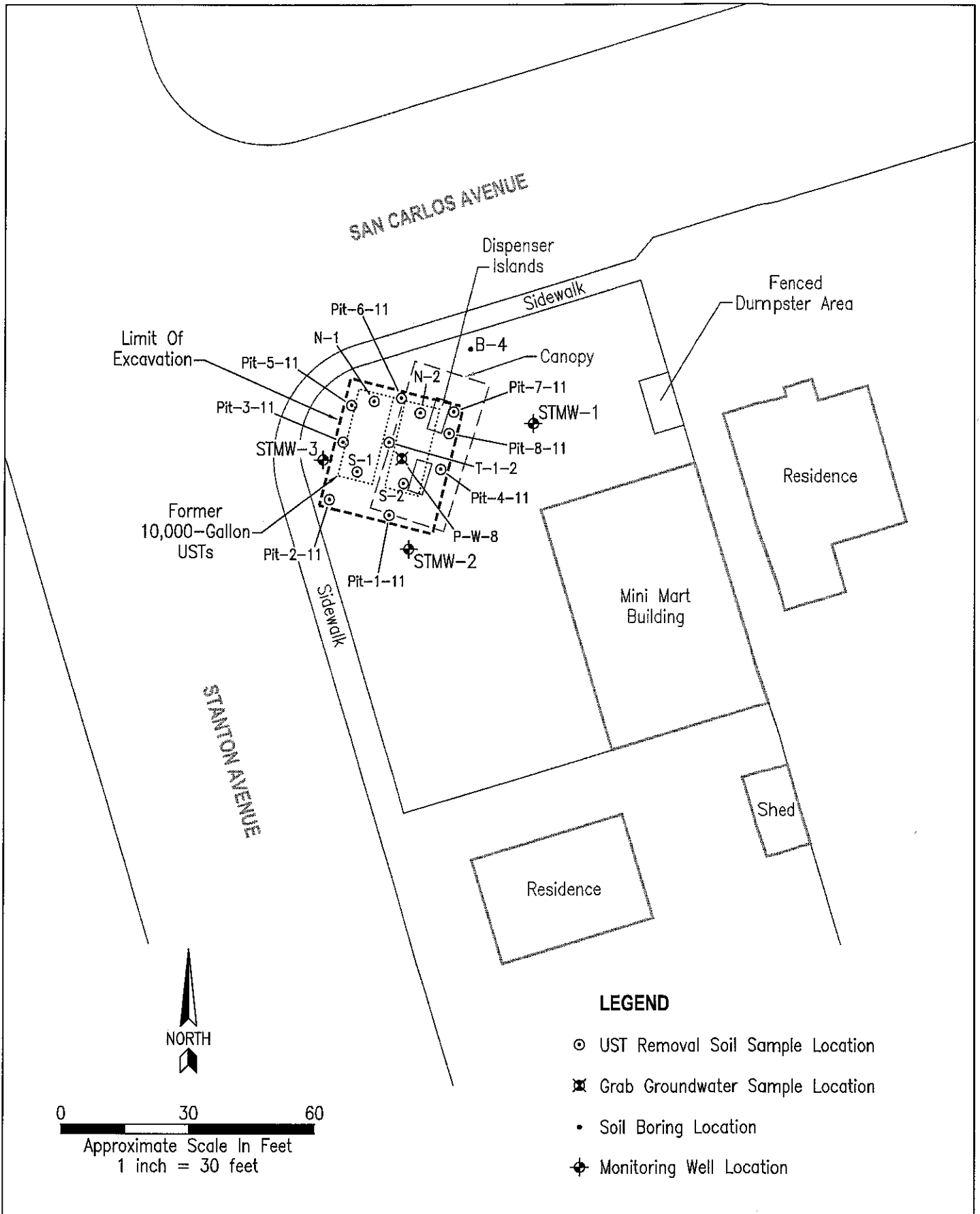
Stop 'N' Save  
20570 Stanton Avenue  
Castro Valley, California



**Environmental  
Compliance  
Group, LLC**


270 Vintage Drive, Turlock, CA 95382  
Phone: (209) 664-1035

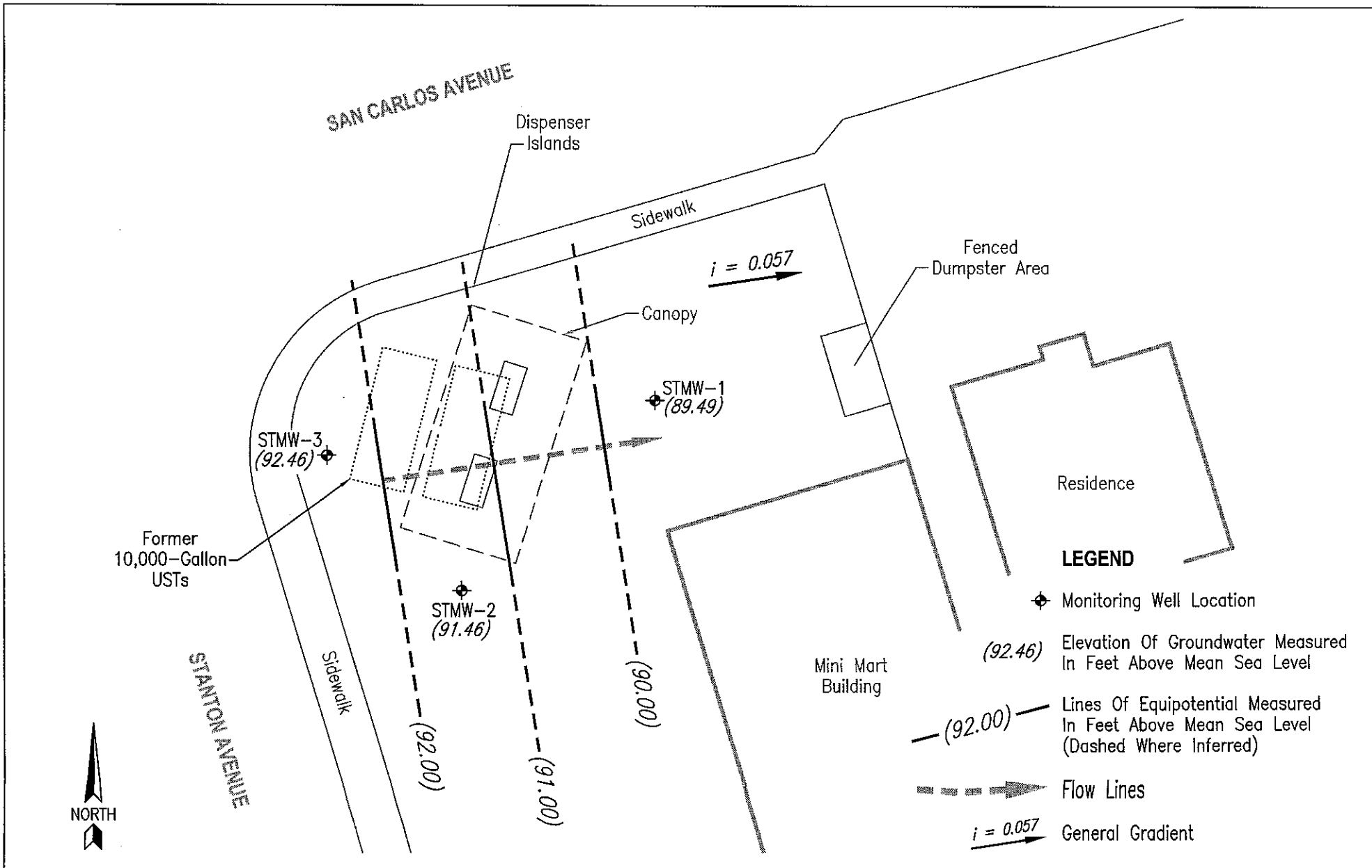




**LEGEND**

- ⊙ UST Removal Soil Sample Location
- ⊠ Grab Groundwater Sample Location
- Soil Boring Location
- ⊕ Monitoring Well Location

<p><b>FIGURE 2</b></p>	<p><b>SITE MAP</b></p> <p>Stop 'N' Save 20570 Stanton Avenue Castro Valley, California</p>	 <p><b>Environmental Compliance Group, LLC</b> 270 Vintage Drive, Turlock, CA 95382 Phone: (209) 664-1035</p>
<p>Project Number: SNS.18281</p>		
<p>Date: July 26, 2010</p>		



