

District I\*  
1625 N. French Dr., Hobbs, NM 88240  
District II  
811 S. First St., Artesia, NM 88210  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico  
Energy Minerals and Natural  
Resources Department

Oil Conservation Division  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

Form C-141  
Revised August 24, 2018  
Submit to appropriate OCD District office

Incident ID	
District RP	
Facility ID	
Application ID	

## Release Notification

NMOCD

NOV 05 2018

### Responsible Party

DISTRICT III

Responsible Party: BP America Production Co.	OGRID: 778	Subsequent Report: SVE
Contact Name: Steve Moskal	Contact Telephone: (505) 330-9179	
Contact email: steven.moskal@bpx.com	Incident # (assigned by OCD)	
Contact mailing address: 380 Airport Road, Durango CO, 81303	NMF 1714348689	

### Location of Release Source

Latitude: 36.918572°

Longitude: -107.972167°

(NAD 83 in decimal degrees to 5 decimal places)

Site Name: Mudge A 002	Site Type: Natural Gas Production Well Pad
Date Release Discovered: April 25, 2017	API#: 30-045-10948

Unit Letter	Section	Township	Range	County
A	10	T31N	R11W	San Juan

Surface Owner: ☐ State ☒ Federal ☐ Tribal ☐ Private (Name: \_\_\_\_\_)

### Nature and Volume of Release

Material(s) Released (Select all that apply and attach calculations or specific justification for the volumes provided below)

<input type="checkbox"/> Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Produced Water	Volume Released (bbls):	Volume Recovered (bbls):
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input checked="" type="checkbox"/> Condensate	Volume Released (bbls): Unknown	Volume Recovered (bbls):
<input type="checkbox"/> Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
<input type="checkbox"/> Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

#### Cause of Release:

On February 12, 2018 BP proposed operation of a SVE system to complete site remediation of soil impacts using the previously installed SVE points. This plan was approved by NMOCD on February 16, 2018. After receiving an electric drop/meter from the City of Farmington, the SVE system was placed into initial operation on June 6, 2018. After initial individual testing on each of the SVE points, gas samples were collected on June 12, 2018 from both BH-2 and BH-3. Subsequent field emission testing on each of the SVE points has indicated that BH-2 appears to extract the greatest VOC's and this has remained the primary extraction point for the system. The attached report document site inspections, field observations, mass removal calculations and laboratory reports.

20

Incident ID	
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<div>Was this a major release as defined by 19.15.29.7(A) NMAC?</div> <div><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</div>	<div>If YES, for what reason(s) does the responsible party consider this a major release?</div>
<div>If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?</div>	

Initial Response

The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury

<div><input checked="" type="checkbox"/> The source of the release has been stopped.</div> <div><input checked="" type="checkbox"/> The impacted area has been secured to protect human health and the environment.</div> <div><input checked="" type="checkbox"/> Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.</div> <div><input checked="" type="checkbox"/> All free liquids and recoverable materials have been removed and managed appropriately.</div>	
<div>If all the actions described above have <u>not</u> been undertaken, explain why:</div> <div>The released water absorbed into the ground surface.</div>	
<div>Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.</div>	
<div>I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.</div> <div><div>Printed Name: _____</div><div>Title: _____</div><div>Signature: _____</div><div>Date: _____</div><div>email: _____</div><div>Telephone: _____</div></div>	
<div><b><u>OCD Only</u></b></div> <div>Received by: _____ Date: _____</div>	

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## Site Assessment/Characterization

*This information must be provided to the appropriate district office no later than 90 days after the release discovery date.*

What is the shallowest depth to groundwater beneath the area affected by the release?

304 (ft bgs)

Did this release impact groundwater or surface water?

☐ Yes ☒ No

Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?

☐ Yes ☒ No

Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?

☐ Yes ☒ No

Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?

☐ Yes ☒ No

Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?

☐ Yes ☒ No

Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?

☐ Yes ☒ No

Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?

☐ Yes ☒ No

Are the lateral extents of the release within 300 feet of a wetland?

