



October 13, 2009  
Project No. 20082474V1

Mr. Ranajit Sahu, C.E.M., Ph.D.  
Basic Remediation Company  
875 West Warm Springs Road  
Henderson, Nevada 89011

**RE: Western Hook Sub-Area Soil Re-Sampling, Henderson, Nevada**

Dear Dr. Sahu:

PROVIDING

- Geotechnical Engineering
- Construction Materials Engineering
- Environmental Engineering
- Drilling Services

On September 18, 2009 through September 22, 2009, Geotechnical and Environmental Services, Inc. (GES) implemented a sampling program per the direction of Basic Remediation Company (BRC). This activity report details the scope of services performed, which consisted of the following:

- September 16, 2009: USA Underground utility alert was called in after field marking the project area.
- September 16, 2009: Staked and located ten (10) sampling locations with a GPS Trimble ProXH Unit. The sample location coordinates were provided by Daniel B. Stephens & Associates, Inc.
- September 18 – September 22, 2009: Collected sixteen (16) samples from six (6) boring locations and four (4) hand sampling locations throughout the site at depths ranging from 0.0 to 12 feet. Duplicate samples were taken approximately every 10<sup>th</sup> sample, while one (1) MS/MSD sample was collected. A total of two (2) field duplicate samples, one (1) matrix spike/matrix spike duplicate sample and one (1) rinsate sample were taken throughout the sampling event.

GES's scope of services was to implement the field sampling program so that others can evaluate the data resulting from our sampling efforts. Therefore, this report does not provide conclusions regarding the analytes or their levels of occurrence.

### **Field Investigation Methodology**

**Soils** - Soil samples were taken from six (6) borings drilled using the hollow stem auger method and four (4) surface locations sampled by hand methods. The boreholes were initiated using a Diedrich D-50+ Track Drill Rig outfitted with 6-1/2 inch outside diameter hollow stem augers. A California modified split spoon sampler was advanced at least 18 inches per sampling interval by using an autohammer with an equivalent force of a 140-pound hammer falling 30 inches for each blow.

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Soil samples were logged according to the USCS Classification by a qualified Geologist. In addition, each sample was examined for odors and stains. Boring logs were prepared for the locations drilled and sampled at depths greater than 0.0 feet below the ground surface (Appendix A, Figures 4 through 9).

At each sample location and depth interval, the samples were collected in six (6) clean 2.5-inch diameter by 6.0-inch long stainless steel sleeves using standard split spoon sampling techniques. The ends of each sleeve(s) retained for analysis were covered with Teflon sheeting and placed in a sealable ZipLock™ type plastic bag.

Duplicate (splits) soil samples were collected for each sample interval and retained on hold until the laboratory analytical results are reviewed. The duplicate sample on hold for the sample with the highest arsenic concentration will be shipped to McCrone Laboratory (Westmont, Illinois) for arsenic analysis. The duplicate samples were collected in clean, laboratory provided 4-ounce glass jars and stored in a refrigerator at 4° Celsius.

Each sample was provided a unique sampling number with the following designation: Sample Location, Depth Interval, Date, and Time. For example, the first sampling location was identified as WHD-As-BG05-0, 9/18/09, 1225, while the final sampling location (matrix spike duplicate) was identified as WHD-As-P14-0-MSD, 9/21/09, 1430. The soil samples were stored in coolers with ice and shipped daily via FedEx to Test America Laboratories (Earth City, Missouri), GEL Laboratory (Charleston, South Carolina) and ALS Laboratory Group (Salt Lake City, Utah).

### **Surface Water**

Surface water samples were collected from two (2) locations within a lined drainage ditch that extends across the west portion of the Western Hook Sub-Area. The sample locations are shown on Figure 2.

At each sample location, the samples were collected by hand in clean polyethylene containers preserved with nitric acid (HNO<sub>3</sub>).