**FIGURE 3**

Project Number:  
SNS.18281

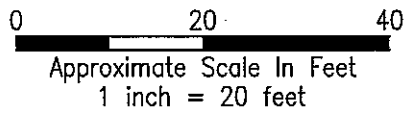
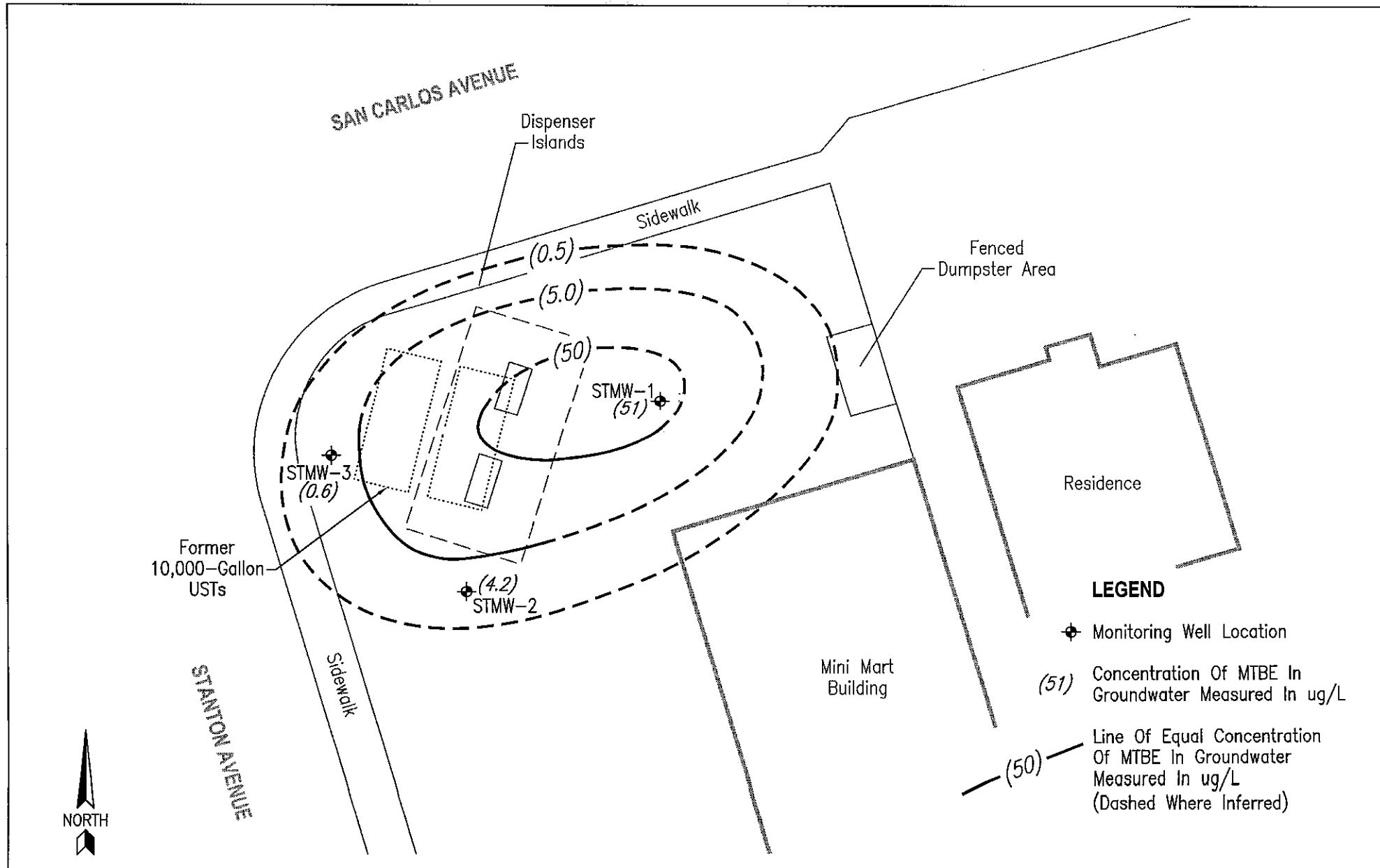
Date:  
October 14, 2010

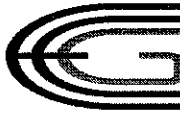
**POTENTIOMETRIC SURFACE MAP  
SEPTEMBER 20, 2010**

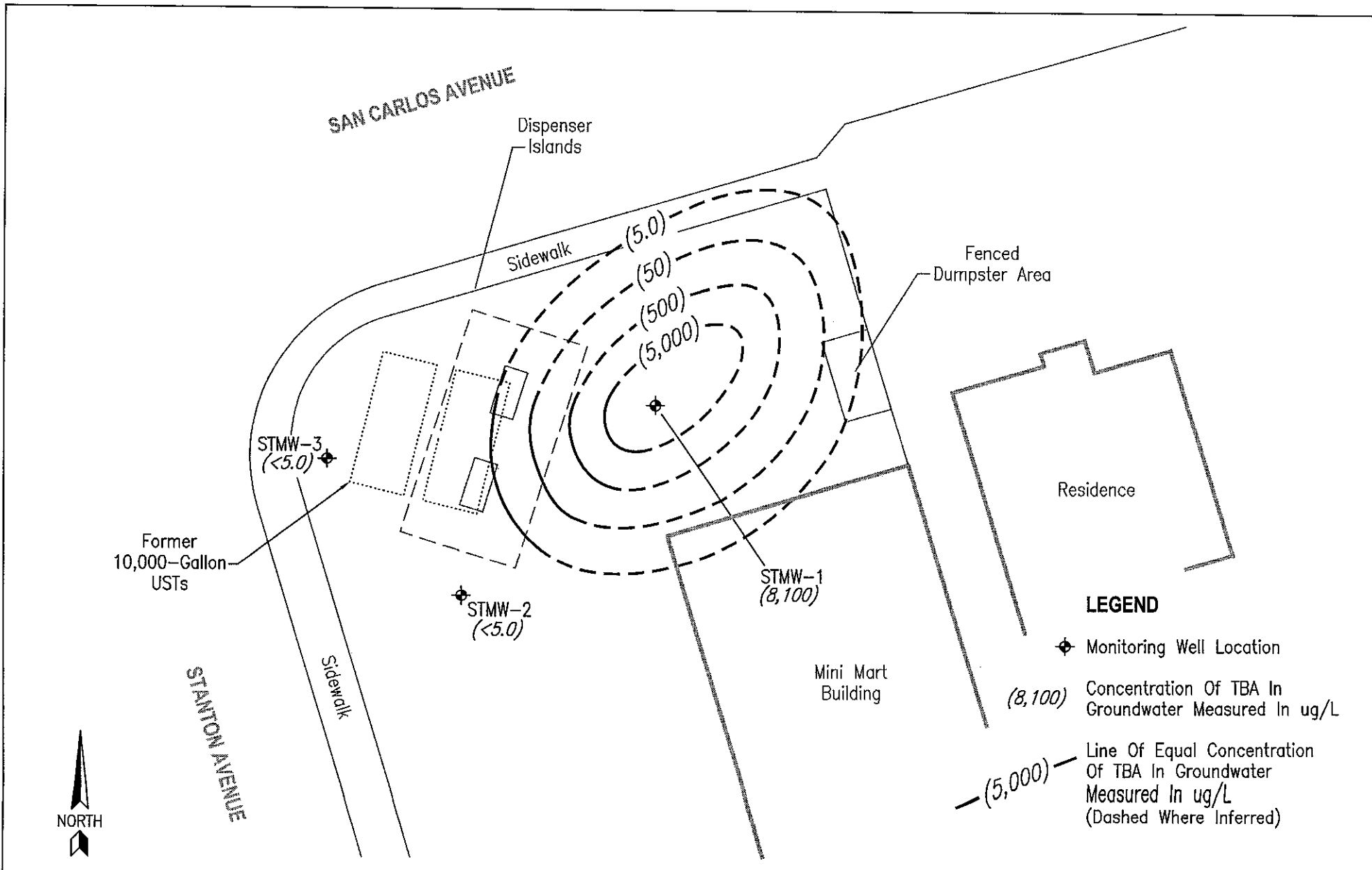
Stop 'N' Save  
20570 Stanton Avenue  
Castro Valley, California



270 Vintage Drive, Turlock, CA 95382  
Phone: (209) 664-1035



<b>FIGURE 4</b> Project Number: SNS.18281 Date: October 14, 2010	<b>MTBE IN GROUNDWATER ISOCONCENTRATION MAP</b> <b>SEPTEMBER 20, 2010</b> Stop 'N' Save 20570 Stanton Avenue Castro Valley, California	 <b>Environmental Compliance Group, LLC</b> 270 Vintage Drive, Turlock, CA 95382 Phone: (209) 664-1035



0 20 40  
 Approximate Scale In Feet  
 1 inch = 20 feet

<b>FIGURE 5</b>	<b>TBA IN GROUNDWATER ISOCONCENTRATION MAP</b> <b>SEPTEMBER 20, 2010</b> Stop 'N' Save 20570 Stanton Avenue Castro Valley, California
Project Number: SNS.18281	
Date: October 14, 2010	

**Environmental Compliance Group, LLC**  
 270 Vintage Drive, Turlock, CA 95382  
 Phone: (209) 664-1035

**Table 1**  
**Well Construction Details**  
 Stop N Save Inc.  
 20570 Stanton Avenue  
 Castro Valley, California

Well ID	Date Installed	TOC Elevation (ft amsl)	Total Depth (ft bgs)	Casing Diameter (inches)	Casing Material	Screen/ Filter	Screen Interval (ft bgs)
<b>Monitoring Wells</b>							
STMW-1	October 2000	97.93	23	2	PVC	0.020/#3	9-23
STMW-2		99.04	22	2	PVC	0.020/#3	9-22
STMW-3		99.6	22	2	PVC	0.020/#3	9-22

**Notes:**

- TOC - denotes top-of-casing
- ft - denotes feet
- amsl - denotes above mean sea level
- bgs - denotes below ground surface
- denotes no data
- pvc - denotes polyvinyl chloride

**Table 2a**  
**Historical Soil Analytical Data**  
**TPH and BTEX**  
 Stop N Save Inc.  
 20570 Stanton Avenue  
 Castro Valley, California