☐ Yes ☒ No

Are the lateral extents of the release overlying a subsurface mine?

☐ Yes ☒ No

Are the lateral extents of the release overlying an unstable area such as karst geology?

☐ Yes ☒ No

Are the lateral extents of the release within a 100-year floodplain?

☐ Yes ☒ No

Did the release impact areas **not** on an exploration, development, production, or storage site?

☐ Yes ☒ No

Attach a comprehensive report (electronic submittals in .pdf format are preferred) demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined. Refer to 19.15.29.11 NMAC for specifics.

### **Characterization Report Checklist:** *Each of the following items must be included in the report.*

- ☐ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.
- ☐ Field data
- ☐ Data table of soil contaminant concentration data
- ☐ Depth to water determination
- ☐ Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release
- ☐ Boring or excavation logs
- ☐ Photographs including date and GIS information
- ☐ Topographic/Aerial maps
- ☐ Laboratory data including chain of custody

If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

Incident ID	
District RP	
Facility ID	
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Printed Name: \_\_\_\_\_ Title: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

email: \_\_\_\_\_ Telephone: \_\_\_\_\_

**OCD Only**

Received by: \_\_\_\_\_ Date: \_\_\_\_\_

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## Remediation Plan

**Remediation Plan Checklist:** *Each of the following items must be included in the plan.*

- ☐ Detailed description of proposed remediation technique
- ☐ Scaled sitemap with GPS coordinates showing delineation points
- ☐ Estimated volume of material to be remediated
- ☐ Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- ☐ Proposed schedule for remediation (note if remediation plan timeline is more than 90 days OCD approval is required)
- ☒ Continued Remediation operation and performance data

**Deferral Requests Only:** *Each of the following items must be confirmed as part of any request for deferral of remediation.*

- ☐ Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.
- ☐ Extents of contamination must be fully delineated.
- ☐ Contamination does not cause an imminent risk to human health, the environment, or groundwater.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: Steve Moskal Title: Environmental Coordinator

Signature:  Date: October 31, 2018

email: steven.moskal@bpx.com Telephone: 505-330-9179

**OCD Only**

Received by: Vanessa Fields Date: 11/05/2018

☒ Approved ☐ Approved with Attached Conditions of Approval ☐ Denied ☐ Deferral Approved

Signature:  Date: 11/14/2018

Incident ID	
District RP	
Facility ID	
Application ID	

## Closure

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (electronic submittals in .pdf format are preferred) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

**Closure Report Attachment Checklist:** *Each of the following items must be included in the closure report.*

- ☐ A scaled site and sampling diagram as described in 19.15.29.11 NMAC
- ☐ Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)
- ☐ Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)
- ☐ Description of remediation activities

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: \_\_\_\_\_ Title: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

email: \_\_\_\_\_ Telephone: \_\_\_\_\_

**OCD Only**

Received by: \_\_\_\_\_ Date: \_\_\_\_\_

Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.

Closure Approved by: \_\_\_\_\_ Date: \_\_\_\_\_

Printed Name: \_\_\_\_\_ Title: \_\_\_\_\_

# BP America

## Mudge A #2

(A) Sec 10 – T31N – R11W

API: 30-045-10948

Quarterly SVE Operation Summary Update

October 24, 2018

### Introduction

Hydrocarbon impacts to soil at the Mudge A #2 were discovered on April 25, 2017 during routine closure of a 95 barrel below grade tank. Initial remediation consisted of excavation of accessible impacts between May 18 – June 12, 2017. Complete impact removal was hindered by the presence of a third party natural gas gathering line and the presence of adequate habitat for the endangered Brack's cactus. The extent of residual soil impacts was investigated between August 14 – 16, 2017 using a hollow stem auger environmental drill rig to advance borings in the area of original excavation. Five (5) borings were drilled for the delineation and four (4) borings were completed as soil vapor extraction (SVE) points. Documentation for these prior activities is documented in the report "Remediation of Hydrocarbon Impacted Soils, Mudge A 2" dated September 14, 2017.