Each sample was provided a unique sampling number with the following designation: Sample Location, Date, and Time. For example, the first sampling location was identified as WHD-As-SW01, 9/18/09, 1415, while the final sampling location was identified as WHD-As-SW02, 9/18/09, 1505. The water samples were stored in coolers with ice and shipped daily via FedEx to Test America Laboratories (Earth City, Missouri).

The health and safety monitoring effort complied with the ***BRC Health and Safety Plan, October, 2005***.

### **Decontamination Procedures**

The drilling equipment and down-hole equipment were decontaminated prior to initial usage and then between each borehole location. Decontamination of drilling equipment consisted of high pressure washing prior to initial boring. The down-hole equipment was washed between borehole locations using Liquinox™ detergent wash, a potable water rinse, and a final rinse with commercially available distilled water.

### **Investigative Derived Waste (IDW)**

All Investigative Derived Waste consisted of drilling cuttings (soil) and equipment decontamination waste (Liquinox laboratory grade detergent and rinse water). Ground water was not encountered, therefore the drill cuttings were returned to the borehole after the sampling was completed. Decontamination fluid was minimal and disposed of in the boreholes.

### **Documentation**

Documentation of the field activities consists of figures showing the site location (Vicinity Map, Figure 1), boring locations (Site Map, Figure 2), photographs of representative boring locations (Figure 3) and boring logs (Figure 4 through 9). These documents are included as attachments. Copies of the Chain-of-Custodies and daily safety meeting forms are also included as attachments.

### **Changes to Original Planned Work**

During this work there were only minor modifications to the original scope of services. Sample location was moved approximately 10 feet south due to the GPS coordinates placing the borings in a small wetlands pond.

We appreciate this opportunity to provide our professional services. If you have questions or comment, feel free to contact our office at (702) 365-1001.

Sincerely,

**Geotechnical & Environmental Services, Inc.**



Richard A. Cooke, C.E.M.  
Project Geologist  
C.E.M. #1820



Kyle S. Hansen, C.E.M.  
Environmental Program Manager  
C.E.M. #2167

RAC:KSH:vm:ac

Enc.: Figures 1, 2 and 3  
Boring Logs (6)  
Chain-of-Custody Records (5)  
Tailgate Safety Meeting Forms (2)

Dist: 1 pdf copy emailed to client at sahuron@earthlink.net  
1 original mailed to addressee  
1 cc to project file