Sample ID	Sample Depth (feet)	Collection Date	TPHg (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)
<b>Near Surface Samples</b>							
N-1	10*	February 2000	5.6	0.07	0.26	0.15	0.98
N-2	10*		11	0.068	0.26	0.13	1.1
S-1	10*		<1.0	<0.005	<0.005	<0.005	0.012
S-2	10*		1.2	<0.005	<0.005	0.006	0.037
T-1-2	10*		71	0.22	0.47	0.49	3.7
Pit-1-11	11	July 2000	91	0.38	0.35	1.6	8.4
Pit-2-11	11		<1.0	<0.005	<0.005	<0.005	<0.005
Pit-3-11	11		<1.0	<0.005	0.005	<0.005	0.038
Pit-4-11	11		<1.0	<0.005	<0.005	<0.005	<0.005
Pit-5-11	11		130	0.14	0.26	1.1	8.5
Pit-6-11	11		8.2	0.077	0.13	0.08	0.76
Pit-7-11	11		220	0.58	1.3	1.8	24
Pit-8-11	11		1,000	5.7	3.9	14	25
<b>Soil Boring</b>							
B-4	5	September 2000	<1.0	<0.10	<0.10	<0.10	<0.10
B-4	10		<1.0	0.02	<0.02	<0.02	<0.02
<b>Monitoring Wells</b>							
STMW-1	5	September 2000	18	<0.25	<0.25	<0.25	1.1
STMW-1	10		76	<1.0	<1.0	<1.0	7.7
STMW-2	5		<1.0	<0.005	<0.005	<0.005	<0.005
STMW-2	10		<1.0	<0.005	<0.005	<0.005	<0.005
STMW-3	5		1.3	<0.005	<0.005	<0.005	<0.005
STMW-3	10		<1.0	<0.005	<0.005	<0.005	<0.005

**Notes:**

- TPHg - denotes total petroleum hydrocarbons as gasoline
- mg/kg - denotes milligrams per kilogram
- < - denotes less than the detection limit
- \* - denotes approximate depth based on tank diameter and sample notes

**Table 2b**  
**Historical Soil Analytical Data**  
**Oxygenates and Lead Scavengers**  
 Stop N Save Inc.  
 20570 Stanton Avenue  
 Castro Valley, California

Boring ID	Sample Depth (feet)	Collection Date	DIPE (mg/kg)	ETBE (mg/kg)	MTBE (mg/kg)	TAME (mg/kg)	TBA (mg/kg)	1,2-DCA (mg/kg)	EDB (mg/kg)
<b>Near Surface Soil Samples</b>									
N-1	10*	February 2000	---	---	0.74	---	---	---	---
N-2	10*		---	---	3.8	---	---	---	---
S-1	10*		---	---	0.18	---	---	---	---
S-2	10*		---	---	0.11	---	---	---	---
T-1-2	10*		---	---	1.2	---	---	---	---
Pit-1-11	11	July 2000	---	---	<0.005	---	---	---	---
Pit-2-11	11		---	---	<0.005	---	---	---	---
Pit-3-11	11		---	---	0.094	---	---	---	---
Pit-4-11	11		---	---	<0.005	---	---	---	---
Pit-5-11	11		---	---	<0.005	---	---	---	---
Pit-6-11	11		---	---	0.42	---	---	---	---
Pit-7-11	11		---	---	<0.005	---	---	---	---
Pit-8-11	11		---	---	16	---	---	---	---
<b>Soil Borings</b>									
B-4	5	September 2000	<0.10	<0.10	0.3	<0.10	0.5	<0.10	<0.10
B-4	10		<0.02	<0.02	0.16	<0.02	<0.08	<0.02	<0.02
<b>Monitoring Wells</b>									
STMW-1	5	September 2000	<0.25	<0.25	1.5	<0.25	<1.0	<0.25	<0.25
STMW-1	10		<1.0	<1.0	1.6	<1.0	<4.0	<1.0	<1.0
STMW-2	5		<0.005	<0.005	<0.005	<0.005	<0.050	<0.005	<0.005
STMW-2	10		<0.005	<0.005	<0.005	<0.005	<0.050	<0.005	<0.005
STMW-3	5		<0.005	<0.005	<0.005	<0.005	<0.050	<0.005	<0.005
STMW-3	10		<0.005	<0.005	<0.005	<0.005	<0.050	<0.005	<0.005

**Notes:**

- |  |   |
|--|---|
| mg/kg - denotes milligrams per kilogram    | DIPE - denotes di-isopropyl ether         |
| --- denotes not analyzed                   | ETBE - denotes ethyl tertiary butyl ether |
| < - denotes less than the detection limit  | TAME - denotes tertiary amyl ether        |
| MTBE - denotes methyl tertiary butyl ether | TBA - denotes tertiary butyl alcohol      |
| 1,2-DCA - denotes 1,2-dichloroethane       | EDB - denotes ethyl dibromide             |

**Table 3a**  
**Grab Groundwater Sample Results**  
**TPH and BTEX**  
 Stop N Save Inc.  
 20570 Stanton Avenue  
 Castro Valley, California

Sample ID	Date Measured	Sample Depth (ft bgs)	TPHg (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl-benzene (ug/L)	Total Xylenes (ug/L)
P-W-8	July 2000	11	110	2.6	0.83	0.95	1.7

**Notes:**

TPHg - denotes total petroleum hydrocarbons as gasoline

ug/L - denotes micrograms per liter

< - denotes less than the detection limit

\* - denotes approximate depth based on tank diameter and sample notes



**Table 3b**  
**Grab Groundwater Sample Results**  
**Oxygenates and Lead Scavengers**  
 Stop N Save Inc.  
 20570 Stanton Avenue  
 Castro Valley, California

Sample ID	Date Measured	Sample Depth (ft bgs)	DIPE (ug/L)	ETBE (ug/L)	MTBE (ug/L)	TAME (ug/L)	TBA (ug/L)	1,2-DCA (ug/L)	EDB (ug/L)
P-W-8	July 2000	11	---	---	130	---	---	---	---

**Notes:**

ug/L - denotes micrograms per liter

< - denotes less than the detection limit

DCA - denotes dichloroethane

EDB - denotes ethylene dibromide

MTBE - denotes methyl tertiary butyl ether

\* - denotes approximate depth based on tank diameter and sample notes

DIPE - denotes di-isopropyl ether

ETBE - denotes ethyl tertiary butyl ether

TAME - denotes tertiary amyl ether

TBA - denotes tertiary butyl alcohol

**Table 4a**  
**Monitoring Well Data**  
**Water Level, TPH, and BTEX**  
 Stop N Save Inc.  
 20570 Stanton Avenue  
 Castro Valley, California

Well ID (TOC)	Date Measured	Depth to Groundwater (ft bgs)	Groundwater Elevation (ft amsl)	TPHg (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)
STMW-1 97.93	10/4/2000	8.34	89.59	60,000	<2,500	<2,500	<2,500	<2,500
	1/4/2001	7.86	90.07	71,000	<2,500	<2,500	<2,500	<5,000
	3/16/2004	5.70	92.23	260	52	64	7.9	27
	7/5/2004	4.82	93.11	2,100	17	240	2.6	12
	12/28/2004	6.82	91.11	310	89	90	11	43
	3/24/2005	5.63	92.30	630	43	140	16	110
	7/20/2005	5.75	92.18	330	12	22	<2.5	9.3
	9/15/2005	7.44	90.49	15,000	<100	<100	<100	<100
	12/12/2005	5.32	92.61	130	4.4	7.5	<1.0	3
	3/16/2005	3.90	94.03	<50	0.9	3.3	<0.5	<0.5
	6/22/2006	7.12	90.81	130	4.4	54	<1.0	7.1
	9/21/2006	7.78	90.15	880	110	32	18	110
	12/18/2006	9.12	88.81	240	7.5	130	1.4	7.6
	3/22/2007	6.82	91.11	190	17	13	2.9	14
	6/29/2007	9.86	88.07	2,700	340	45	52	310
	9/28/2007	6.88	91.05	1,000	85	2.5	11	72
	12/20/2007	7.81	90.12	690	92	<5.0	<5.0	36
	3/27/2008	7.37	90.56	160	36	0.92	<0.50	5.1
	6/6/2008	7.98	89.95	170	44	<5.0	<5.0	<15
	8/14/2008	8.50	89.43	<1,000	24	<10	<10	<20
12/30/2008	7.85	90.08	<100	2.6	<1.0	<1.0	<2.0	
3/6/2009	7.48	90.45	57	<5.0	<5.0	<5.0	<15	
6/12/2009	7.92	90.01	70	<5.0	<5.0	<5.0	<15	
12/1/2009	8.20	89.73	<50	<5.0	<5.0	<5.0	<15	
9/20/2010	8.44	89.49	<500	<5.0	<5.0	<5.0	<10	

**Table 4a**  
**Monitoring Well Data**  
**Water Level, TPH, and BTEX**  
 Stop N Save Inc.  
 20570 Stanton Avenue  
 Castro Valley, California