### SVE System Operation

On February 12, 2018 BP proposed operation of a SVE system to complete site remediation of soil impacts using the previously installed SVE points. This plan was approved by NMOCD on February 16, 2018 with stipulations that included: (1) Documentation of a minimum 90% run time on the SVE unit, (2) Initial and annual collection of an effluent gas sample for analysis by US EPA Method 8260 for volatile organic compounds (VOC's), and (3) Submission of a quarterly report documenting site activities, run time and mass removal (both gas and liquid).

After receiving an electric drop/meter from the City of Farmington, the SVE system was placed into initial operation on June 6, 2018. The primary blower is a 1.5 horsepower Rotron EN454 regenerative blower with in-line flow meter and vacuum gages. After initial individual testing on each of the SVE points, gas samples were collected on June 12, 2018 from both BH-2 and BH-3. Subsequent field emission testing on each of the SVE points has indicated that BH-2 appears to extract the greatest VOC's and this has remained the primary extraction point for the system. Periodically the other points are short term tested to determine if they might indicate improved mass removal.

The attached spreadsheets document site inspections, field observations and mass removal calculations. The system has maintained a 100% runtime for its first quarter of operation (June 6 – September 24, 2018). Residual hydrocarbon mass in the soil prior to start-up of the SVE system was believed to be very low and mass removal by the SVE system documents this. During the first quarter of operation the total hydrocarbon mass removed was approximately 2.7 pounds in gas form. No liquid hydrocarbons were extracted.

### Conclusions

The SVE system has successfully operated during the first quarter of use. No changes to the system or operations are presently planned.

# BP America - Mudge A 002

## Summary SVE System Monitoring Data

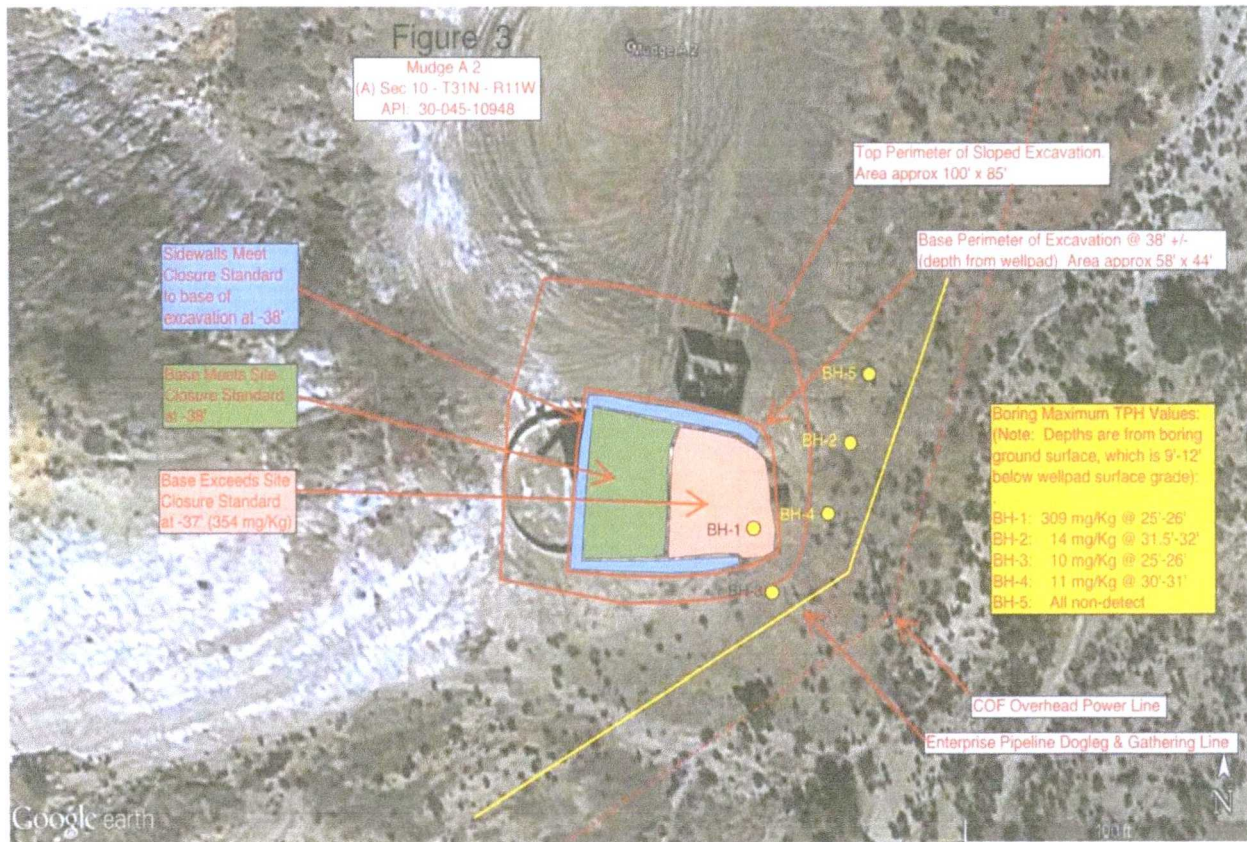
Date	SVE Pt.	Exhaust OVM (ppm)	Exhaust Vacuum (in)	Exhaust Rate (cfm)	System Operational at Time of Arrival?	H <sub>2</sub> O Drained from drum?	H <sub>2</sub> O Amt. Drained (Gal.)?	Comments
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[illegible]