Well ID (TOC)	Date Measured	Depth to Groundwater (ft bgs)	Groundwater Elevation (ft amsl)	TPHg (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl-benzene (ug/L)	Total Xylenes (ug/L)
STMW-2 99.04	10/4/2000	8.22	90.82	69	<5.0	<5.0	<5.0	<5.0
	1/4/2001	6.70	92.34	110	<5.0	<5.0	<5.0	<5.0
	3/16/2004	6.08	92.96	1,100	<10	<10	<10	<20
	7/5/2004	6.86	92.18	1,800	<10	<10	<10	<20
	12/28/2004	6.22	92.82	1,000	<13	<13	<13	<13
	3/24/2005	5.12	93.92	760	<5.0	<5.0	<5.0	<5.0
	7/20/2005	5.66	93.38	64	<1.0	<1.0	<1.0	<1.0
	9/15/2005	6.14	92.90	53	<1.0	<1.0	<1.0	<1.0
	12/12/2005	6.68	92.36	<50	2.2	<0.5	0.6	<0.5
	3/16/2005	5.54	93.50	<50	<0.5	<0.5	<0.5	<0.5
	6/22/2006	6.02	93.02	<50	<0.5	<0.5	<0.5	<0.5
	9/21/2006	6.94	92.10	<50	<0.5	<0.5	<0.5	<0.5
	12/18/2006	6.46	92.58	<50	<0.5	<0.5	<0.5	<0.5
	3/22/2007	6.16	92.88	<50	<0.5	<0.5	<0.5	<0.5
	6/29/2007	9.06	89.98	<50	<0.5	<0.5	<0.5	<0.5
	9/28/2007	7.63	91.41	<50	<0.5	<0.5	<0.5	<1.0
	12/20/2007	7.43	91.61	<50	<0.5	<0.5	<0.5	<1.0
	3/27/2008	6.16	92.88	<50	<0.50	<0.50	<0.50	<1.5
	6/6/2008	7.09	91.95	<50	<0.50	<0.50	<0.50	<1.5
	8/14/2008	7.85	91.19	<50	<0.5	<0.5	<0.5	<1.0
12/30/2008	7.52	91.52	<50	<0.5	<0.5	<0.5	<1.0	
3/6/2009	6.90	92.14	<50	<0.50	<0.50	<0.50	<1.5	
6/12/2009	6.65	92.39	<50	<0.50	<0.50	<0.50	<1.5	
12/1/2009	7.43	91.61	<50	<0.50	<0.50	<0.50	<1.5	
9/20/2010	7.58	91.46	<50	<0.50	<0.50	<0.50	<1.0	

**Table 4a**  
**Monitoring Well Data**  
**Water Level, TPH, and BTEX**  
 Stop N Save Inc.  
 20570 Stanton Avenue  
 Castro Valley, California

Well ID (TOC)	Date Measured	Depth to Groundwater (ft bgs)	Groundwater Elevation (ft amsl)	TPHg (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)
STMW-3 99.60	10/4/2000	8.42	91.18	<50	<5.0	<5.0	<5.0	<5.0
	1/4/2001	6.16	93.44	<50	<5.0	<5.0	<5.0	<5.0
	3/16/2004	7.18	92.42	<50	<0.5	<0.5	<0.5	<1.0
	7/5/2004	6.27	93.33	<25	<0.5	<0.5	<0.5	<1.0
	12/28/2004	5.64	93.96	<25	<0.5	<0.5	<0.5	<0.5
	3/24/2005	5.12	94.48	<25	<0.5	<0.5	<0.5	<0.5
	7/20/2005	5.50	94.10	<50	<0.5	<0.5	<0.5	<0.5
	9/15/2005	5.56	94.04	<50	<0.5	<0.5	<0.5	<0.5
	12/12/2005	6.26	93.34	<50	<0.5	<0.5	<0.5	<0.5
	3/16/2005	5.14	94.46	<50	<0.5	<0.5	<0.5	<0.5
	6/22/2006	5.92	93.68	<50	<0.5	<0.5	<0.5	<0.5
	9/21/2006	6.14	93.46	<50	<0.5	<0.5	<0.5	<0.5
	12/18/2006	5.50	94.10	<50	<0.5	<0.5	<0.5	<0.5
	3/22/2007	5.88	93.72	<50	<0.5	<0.5	<0.5	<0.5
	6/29/2007	8.82	90.78	<50	<0.5	<0.5	<0.5	<0.5
	9/28/2007	8.14	91.46	<50	<0.5	<0.5	<0.5	<1.0
	12/20/2007	6.56	93.04	<50	<0.5	<0.5	<0.5	<1.0
	3/27/2008	6.21	93.39	<50	<0.50	<0.50	<0.50	<1.5
	6/6/2008	6.84	92.76	<50	<0.50	<0.50	<0.50	<1.5
	8/14/2008	7.34	92.26	<50	<0.5	<0.5	<0.5	<1.0
12/30/2008	6.45	93.15	<50	<0.5	<0.5	<0.5	<1.0	
3/6/2009	5.06	94.54	<50	<0.50	<0.50	<0.50	<1.5	
6/12/2009	6.54	93.06	<50	<0.50	<0.50	<0.50	<1.5	
12/1/2009	6.79	92.81	<50	<0.50	<0.50	<0.50	<1.5	
9/20/2010	7.14	92.46	<50	<0.50	<0.50	<0.50	<1.0	

**Notes:**

TPHg - denotes total petroleum hydrocarbons as gasoline

ug/L - denotes micrograms per liter

< - denotes less than the detection limit

**Table 4b**  
**Monitoring Well Data**  
**Oxygenates and Lead Scavengers**  
 Stop N Save Inc.  
 20570 Stanton Avenue  
 Castro Valley, California

Well ID	Date Measured	DIPE (ug/L)	ETBE (ug/L)	MTBE (ug/L)	TAME (ug/L)	TBA (ug/L)	1,2-DCA (ug/L)	EDB (ug/L)
STMW-1 97.93	10/4/2000	---	---	69,000	---	<10,000	---	---
	1/4/2001	---	---	89,000	---	<20,000	---	---
	3/16/2004	---	---	39	---	<10	---	---
	7/5/2004	---	---	520	---	<50	---	---
	12/28/2004	---	---	32	---	<20	---	---
	3/24/2005	---	---	20	---	<20	---	---
	7/20/2005	---	---	310	---	<50	---	---
	9/15/2005	---	---	13,000	---	2,500	---	---
	12/12/2005	---	---	170	---	100	---	---
	3/16/2005	---	---	21	---	<10	---	---
	6/22/2006	---	---	70	---	<20	---	---
	9/21/2006	---	---	1,600	---	2,300	---	---
	12/18/2006	---	---	130	---	180	---	---
	3/22/2007	---	---	360	---	170	---	---
	6/29/2007	---	---	3,100	---	2,200	---	---
	9/28/2007	<2.5	<2.5	1,000	<2.5	5,300	<2.5	<2.5
	12/20/2007	<5.0	<5.0	1,200	<5.0	15,000	<5.0	<5.0
	3/27/2008	<1.0	<1.0	590	<1.0	4,900	<1.0	<1.0
	6/6/2008	<10	<10	1,000	<10	5,700	<10	<10
	8/14/2008	<10	<10	450	<10	10,000	<10	<10
12/30/2008	<1.0	<1.0	84	<1.0	7,700	<1.0	<1.0	
3/6/2009	<10	<10	340	<10	5,400	<10	<10	
6/12/2009	<10	<10	170	<10	5,000	<10	<10	
12/1/2009	<10	<10	42	<10	5,600	<10	<10	
9/20/2010	<5.0	<5.0	51	<5.0	8,100	<5.0	<5.0	

**Table 4b**  
**Monitoring Well Data**  
**Oxygenates and Lead Scavengers**  
 Stop N Save Inc.  
 20570 Stanton Avenue  
 Castro Valley, California

Well ID	Date Measured	DIPE (ug/L)	ETBE (ug/L)	MTBE (ug/L)	TAME (ug/L)	TBA (ug/L)	1,2-DCA (ug/L)	EDB (ug/L)
STMW-2 99.04	10/4/2000	---	---	66	---	<20	---	---
	1/4/2001	---	---	120	---	<20	---	---
	3/16/2004	---	---	1,700	---	<200	---	---
	7/5/2004	---	---	1,800	---	<200	---	---
	12/28/2004	---	---	1,400	---	<250	---	---
	3/24/2005	---	---	930	---	180	---	---
	7/20/2005	---	---	43	---	920	---	---
	9/15/2005	---	---	88	---	130	---	---
	12/12/2005	---	---	23	---	22	---	---
	3/16/2005	---	---	34	---	150	---	---
	6/22/2006	---	---	12	---	200	---	---
	9/21/2006	---	---	16	---	41	---	---
	12/18/2006	---	---	15	---	71	---	---
	3/22/2007	---	---	15	---	71	---	---
	6/29/2007	---	---	14	---	<10	---	---
	9/28/2007	<0.5	<0.5	14	<0.5	<5.0	<0.5	<0.5
	12/20/2007	<0.5	<0.5	6.2	<0.5	54	<0.5	<0.5
	3/27/2008	<1.0	<1.0	14	<1.0	<12	<1.0	<1.0
	6/6/2008	<1.0	<1.0	5.6	<1.0	<12	<1.0	<1.0
	8/14/2008	<0.5	<0.5	2.0	<0.5	<5.0	<0.5	<0.5
	12/30/2008	<0.5	<0.5	8.6	<0.5	<5.0	<0.5	<0.5
3/6/2009	<1.0	<1.0	3.0	<1.0	<12	<1.0	<1.0	
6/12/2009	<1.0	<1.0	3.8	<1.0	<12	<1.0	<1.0	
12/1/2009	<1.0	<1.0	5.4	<1.0	<12	<1.0	<1.0	
9/20/2010	<0.5	<0.5	4.2	<0.5	<5.0	<0.5	<0.5	