# BP America - Mudge A 002

## Summary SVE System Initial Monitoring Data

Date	SVE Pt.	Time	Exhaust OVM (ppm)	Exhaust Vacuum (in)	Exhaust Rate (cfm)	Boring Total Depth (ft.)	Comments
6/6/2018	BH-1	0735	0.0	62	NA	35	Very little air flow from blow exhaust felt physically
6/6/2018	BH-1	0750	0.0	56	60		Same as above
6/6/2018	BH-1	1435	26.2	48	NA		Very little air flow from blow exhaust felt physically
6/6/2018	BH-1	1450	8.0	46	60		Same as above
6/6/2018	BH-1	1505	7.3	46	60		Same as above
6/6/2018	BH-1	1535	7.5	46	60		Same as above
6/7/2018	BH-1	0950	1.3	47	50		Same as above, SVE operational at time of arrival
6/6/2018	BH-2	1330	3.4	54	NA	35	Very little air flow from blow exhaust felt physically
6/6/2018	BH-2	1345	2.8	48	NA		Same as above
6/6/2018	BH-2	1400	28.1	51	NA		Same as above
6/6/2018	BH-2	1430	30.5	52	NA		Same as above
6/7/2018	BH-2	1135	29.2	46	60		Same as above
6/6/2018	BH-3	0752	0.0	56	NA	33	Very little air flow from blow exhaust felt physically
6/6/2018	BH-3	0800	0.3	53	NA		Same as above
6/6/2018	BH-3	0817	15.0	52	60		More air flow from blower exhaust felt physically
6/6/2018	BH-3	0900	19.3	51	60		Same as above
6/7/2018	BH-3	1027	20.5	46	50		Very little air flow from blow exhaust felt physically
6/6/2018	BH-4	1226	15.3	56	NA	35	Very little air flow from blow exhaust felt physically
6/6/2018	BH-4	1241	14.8	48	NA		Same as above
6/6/2018	BH-4	1256	5.1	47	NA		Same as above
6/6/2018	BH-4	1326	4.5	46	NA		Same as above
6/7/2018	BH-4	1059	5.3	46	50		Same as above



# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order 1806747

Date Reported: 6/21/2018

CLIENT: Blagg Engineering

Client Sample ID: SVE (BH-2)

Project: MUDGE A 2

Collection Date: 6/12/2018 6:30:00 AM

Lab ID: 1806747-001

Matrix: AIR

Received Date: 6/13/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: DJF
Benzene	1.4	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
Toluene	0.99	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
Ethylbenzene	0.50	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
Methyl tert-butyl ether (MTBE)	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
1,2,4-Trimethylbenzene	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
1,3,5-Trimethylbenzene	0.17	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
1,2-Dichloroethane (EDC)	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
1,2-Dibromoethane (EDB)	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
Naphthalene	ND	0.20		µg/L	1	6/20/2018 11:29:46 AM	C52119
1-Methylnaphthalene	ND	0.40		µg/L	1	6/20/2018 11:29:46 AM	C52119
2-Methylnaphthalene	ND	0.40		µg/L	1	6/20/2018 11:29:46 AM	C52119
Acetone	ND	1.0		µg/L	1	6/20/2018 11:29:46 AM	C52119
Bromobenzene	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
Bromodichloromethane	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
Bromoform	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
Bromomethane	ND	0.20		µg/L	1	6/20/2018 11:29:46 AM	C52119
2-Butanone	ND	1.0		µg/L	1	6/20/2018 11:29:46 AM	C52119
Carbon disulfide	ND	1.0		µg/L	1	6/20/2018 11:29:46 AM	C52119
Carbon tetrachloride	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
Chlorobenzene	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
Chloroethane	ND	0.20		µg/L	1	6/20/2018 11:29:46 AM	C52119
Chloroform	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
Chloromethane	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
2-Chlorotoluene	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
4-Chlorotoluene	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
cis-1,2-DCE	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
cis-1,3-Dichloropropene	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
1,2-Dibromo-3-chloropropane	ND	0.20		µg/L	1	6/20/2018 11:29:46 AM	C52119
Dibromochloromethane	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
Dibromomethane	ND	0.20		µg/L	1	6/20/2018 11:29:46 AM	C52119
1,2-Dichlorobenzene	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
1,3-Dichlorobenzene	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
1,4-Dichlorobenzene	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
Dichlorodifluoromethane	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
1,1-Dichloroethane	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
1,1-Dichloroethene	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
1,2-Dichloropropane	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
1,3-Dichloropropane	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
2,2-Dichloropropane	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order 1806747

Date Reported: 6/21/2018

CLIENT: Blagg Engineering

Project: MUDGE A 2

Lab ID: 1806747-001

Matrix: AIR

Client Sample ID: SVE (BH-2)

Collection Date: 6/12/2018 6:30:00 AM

Received Date: 6/13/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: DJF
1,1-Dichloropropene	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
Hexachlorobutadiene	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
2-Hexanone	ND	1.0		µg/L	1	6/20/2018 11:29:46 AM	C52119
Isopropylbenzene	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
4-Isopropyltoluene	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
4-Methyl-2-pentanone	ND	1.0		µg/L	1	6/20/2018 11:29:46 AM	C52119
Methylene chloride	ND	0.30		µg/L	1	6/20/2018 11:29:46 AM	C52119
n-Butylbenzene	ND	0.30		µg/L	1	6/20/2018 11:29:46 AM	C52119
n-Propylbenzene	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
sec-Butylbenzene	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
Styrene	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
tert-Butylbenzene	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
1,1,1,2-Tetrachloroethane	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
1,1,2,2-Tetrachloroethane	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
Tetrachloroethene (PCE)	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
trans-1,2-DCE	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
trans-1,3-Dichloropropene	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
1,2,3-Trichlorobenzene	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
1,2,4-Trichlorobenzene	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
1,1,1-Trichloroethane	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
1,1,2-Trichloroethane	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
Trichloroethene (TCE)	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
Trichlorofluoromethane	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
1,2,3-Trichloropropane	ND	0.20		µg/L	1	6/20/2018 11:29:46 AM	C52119
Vinyl chloride	ND	0.10		µg/L	1	6/20/2018 11:29:46 AM	C52119
Xylenes, Total	2.1	0.15		µg/L	1	6/20/2018 11:29:46 AM	C52119
Surr: Dibromofluoromethane	85.1	70-130		%Rec	1	6/20/2018 11:29:46 AM	C52119
Surr: 1,2-Dichloroethane-d4	194	70-130	S	%Rec	1	6/20/2018 11:29:46 AM	C52119
Surr: Toluene-d8	111	70-130		%Rec	1	6/20/2018 11:29:46 AM	C52119
Surr: 4-Bromofluorobenzene	114	70-130		%Rec	1	6/20/2018 11:29:46 AM	C52119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order 1806863