**Table 4b**  
**Monitoring Well Data**  
**Oxygenates and Lead Scavengers**  
 Stop N Save Inc.  
 20570 Stanton Avenue  
 Castro Valley, California

Well ID	Date Measured	DIPE (ug/L)	ETBE (ug/L)	MTBE (ug/L)	TAME (ug/L)	TBA (ug/L)	1,2-DCA (ug/L)	EDB (ug/L)
STMW-3 99.60	10/4/2000	---	---	<5.0	---	<20	---	---
	1/4/2001	---	---	<5.0	---	<20	---	---
	3/16/2004	---	---	2.8	---	<10	---	---
	7/5/2004	---	---	2.5	---	<10	---	---
	12/28/2004	---	---	2.0	---	<10	---	---
	3/24/2005	---	---	1.4	---	<10	---	---
	7/20/2005	---	---	1.5	---	<10	---	---
	9/15/2005	---	---	1.2	---	<10	---	---
	12/12/2005	---	---	<1.0	---	<10	---	---
	3/16/2005	---	---	<1.0	---	<10	---	---
	6/22/2006	---	---	<1.0	---	<10	---	---
	9/21/2006	---	---	<1.0	---	<10	---	---
	12/18/2006	---	---	<1.0	---	<10	---	---
	3/22/2007	---	---	<1.0	---	<10	---	---
	6/29/2007	---	---	<1.0	---	<10	---	---
	9/28/2007	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5	<0.5
	12/20/2007	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5	<0.5
	3/27/2008	<1.0	<1.0	<1.0	<1.0	<12	<1.0	<1.0
	6/6/2008	<1.0	<1.0	<1.0	<1.0	<12	<1.0	<1.0
	8/14/2008	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5	<0.5
	12/30/2008	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5	<0.5
3/6/2009	<1.0	<1.0	<1.0	<1.0	<12	<1.0	<1.0	
6/12/2009	<1.0	<1.0	<1.0	<1.0	<12	<1.0	<1.0	
12/1/2009	<1.0	<1.0	<1.0	<1.0	<12	<1.0	<1.0	
9/20/2010	<0.5	<0.5	0.6	<0.5	<5.0	<0.5	<0.5	

**Notes:**

ug/L - denotes micrograms per liter

< - denotes less than the detection limit

DCA - denotes dichloroethane

EDB - denotes ethylene dibromide

MTBE - denotes methyl tertiary butyl ether

DIPE - denotes di-isopropyl ether

ETBE - denotes ethyl tertiary butyl ether

TAME - denotes tertiary amyl ether

TBA - denotes tertiary butyl alcohol

# **ENVIRONMENTAL COMPLIANCE GROUP, LLC**

## **STANDARD OPERATING AND SAFETY AND LOSS CONTROL PROCEDURES**

### **1.0 SOIL BORING/DRILLING SAMPLE COLLECTION AND CLASSIFICATION PROCEDURES**

ECG will prepare a site-specific Health and Safety Plan as required by the Occupational Health and Safety Administration (OSHA) Standard "Hazardous Waste Operations and Emergency Response" guidelines (29 CFR.1910.120). The document will be reviewed and signed by all ECG personnel and subcontractors prior to performing work at the site.

Prior to conducting and subsurface work at the site, Underground Services Alert (USA) will be contacted to delineate subsurface utilities near the site with surface markings. In addition, the first five feet of every location will be hand cleared to a diameter larger than the diameter of the auger or probe as a further precaution against damaging underground utilities. Sites that are currently operated as gas stations will be cleared with a private utility locator prior to drilling activities.

Soil samples to be submitted for chemical analyses are collected into brass or stainless steel tubes. The tubes are placed in an 18-inch long split-barrel sampler. The split-barrel sampler is driven its entire length hydraulically or by 140-pound drop hammer. The split-barrel sampler is removed from the borehole and the tubes are removed. When the tubes are removed from the split-barrel sampler, the tubes are trimmed and capped with Teflon sheets and plastic caps or the soil is removed from the tubes and placed in other appropriate sample containers. The samples are sealed, labeled, and placed in ice under chain-of-custody to be delivered to the analytical laboratory. All samples will be kept refrigerated until their delivery to the analytical laboratory.

One soil sample collected from each split-barrel sampler is field screened with a photoionization detector (PID), flame ionization detector (FID), or other equivalent field screening meter. The soil sample is sealed in a plastic bag or other appropriate container to allow volatilization of volatile organic compounds (VOCs). The field meter is used to measure the VOC concentration in the container's headspace and is recorded on the boring logs at the appropriate depth interval.

Other soil samples collected from each split-barrel sampler are inspected and documented to identify the soil stratigraphy beneath the site and classify the soil types according to the United Soil Classification System. The soil types are recorded on boring logs with the appropriate depth interval and any pertinent field observations. Drilling and sampling equipment are steam cleaned or washed in solution and rinsed in deionized water prior to use, between sample collections and boreholes and after use.

### **2.0 SOIL EXCAVATION SAMPLE COLLECTION AND CLASSIFICATION PROCEDURES**

Soil samples to be submitted for chemical analyses are collected into brass or stainless steel tubes or other appropriate containers. The samples are sealed, labeled, and placed in ice under chain-of-custody (COC) to be delivered to the analytical laboratory. All samples will be kept refrigerated until their delivery to the analytical laboratory.

Select soil samples are placed into a sealed plastic bag or other appropriate container and field screened using a PID, FID, or equivalent meter. Other soil samples collected are inspected and documented to identify the soil stratigraphy beneath the site and classify the soil types according to the United Soil Classification System. The soil types are recorded field notes with the appropriate depth interval and any pertinent field observations. Sampling equipment are steam cleaned or washed in solution and rinsed in deionized water prior to use, between sample collections, and after use. Soil cuttings and rinsewater are temporarily stored onsite pending laboratory analytical results and proper transport and disposal.

### **3.0 SAMPLE IDENTIFICATION AND COC PROCEDURES**

Sample containers are labeled with job number, job name, sample collection time and date, sample collection point, and analyses requested. Sampling method, sampler's name, and any pertinent field observations are recorded on boring logs or excavation field notes. COC forms track the possession of the sample from the time of its collection until the time of its delivery to the analytical laboratory. During sample transfers, the person with custody of the samples will relinquish them to the next person by signing the COC and documenting the time and date. The analytical laboratory Quality Control/Quality Assurance (QA/QC) staff will document the receipt of the samples and confirm the analyses requested on the COC matches the sample containers and preservative used, if any. The analytical laboratory will assign unique log numbers for identification during the analyses and reporting. The log numbers will be added to the COC form and maintained in a log book maintained by the analytical laboratory.



#### **4.0 ANALYTICAL LABORATORY QA/QC PROCEDURES**

The analytical laboratory analyzes spikes, replicates, blanks, spiked blanks, and certified reference materials to verify analytical methods and results. The analytical laboratory QA/QC also includes:

- Routine instrument calibration,
- Complying with state and federal laboratory accreditation and certification programs,
- Participation in U.S. EPA performance evaluation studies,
- Standard operating procedures, and
- Multiple review of raw data and client reports

#### **5.0 HOLLOW STEM AUGER WELL INSTALLATION**

Boreholes for wells are often drilled with a truck-mounted hollow stem auger drill rig. The borehole diameter is at least 4 inches wider than the outside diameter of the well casing. Soil samples are collected and screened as described in **Section 1.0** and decontamination procedures are also the same as described in **Section 1.0**.

Wells are cased with both blank and factory-perforated Schedule 40 PVC. The factory perforations are typically 0.020 inches wide by 1.5 inch long slots, with 42 slots per foot. A PVC cap is typically installed at the bottom of the casing with stainless steel screws. No solvents or cements are used in the construction of the wells. Well stabilizers or centering devices may be installed around the casing to ensure the filter material and grout in the annulus are evenly distributed. The casing is purchased pre-cleaned or steam cleaned and washed prior to installation in the borehole.

The casing is set inside the augers and sand, gravel, or other filter material is poured into the annulus to fill the borehole from the bottom to approximately 1-2 feet above the perforations. A two foot thick bentonite plug is placed above the filter material to prevent the grout from filling the filter pack. Neat cement or sand-cement grout is poured into the annulus from the top of the bentonite plug to the surface. For wells located in parking lots or driveways, or roads, a traffic rated well box is installed around the well. For wells located in landscaped areas or fields, a stovepipe well protection device is installed around the well. Soil cuttings and rinsewater are temporarily stored onsite pending laboratory analytical results and proper transport and disposal.

#### **6.0 MUD AND AIR ROTARY WELL INSTALLATION**

Boreholes for wells can also be drilled with a truck-mounted air rotary or mud rotary drill rig. Air or mud can be used as a drill fluid to fill the borehole and prevent the borehole from caving in and remove drill cuttings. Mud or air can be chosen depending on the subsurface conditions. Soil samples are collected and screened as described in **Section 1.0** and decontamination procedures are also the same as described in **Section 1.0**.