Date Reported: 6/21/2018

CLIENT: Blagg Engineering

Client Sample ID: SVE (BH-3)

Project: MUDGE A 2

Collection Date: 6/13/2018 7:50:00 AM

Lab ID: 1806863-001

Matrix: AIR

Received Date: 6/14/2018 8:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: DJF
Benzene	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
Toluene	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
Ethylbenzene	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
Methyl tert-butyl ether (MTBE)	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
1,2,4-Trimethylbenzene	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
1,3,5-Trimethylbenzene	0.20	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
1,2-Dichloroethane (EDC)	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
1,2-Dibromoethane (EDB)	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
Naphthalene	ND	0.20		µg/L	1	6/20/2018 11:59:01 AM	C52119
1-Methylnaphthalene	ND	0.40		µg/L	1	6/20/2018 11:59:01 AM	C52119
2-Methylnaphthalene	ND	0.40		µg/L	1	6/20/2018 11:59:01 AM	C52119
Acetone	ND	1.0		µg/L	1	6/20/2018 11:59:01 AM	C52119
Bromobenzene	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
Bromodichloromethane	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
Bromoform	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
Bromomethane	ND	0.20		µg/L	1	6/20/2018 11:59:01 AM	C52119
2-Butanone	ND	1.0		µg/L	1	6/20/2018 11:59:01 AM	C52119
Carbon disulfide	ND	1.0		µg/L	1	6/20/2018 11:59:01 AM	C52119
Carbon tetrachloride	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
Chlorobenzene	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
Chloroethane	ND	0.20		µg/L	1	6/20/2018 11:59:01 AM	C52119
Chloroform	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
Chloromethane	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
2-Chlorotoluene	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
4-Chlorotoluene	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
cis-1,2-DCE	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
cis-1,3-Dichloropropene	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
1,2-Dibromo-3-chloropropane	ND	0.20		µg/L	1	6/20/2018 11:59:01 AM	C52119
Dibromochloromethane	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
Dibromomethane	ND	0.20		µg/L	1	6/20/2018 11:59:01 AM	C52119
1,2-Dichlorobenzene	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
1,3-Dichlorobenzene	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
1,4-Dichlorobenzene	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
Dichlorodifluoromethane	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
1,1-Dichloroethane	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
1,1-Dichloroethene	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
1,2-Dichloropropane	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
1,3-Dichloropropane	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
2,2-Dichloropropane	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 1 of 2
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order 1806863

Date Reported: 6/21/2018

CLIENT: Blagg Engineering

Client Sample ID: SVE (BH-3)

Project: MUDGE A 2

Collection Date: 6/13/2018 7:50:00 AM

Lab ID: 1806863-001

Matrix: AIR

Received Date: 6/14/2018 8:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260B: VOLATILES</b>							Analyst: DJF
1,1-Dichloropropene	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
Hexachlorobutadiene	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
2-Hexanone	ND	1.0		µg/L	1	6/20/2018 11:59:01 AM	C52119
Isopropylbenzene	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
4-Isopropyltoluene	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
4-Methyl-2-pentanone	ND	1.0		µg/L	1	6/20/2018 11:59:01 AM	C52119
Methylene chloride	ND	0.30		µg/L	1	6/20/2018 11:59:01 AM	C52119
n-Butylbenzene	ND	0.30		µg/L	1	6/20/2018 11:59:01 AM	C52119
n-Propylbenzene	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
sec-Butylbenzene	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
Styrene	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
tert-Butylbenzene	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
1,1,1,2-Tetrachloroethane	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
1,1,2,2-Tetrachloroethane	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
Tetrachloroethene (PCE)	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
trans-1,2-DCE	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
trans-1,3-Dichloropropene	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
1,2,3-Trichlorobenzene	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
1,2,4-Trichlorobenzene	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
1,1,1-Trichloroethane	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
1,1,2-Trichloroethane	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
Trichloroethene (TCE)	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
Trichlorofluoromethane	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
1,2,3-Trichloropropane	ND	0.20		µg/L	1	6/20/2018 11:59:01 AM	C52119
Vinyl chloride	ND	0.10		µg/L	1	6/20/2018 11:59:01 AM	C52119
Xylenes, Total	ND	0.15		µg/L	1	6/20/2018 11:59:01 AM	C52119
Surr: Dibromofluoromethane	84.3	70-130		%Rec	1	6/20/2018 11:59:01 AM	C52119
Surr: 1,2-Dichloroethane-d4	122	70-130		%Rec	1	6/20/2018 11:59:01 AM	C52119
Surr: Toluene-d8	106	70-130		%Rec	1	6/20/2018 11:59:01 AM	C52119
Surr: 4-Bromofluorobenzene	120	70-130		%Rec	1	6/20/2018 11:59:01 AM	C52119

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 2 of 2
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

<b>Chain-of-Custody Record</b>		Turn-Around Time:	
Client: <b>BLAGG ENGR. / BP AMERICA</b>		<input checked="" type="checkbox"/> Standard <input type="checkbox"/> Rush _____	
Mailing Address: <b>P.O. BOX 87</b>		Project Name:	
<b>BLOOMFIELD, NM 87413</b>		<b>MUDGE A # 2</b>	
Phone #: <b>(505) 632-1199</b>		Project #:	
email or Fax#:		Project Manager:	
QA/QC Package:		<b>STEVE MOSKAL</b>	
<input checked="" type="checkbox"/> Standard <input type="checkbox"/> Level 4 (Full Validation)		Sampler: <b>NELSON VELEZ</b>	
Accreditation:		On Ice: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
<input type="checkbox"/> NELAP <input type="checkbox"/> Other _____		Sample Temperature: <b>2.3 - CP 1.0 = 1.3</b>	
<input type="checkbox"/> EDD (Type) _____			

Sample Temperature:  $2.3 - \cancel{CF} - 1.0 = 1.3$

[illegible][illegible]

Date: 6/12/18	Time: 1710	Relinquished by: <i>[Signature]</i>	Received by: <i>[Signature]</i>	Date 6/12/18	Time 1710
Date: 4/12/18	Time:	Relinquished by: <i>[Signature]</i>	Received by: <i>[Signature]</i>	Date 06/13/18	Time 0700

Remarks:	INVOICE DIRECTLY TO BP UPON RECEIVING BILLING CODE INFORMATION VIA EMAIL.
----------	--

**CONTACT: STEVE MOSKAL**

06/13/17  
Per NU sample to DIS SVE BH-2/A

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any such contracted data will be clearly noted on the analytical report.

<b>Chain-of-Custody Record</b>		Turn-Around Time:
Client:	<b>BLAGG ENGR. / BP AMERICA</b>	<input checked="" type="checkbox"/> Standard <input type="checkbox"/> Rush _____
Mailing Address:	<b>P.O. BOX 87</b>	Project Name:  <b>MUDGE A # 2</b>
	<b>BLOOMFIELD, NM 87413</b>	
Phone #:	<b>(505) 632-1199</b>	Project #:
email or Fax#:		Project Manager:
QA/QC Package:		<b>STEVE MOSKAL</b>
<input checked="" type="checkbox"/> Standard <input type="checkbox"/> Level 4 (Full Validation)		
Accreditation:		Sampler: <b>NELSON VELEZ</b>
<input type="checkbox"/> NELAP <input type="checkbox"/> Other _____		On Ice: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> EDD (Type) _____		Sample Temperature: <b>20-10°C / 10</b>

☒ Standard      ☐ Rush

**MUDGE A #2**

Project #:

Project Manager:

**STEVE MOSKAL**

Sampler: **NELSON VELEZ**

On Ice: ☒ Yes ☐ No

Sample Temperature: 20-10 (°F) 1.0

[illegible]