Wells are cased with both blank and factory-perforated Schedule 40 PVC. The factory perforations are typically 0.020 inches wide by 1.5 inch long slots, with 42 slots per foot. A PVC cap is typically installed at the bottom of the casing with stainless steel screws. No solvents or cements are used in the construction of the wells. Well stabilizers or centering devices may be installed around the casing to ensure the filter material and grout in the annulus are evenly distributed. The casing is purchased pre-cleaned or steam cleaned and washed prior to installation in the borehole. Soil cuttings and drilling fluids are temporarily stored onsite pending laboratory analytical results and proper transport and disposal.

The casing is set inside the augers and sand, gravel, or other filter material is poured into the annulus to fill the borehole from the bottom to approximately 1-2 feet above the perforations. A two foot thick bentonite plug is placed above the filter material to prevent the grout from filling the filter pack. Neat cement or sand-cement grout is poured into the annulus from the top of the bentonite plug to the surface. For wells located in parking lots or driveways, or roads, a traffic rated well box is installed around the well. For wells located in landscaped areas or fields, a stovepipe well protection device is installed around the well. Soil cuttings and rinsewater are temporarily stored onsite pending laboratory analytical results and proper transport and disposal.

#### **7.0 WELL DEVELOPMENT**

After well installation, the wells are developed to remove residual drilling materials from the annulus and to improve well production by fine materials from the filter pack. Possible well development methods include pumping, surging, balling, jetting, flushing, and air lifting. Development water is temporarily stored onsite pending laboratory analytical results and proper transport and disposal. Development equipment are steam cleaned or washed in solution and rinsed in deionized water prior to use, between sample collections and after use. After well development the wells are typically allowed to stabilize for at least 24 hours prior to purging and sampling.

## 8.0 LIQUID LEVEL MEASUREMENTS

Liquid level measurements are made with a water level meter and/or interface probe and disposable bailers. The probe tip attached to a measuring tape is lowered into the well and into the groundwater when a beeping tone indicates the probe is in the groundwater. The probe and measuring tape (graduated to hundredths of a foot) are slowly raised until the beeping stops and the depth to water measurement is recorded. If the meter makes a steady tone, this indicates the presence of floating liquid hydrocarbons (FLH) and the probe and measuring tape are raised until the steady tone stops and the depth to the FLH is measured. Once depth to water and depth to FLH (if present) has been recorded, the probe and measuring tape are lowered to the bottom of the well where the total depth of the well is measured. The depth to water, depth to FLH, and depth to bottom are measured again to confirm the results.

If FLH is encountered in the well, a disposable bailer is lowered into the well and brought back to the surface to confirm the thickness/presence of FLH. To minimize potential for cross contamination between wells, all measurements are done from cleanest to dirtiest well. Prior to beginning liquid level measurements, in between measurements in all wells, and at the completion of liquid level measurements, the water level probe and measuring tape is cleaned with solution (Alconox, Simple Green, or equivalent) and rinsed with deionized water.

## 9.0 WELL PURGING AND SAMPLING

Each well is typically purged of at least three well casing volumes of groundwater prior to collecting a groundwater sample. Purging can continue beyond three well casing volumes if field parameters including pH, temperature, electrical conductivity are not stabilizing during the purging process. If the well is purged dry before the three well casing volumes has been purged, the well is typically allowed to recharge to 80 percent of its initial water level before a groundwater sample is collected.

Purging equipment can include submersible pumps, PVC purging bailers, disposable bailers, air lift pumps, or pneumatic pumps. Prior to beginning well purging, in between each well purging, and at the completion of purging activities, all non-dedicated purging equipment is cleaned with solution (Alconox, Simple Green, or equivalent) and rinsed with deionized water.

Once the well has been purged, it will be sampled with a disposable bailer, PVC bailer, stainless steel bailer, or through a low flow groundwater pump. The groundwater sample is transferred from the bottom of the bailer to reduce volatilization to the appropriate sample container. The sample containers are specified by the analytical laboratory depending on the analyses requested. Sample containers typically include volatile organic compound (VOA) vials with septa of Teflon like materials. The groundwater sample is collected into the VOAs to minimize air bubbles and once the cap has been placed on the VOA, the VOA is tipped upside down to see if air bubbles are present in the VOA. Typically a duplicate VOA is collected from each well to be analyzed by the analytical laboratory, if warranted, to verify results.

Sample containers are labeled as described in **Section 3.0** and placed immediately in an ice chest and kept refrigerated until its delivery to the analytical laboratory. A trip blank may also be prepared by the analytical laboratory to travel with the ice chest during transport to the laboratory. Field blanks from equipment that has been decontaminated may be collected in between use in different wells to verify the decontamination procedure is effective. To minimize potential for cross contamination between wells, all wells are purged and sampled from cleanest to dirtiest well.

## 10.0 TEDLAR BAG SOIL VAPOR SAMPLING

Sampling equipment to collect Tedlar bag soil vapor samples includes an air pump, a Tedlar bag which can range in size from 1 to 10 liters, and 3/16-inch diameter polyethylene tubing. The air pump should be equipped with 3/16-inch hose barbs for the polyethylene tubing to attach to. The Tedlar bag must be equipped with a valve for filling and sealing the bag.

When soil vapor samples are collected from remediation equipment, the sample collection port on the remediation equipment is typically fitted with a 3/16-inch hose barb. Prior to collecting soil vapor samples from remediation equipment, air flow, temperature, and pressure or vacuum of the sampling point/remediation equipment are recorded. One end of the polyethylene tubing is connected to the sample collection port and one end is connected to the influent of the air pump, creating an air tight seal. The air pump is turned on and soil vapor from the sample collection port is pumped through the air pump for at least one minute. The air pump is turned off and one end of another piece of polyethylene tubing is connected to the effluent of the air pump and one end is connected to the valve on the Tedlar bag. The valve is opened and the air pump is turned on filling the Tedlar bag with the soil vapor sample until the bag has reached 75% capacity, when the valve on the Tedlar bag is closed and the air pump is turned off.

Tedlar bags are labeled as described in **Section 3.0** and placed immediately in an empty ice chest and kept dry and unrefrigerated until its delivery to the analytical laboratory. After each soil vapor sample collection, the air pump is turned on for five minutes to allow ambient air to clear the air pump and polyethylene tubing.

#### **11.0 SUMMA CANISTER SOIL VAPOR SAMPLING**

Sampling equipment to collect Summa canister soil vapor samples includes a sterilized Summa stainless steel canister under vacuum, ¼-inch diameter polyethylene tubing, and a laboratory calibrated flow meter, if required.

When soil vapor samples are collected from remediation equipment, the sample collection port on the remediation equipment is typically fitted with brass connection with silicone septa that has been threaded into a tapped hole on the piping network. Prior to collecting soil vapor samples from remediation equipment, air flow, temperature, and pressure or vacuum of the sampling point/remediation equipment are recorded. One end of the polyethylene tubing is connected to the brass sample collection port and one end is connected to the canister valve or flow meter, creating an air tight seal. Prior to collecting the soil vapor sample, the valve on the Summa canister is opened to verify the Summa canister has the required vacuum which is recorded. The sample valve or flow meter is opened and the soil vapor sample is collected into the Summa canister and the sample valve is closed and the final vacuum reading (typically greater than 5 inches per square inch) on the Summa canister is recorded.

Summa canisters are labeled as described in **Section 3.0** and placed immediately in an empty ice chest and kept dry and unrefrigerated until its delivery to the analytical laboratory.

#### **12.0 SYRINGE SOIL VAPOR SAMPLING**

Sampling equipment to collect syringe soil vapor samples includes a sterilized, 100 cubic centimeter, gas tight syringe and silicone septa.

When soil vapor samples are collected from remediation equipment, the sample collection port on the remediation equipment is typically fitted with brass connection with silicone septa that has been threaded into a tapped hole on the piping network. Prior to collecting soil vapor samples from remediation equipment, air flow, temperature, and pressure or vacuum of the sampling point/remediation equipment are recorded. The syringe is inserted into the silicone septa and the plunger is purged or pumped at least three times. The sample is collected the fourth time the syringe plunger is extracted and the syringe is removed from the sample collection port and the needle on the syringe is capped with a rubber stopper.

Syringes are labeled as described in **Section 3.0** and placed immediately in an empty ice chest and kept dry and unrefrigerated until its delivery to the analytical laboratory.

#### **13.0 TEDLAR BAG SOIL VAPOR SURVEY, TEMPORARY SAMPLING POINTS**

Sampling equipment to collect Tedlar bag soil vapor survey samples includes an air pump, a Tedlar bag which can range in size from 1 to 10 liters, 3/16-inch diameter polyethylene tubing, and possibly a soil vapor probe. The air pump should be equipped with 3/16-inch hose barbs for the polyethylene tubing to attach to. The Tedlar bag must be equipped with a valve for filling and sealing the bag.

A temporary borehole is advanced using either a slam bar or a direct push drill rig. In the case of the slam bar, once the borehole has been created, a temporary soil vapor probe is inserted into the borehole and advanced with a slide hammer or other physical force two additional feet. A bentonite seal is then placed in the borehole above the soil vapor probe to create an air tight seal and prevent ambient air from entering the sample collection space. In the case of the direct push drill rig, the sampling rod is advanced to the desired depth with a 6-inch retractable vapor screen at the tip. The sample screen on the 6-inch vapor screen is removed and a bentonite seal is then placed in the borehole above the soil vapor probe to create an air tight seal and prevent ambient air from entering the sample collection space.

Once the bentonite seal has set, at least one hour, the soil vapor survey samples are collected into Tedlar bags as described in **Section 10.0**. Tedlar bags are labeled as described in **Section 3.0** and placed immediately in an empty ice chest and kept dry and unrefrigerated until its delivery to the analytical laboratory. After each soil vapor sample collection, the air pump is turned on for five minutes to allow ambient air to clear the air pump and polyethylene tubing.

#### **13.0 TEDLAR BAG SOIL VAPOR SURVEY, TEMPORARY AND REPEATABLE SAMPLING POINTS**

Sampling equipment to collect Tedlar bag soil vapor survey samples includes an air pump, a Tedlar bag which can range in size from 1 to 10 liters, 3/16-inch diameter polyethylene tubing, and possibly a soil vapor probe. The air pump should be equipped with 3/16-inch hose barbs for the polyethylene tubing to attach to. The Tedlar bag must be equipped with a valve for filling and sealing the bag.

### 13.1 TEMPORARY SAMPLING POINTS

A temporary borehole is advanced using either a slam bar or a direct push drill rig. In the case of the slam bar, once the borehole has been created, a temporary soil vapor probe is inserted into the borehole and advanced with a slide hammer or other physical force two additional feet. A bentonite seal is then placed in the borehole above the soil vapor probe to create an air tight seal and prevent ambient air from entering the sample collection space. In the case of the direct push drill rig, the sampling rod is advanced to the desired depth with a 6-inch retractable vapor screen at the tip. The sample screen on the 6-inch vapor screen is removed and a bentonite seal is then placed in the borehole above the soil vapor probe to create an air tight seal and prevent ambient air from entering the sample collection space.

Once the bentonite seal has set, at least one hour, the soil vapor survey samples are collected into Tedlar bags as described in **Section 10.0**. Tedlar bags are labeled as described in **Section 3.0** and placed immediately in an empty ice chest and kept dry and unrefrigerated until its delivery to the analytical laboratory. After each soil vapor sample collection, the air pump is turned on for five minutes to allow ambient air to clear the air pump and polyethylene tubing.

### 13.2 REPEATABLE SAMPLING POINTS

A borehole is advanced using either a hand auger or a drill rig. A 6-inch slotted probe with caps on both ends is placed in the borehole. A Swagelok fitting is attached to one end cap and 3/16-inch diameter Nylon tubing is attached to the Swagelok fitting. A one foot sand pack is placed around the probe and the remainder of the borehole is sealed with a layer of dry bentonite powder, followed by a layer of bentonite chips, and an additional layer of dry bentonite powder. A well box is placed on the surface of the repeatable sampling point and the excess Nylon tubing is placed inside the well box.

Soil vapor survey samples will be collected at least one week after probe installation. In addition, soil vapor survey samples will only be collected after five consecutive precipitation free days and after any onsite irrigation has been suspended.

The soil vapor survey samples are collected into Tedlar bags as described in **Section 10.0** or Summa canisters as described in **Section 11.0**. Tedlar bags or Summa canisters are labeled as described in **Section 3.0** and placed immediately in an empty ice chest and kept dry and unrefrigerated until its delivery to the analytical laboratory. After each soil vapor sample collection, the air pump is turned on for five minutes to allow ambient air to clear the air pump and polyethylene tubing.

# argon laboratories

24 September 2010

Drew Van Allen  
Environmental Compliance Group, LLC  
270 Vintage Drive  
Turlock, CA 95382

RE: Stop N Save Inc. Project Data

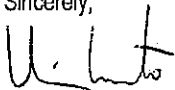
Enclosed are the results for sample(s) received on 09/23/10 10:10 by Argon Laboratories. The sample(s) were analyzed according to instructions in accompanying chain-of-custody. Results are summarized on the following pages.

Please see quality control report for a summary of QC data pertaining to this project.

The sample(s) will be stored for 30 days after completion of analysis, then disposed of in accordance with State and Federal regulations. Sample(s) may be archived by prior arrangement.

Thank you for the opportunity to service the needs of your company.

Sincerely,



Hiram Cueto  
Lab Manager



# Argon Laboratories Sample Receipt Checklist

Client Name: ECG Date & Time Received: 09/23/10 10:10

Project Name: Stop N Save Inc Client Project Number: SNS.18281

Received By: AH Matrix: Water  Soil  Sludge

Sample Carrier: Client  Laboratory  Fed Ex  UPS  Other

Argon Labs Project Number: K009048

Shipper Container in good condition? N/A  Yes  No  Samples received in proper containers? Yes  No

Samples received intact? Yes  No  Samples received under refrigeration? Yes  No  Sufficient sample volume for requested tests? Yes  No

Chain of custody present? Yes  No  Samples received within holding time? Yes  No

Chain of Custody signed by all parties? Yes  No  Do samples contain proper preservative?  
N/A  Yes  No

Chain of Custody matches all sample labels? Yes  No  Do VOA vials contain zero headspace?  
(None submitted ) Yes  No

**ANY "No" RESPONSE MUST BE DETAILED IN THE COMMENTS SECTION BELOW**

Date Client Contacted: \_\_\_\_\_ Person Contacted: \_\_\_\_\_

Contacted By: \_\_\_\_\_ Subject: \_\_\_\_\_

*Comments:*

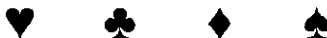
*Action Taken:*

**ADDITIONAL TEST(S) REQUEST / OTHER**

Contacted By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

Call Received By: \_\_\_\_\_

*Comments:*



Environmental Compliance Group, LLC 270 Vintage Drive Turlock, CA 95382	Project Number: SNS.18281 Project Name: Stop N Save Inc. Project Manager: Drew Van Allen	Work Order No.: K009048
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**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	K009048-01	Water	09/20/10 13:30	09/23/10 10:10
MW-2	K009048-02	Water	09/20/10 13:00	09/23/10 10:10
MW-3	K009048-03	Water	09/20/10 12:30	09/23/10 10:10

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Approved By  
Argon Laboratories, Inc. California D.O.H.S. Cert. #2359



Environmental Compliance Group, LLC 270 Vintage Drive Turlock, CA 95382	Project Number: SNS.18281 Project Name: Stop N Save Inc. Project Manager: Drew Van Allen	Work Order No.: K009048
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**TPH-gas & Volatile Organic Compounds by GC/MS**

Analyte	Result	Reporting Limit	Units	Dilution	Analyzed	Method	Notes
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**MW-1 (K009048-01) Water Sampled: 20-Sep-10 13:30 Received: 23-Sep-10 10:10**

Total Petroleum Hydrocarbons @	ND	500	ug/L	10	23-Sep-10	EPA 8260B	
Gasoline							
Benzene	ND	5.0	"	"	"	"	
Toluene	ND	5.0	"	"	"	"	
Xylenes, total	ND	10	"	"	"	"	
Ethyl Benzene	ND	5.0	"	"	"	"	
<b>t-Butanol</b>	<b>8100</b>	<b>50</b>	"	"	"	"	
<b>Methyl tert-Butyl Ether</b>	<b>51</b>	<b>5.0</b>	"	"	"	"	
Di-Isopropyl Ether	ND	5.0	"	"	"	"	
Ethyl tert-Butyl Ether	ND	5.0	"	"	"	"	
tert-Amyl Methyl Ether	ND	5.0	"	"	"	"	
1,2-Dichloroethane	ND	5.0	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	5.0	"	"	"	"	

Surr. Rec.: 106 % " "

**MW-2 (K009048-02) Water Sampled: 20-Sep-10 13:00 Received: 23-Sep-10 10:10**

Total Petroleum Hydrocarbons @	ND	50	ug/L	1	23-Sep-10	EPA 8260B	
Gasoline							
Benzene	ND	0.5	"	"	"	"	
Toluene	ND	0.5	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	
Ethyl Benzene	ND	0.5	"	"	"	"	
t-Butanol	ND	5.0	"	"	"	"	
<b>Methyl tert-Butyl Ether</b>	<b>4.2</b>	<b>0.5</b>	"	"	"	"	
Di-Isopropyl Ether	ND	0.5	"	"	"	"	
Ethyl tert-Butyl Ether	ND	0.5	"	"	"	"	
tert-Amyl Methyl Ether	ND	0.5	"	"	"	"	
1,2-Dichloroethane	ND	0.5	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.5	"	"	"	"	

Surr. Rec.: 104 % " "

Approved By  
Argon Laboratories, Inc. California D.O.H.S. Cert. #2359

Environmental Compliance Group, LLC 270 Vintage Drive Turlock, CA 95382	Project Number: SNS.18281 Project Name: Stop N Save Inc. Project Manager: Drew Van Allen	Work Order No.: K009048
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**TPH-gas & Volatile Organic Compounds by GC/MS**

Analyte	Result	Reporting Limit	Units	Dilution	Analyzed	Method	Notes
<b>MW-3 (K009048-03) Water Sampled: 20-Sep-10 12:30 Received: 23-Sep-10 10:10</b>							
Total Petroleum Hydrocarbons @	ND	50	ug/L	1	23-Sep-10	EPA 8260B	
Gasoline							
Benzene	ND	0.5	"	"	"	"	
Toluene	ND	0.5	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	
Ethyl Benzene	ND	0.5	"	"	"	"	
t-Butanol	ND	5.0	"	"	"	"	
<b>Methyl tert-Butyl Ether</b>	<b>0.6</b>	<b>0.5</b>	"	"	"	"	
Di-Isopropyl Ether	ND	0.5	"	"	"	"	
Ethyl tert-Butyl Ether	ND	0.5	"	"	"	"	
tert-Amyl Methyl Ether	ND	0.5	"	"	"	"	
1,2-Dichloroethane	ND	0.5	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.5	"	"	"	"	
Surr. Rec.:		102 %			"	"	