Date: 6/13/18	Time: 1333	Relinquished by: <i>[Signature]</i>	Received by: <i>[Signature]</i>	Date 6/13/18	Time 1333
Date: 6/13/18	Time: 1830	Relinquished by: <i>[Signature]</i>	Received by: carrier <i>[Signature]</i>	Date 6/14/18	Time 820

## HALL ENVIRONMENTAL ANALYSIS LABORATORY

[www.hallenvironmental.com](http://www.hallenvironmental.com)

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975      Fax 505-345-4107

## Analysis Request

[illegible]

Remarks:	INVOICE DIRECTLY TO BP UPON RECEIVING BILLING CODE INFORMATION VIA EMAIL.
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CONTACT: **STEVE MOSKAL**

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This carries a portion of this possibility. Any subcontracted data will be clearly noted on the analytical report.



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: www.hallenvironmental.com

## Sample Log-In Check List

Client Name: BLAGG

Work Order Number: 1806747

RcptNo: 1

Received By: Anne Thorne

6/13/2018 7:00:00 AM

*Anne Thorne*

Completed By: Anne Thorne

6/13/2018 9:11:50 AM

*Anne Thorne*

Reviewed By: *AT 06/13/18*

### Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐  
2. How was the sample delivered? Courier

### Log In

3. Was an attempt made to cool the samples? Yes ☐ No ☐ NA ☒  
4. Were all samples received at a temperature of  $>0^{\circ}\text{C}$  to  $6.0^{\circ}\text{C}$ ? Yes ☐ No ☐ NA ☒  
5. Sample(s) in proper container(s)? Yes ☒ No ☐  
6. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐  
7. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐  
8. Was preservative added to bottles? Yes ☐ No ☒ NA ☐  
9. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☒  
10. Were any sample containers received broken? Yes ☐ No ☒  
11. Does paperwork match bottle labels?  
(Note discrepancies on chain of custody) Yes ☒ No ☐  
12. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐  
13. Is it clear what analyses were requested? Yes ☒ No ☐  
14. Were all holding times able to be met?  
(If no, notify customer for authorization.) Yes ☒ No ☐

# of preserved  
bottles checked  
for pH:

( $<2$  or  $>12$  unless noted)

Adjusted? \_\_\_\_\_

Checked by: \_\_\_\_\_

### Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified: \_\_\_\_\_

Date: \_\_\_\_\_

By Whom: \_\_\_\_\_

Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: \_\_\_\_\_

Client Instructions: \_\_\_\_\_

16. Additional remarks:

17. Cooler Information



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: www.hallenvironmental.com

## Sample Log-In Check List

Client Name: **BLAGG**

Work Order Number: **1806863**

RcptNo: **1**

Received By: **Isaiah Ortiz**

6/14/2018 8:20:00 AM

*IO*

Completed By: **Anne Thorne**

6/14/2018 11:36:20 AM

*Anne Thorne*

Reviewed By:

*IO 6-14-18*

Labeled by: *A 06/14/18*

### Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
2. How was the sample delivered? Courier

### Log In

3. Was an attempt made to cool the samples? Yes ☐ No ☐ NA ☒
4. Were all samples received at a temperature of  $>0^{\circ}\text{C}$  to  $6.0^{\circ}\text{C}$ ? Yes ☐ No ☐ NA ☒
5. Sample(s) in proper container(s)? Yes ☒ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐
8. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
9. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☒
10. Were any sample containers received broken? Yes ☐ No ☒
11. Does paperwork match bottle labels?  
(Note discrepancies on chain of custody) Yes ☒ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
13. Is it clear what analyses were requested? Yes ☒ No ☐
14. Were all holding times able to be met?  
(If no, notify customer for authorization.) Yes ☒ No ☐

# of preserved  
bottles checked  
for pH: \_\_\_\_\_  
( $<2$  or  $>12$  unless noted)  
Adjusted? \_\_\_\_\_  
Checked by: \_\_\_\_\_

### Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified:		Date:	
By Whom:		Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:			
Client Instructions:			

16. Additional remarks:

17. Cooler Information