Approved By  
Argon Laboratories, Inc. California D.O.H.S. Cert. #2359

Environmental Compliance Group, LLC 270 Vintage Drive Turlock, CA 95382	Project Number: SNS.18281 Project Name: Stop N Save Inc. Project Manager: Drew Van Allen	Work Order No.: K009048
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**TPH-gas & Volatile Organic Compounds by GC/MS - Quality Control**

**Argon Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Notes
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**Batch K001426 - EPA 5030B**

**Blank (K001426-BLK1)**

Prepared & Analyzed: 09/23/10

<i>Surrogate: Fluorobenzene</i>	51.0		ug/L	50		102	70-130			
Total Petroleum Hydrocarbons @ Gasoline	ND	50	"							
Benzene	ND	0.5	"							
Toluene	ND	0.5	"							
Xylenes, total	ND	1.0	"							
Ethyl Benzene	ND	0.5	"							
t-Butanol	ND	5.0	"							
Methyl tert-Butyl Ether	ND	0.5	"							
Di-Isopropyl Ether	ND	0.5	"							
Ethyl tert-Butyl Ether	ND	0.5	"							
tert-Amyl Methyl Ether	ND	0.5	"							
1,2-Dichloroethane	ND	0.5	"							
1,2-Dibromoethane (EDB)	ND	0.5	"							

**LCS (K001426-BS1)**

Prepared & Analyzed: 09/23/10

Methyl tert-Butyl Ether	26.8		ug/L	25		107	80-120			
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**LCS Dup (K001426-BSD1)**

Prepared & Analyzed: 09/23/10

Methyl tert-Butyl Ether	25.9		ug/L	25		104	80-120	3	20	
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**Matrix Spike (K001426-MS1)**

Source: K009041-02

Prepared & Analyzed: 09/23/10

Total Petroleum Hydrocarbons @ Gasoline	1050		ug/L	1000	ND	105	70-130			
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**Matrix Spike Dup (K001426-MSD1)**

Source: K009041-02

Prepared & Analyzed: 09/23/10

Total Petroleum Hydrocarbons @ Gasoline	983		ug/L	1000	ND	98	70-130	6	20	
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Argon Laboratories, Inc. California D.O.H.S. Cert. #2359

Environmental Compliance Group, LLC  
270 Vintage Drive  
Turlock, CA 95382

Project Number: SNS.18281  
Project Name: Stop N Save Inc.  
Project Manager: Drew Van Allen

Work Order No.:  
K009048

### Notes and Definitions

DET Analyte DETECTED  
ND Analyte NOT DETECTED at or above the reporting limit  
NR Not Reported  
dry Sample results reported on a dry weight basis  
RPD Relative Percent Difference

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Approved By

Argon Laboratories, Inc. California D.O.H.S. Cert. #2359



# PURGE/DEVELOPMENT FORM

**PROJECT NAME:** Stop N Save Inc. **PROJECT NUMBER:** SNS.18281  
**PROJECT MANAGER:** dva **TASK NUMBER:** \_\_\_\_\_  
**SITE ADDRESS:** 20570 Stanton Avenue, Castro Valley, CA

**WELL ID:** STMW-1 **TYPE OF WELL:** Monitoring

**WATER COLUMN DATA:** (feet)  
 Well Total Depth: 22.10  
 Depth to Water: 8.44  
 Water Column Length: 13.66

**WELL DIAMETER:**  
 2-inch:  \_\_\_\_\_  
 4-inch: \_\_\_\_\_  
 6-inch: \_\_\_\_\_

**PURGE VOLUME CALCULATION:**

Water Column Length x Multiplier x No. Volumes = Purge Volume

$$\frac{13.66}{\text{Water Column Length}} \times \frac{0.17}{\text{Multiplier}} \times \frac{3}{\text{No. Volumes}} = \frac{7.0}{\text{Purge Volume}}$$

**MULTIPLIER DATA:**

Multiplier for Schedule 40 PVC; Gallons/Linear Foot Based on Casing Diameter:

2-inch: 0.17  
 4-inch: 0.65  
 6-inch: 1.5

**PURGE METHOD:**

Disposable Bailer \_\_\_\_\_  
 PVC Bailer \_\_\_\_\_  
 Submersible Pump \_\_\_\_\_  
 Other \_\_\_\_\_

**SAMPLE METHOD:**

Disposable Bailer  \_\_\_\_\_  
 Pump: \_\_\_\_\_  
 Other: \_\_\_\_\_

TIME	VOLUME PURGED (gal)	pH	TEMP. (°C)	COND. (uS/cm)	DO (mg/l)	ORP (mV)	COMMENTS
1316	2.5	6.88	20.3	1586			
1320	5.0	6.83	19.8	1644			
1324	7.0	6.87	19.5	1720			
1328							sampled

**FIELD TECHNICIAN:** \_\_\_\_\_ **DATE:** DVA  
9/20/18

# PURGE/DEVELOPMENT FORM

**PROJECT NAME:** Stop N Save Inc.      **PROJECT NUMBER:** SNS.18281  
**PROJECT MANAGER:** dva      **TASK NUMBER:** \_\_\_\_\_  
**SITE ADDRESS:** 20570 Stanton Avenue, Castro Valley, CA

**WELL ID:** STMW-2      **TYPE OF WELL:** Monitoring

**WATER COLUMN DATA:** (feet)  
 Well Total Depth: 21.63  
 Depth to Water: 7.58  
 Water Column Length: 14.05

**WELL DIAMETER:**  
 2-inch:  \_\_\_\_\_  
 4-inch: \_\_\_\_\_  
 6-inch: \_\_\_\_\_

**PURGE VOLUME CALCULATION:**  
 Water Column Length x Multiplier x No. Volumes = Purge Volume  
14.05 x 0.17 x 3 = 7.2  
 Water Column Length      Multiplier      No. Volumes      Purge Volume

**MULTIPLIER DATA:**  
 Multiplier for Schedule 40 PVC; Gallons/Linear Foot Based on Casing Diameter:  
 2-inch: 0.17  
 4-inch: 0.65  
 6-inch: 1.5

**PURGE METHOD:**      **SAMPLE METHOD:**  
 Disposable Bailer  \_\_\_\_\_      Disposable Bailer  \_\_\_\_\_  
 PVC Bailer \_\_\_\_\_      Pump: \_\_\_\_\_  
 Submersible Pump \_\_\_\_\_      Other: \_\_\_\_\_  
 Other \_\_\_\_\_

TIME	VOLUME PURGED (gal)	pH	TEMP. (°C)	COND. (uS/cm)	DO (mg/l)	ORP (mV)	COMMENTS
1249	2.5	7.27	21.7	1763			
1253	5.0	7.16	20.8	1956			
1258	7.5	7.19	20.5	2320			
1300							see y

**FIELD TECHNICIAN:** \_\_\_\_\_  
**DATE:** DVA  
9/20/12

# PURGE/DEVELOPMENT FORM

**PROJECT NAME:** Stop N Save Inc. **PROJECT NUMBER:** SNS.18281  
**PROJECT MANAGER:** dva **TASK NUMBER:** \_\_\_\_\_  
**SITE ADDRESS:** 20570 Stanton Avenue, Castro Valley, CA

**WELL ID:** STAW-3 **TYPE OF WELL:** Monitoring

**WATER COLUMN DATA:** (feet)  
 Well Total Depth: 21.58  
 Depth to Water: 7.14  
 Water Column Length: 14.44

**WELL DIAMETER:**  
 2-inch:  \_\_\_\_\_  
 4-inch: \_\_\_\_\_  
 6-inch: \_\_\_\_\_

**PURGE VOLUME CALCULATION:**  
 Water Column Length x Multiplier x No. Volumes = Purge Volume

$$\frac{14.44}{\text{Water Column Length}} \times \frac{0.17}{\text{Multiplier}} \times \frac{3}{\text{No. Volumes}} = \frac{7.4}{\text{Purge Volume}}$$

**MULTIPLIER DATA:**  
 Multiplier for Schedule 40 PVC; Gallons/Linear Foot Based on Casing Diameter:

2-inch: 0.17  
 4-inch: 0.65  
 6-inch: 1.5

**PURGE METHOD:** Disposable Bailer  \_\_\_\_\_  
 PVC Bailer \_\_\_\_\_  
 Submersible Pump \_\_\_\_\_  
 Other \_\_\_\_\_

**SAMPLE METHOD:** Disposable Bailer  \_\_\_\_\_  
 Pump: \_\_\_\_\_  
 Other: \_\_\_\_\_

TIME	VOLUME PURGED (gal)	pH	TEMP. (°C)	COND. (uS/cm)	DO (mg/l)	ORP (mV)	COMMENTS
1210	2.5	7.71	21.0	1932			
1214	5.0	7.29	20.9	2660			
1216	5.5	7.27	20.1	3410			
1230							DRY sample

**FIELD TECHNICIAN:** Dva  
**DATE:** 9/25/10