**FIGURES:  
VICINITY MAP  
EXPLORATION LOCATION MAP  
BORING LOGS**



★ SITE LOCATION



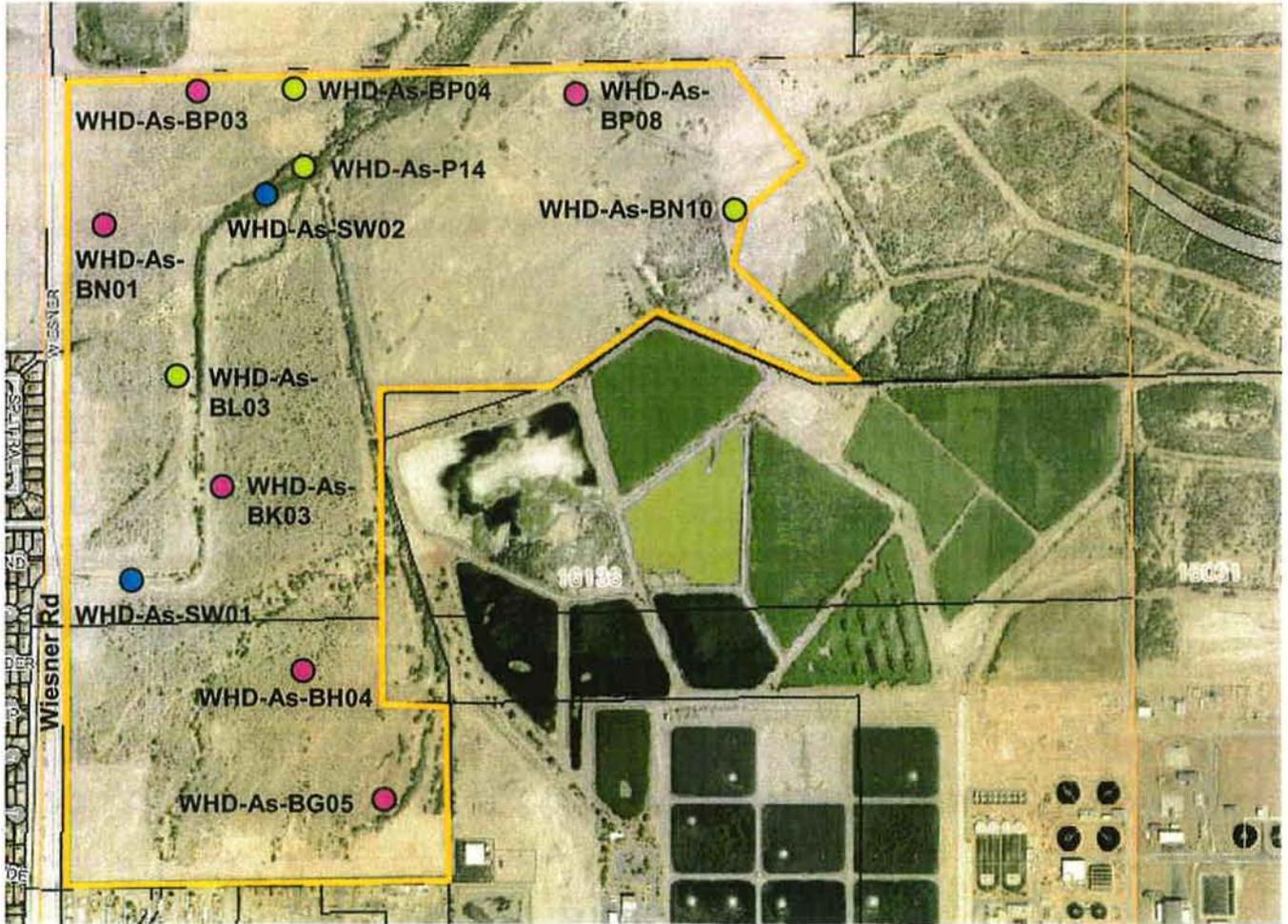
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Las Vegas, Nevada 89119

Vicinity Map  
Western Hook Sub-Area  
Henderson, Nevada

Job #20092474V1

Figure 1



- Soil Sample Locations – Surface Only
- Soil Sample Locations – Surface and Subsurface
- Surface Water Sample Locations

Clark County Nevada  
 Southern Nevada GIS  
 IM3.7 Aerial Photograph  
 Fall 2009-Spring 2009



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**AERIAL PHOTOGRAPH  
 Western Hook Sub-Area  
 Henderson, Nevada**

Job #20092474V1

Figure 2



1. WHD-AS-BP04: View toward the west.



2. WHD-AS-P14: View of GPS location in a wetlands area. The sample was collected approximately 10 feet left of the stake (south).



3. WHD-AS-BN08: View showing the location on top of a soil berm.

	<p><b>PROJECT:</b> Western Hook Re-Sampling 20042474V1 <b>FIGURE 3</b> <b>Site Photographs</b></p>
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4. WHD-AS-BK03: View toward the south.



5. WHD-AS-BP03: View toward the east.



6. WHD-AS-BN01: View toward the west.



**PROJECT:**  
Western Hook  
Re-Sampling  
20042474V1  
**FIGURE 3a**  
**Site Photographs**

# EXPLORATION LOG WHD-AS-BG05

**PROJECT:** WESTERN HOOK SUB-AREA RE-SAMPLING  
**EXPLORATION LOCATION:** HENDERSON, NEVADA  
**EXPLORATION SIZE (dia.):** 6 1/4" O.D. AUGERS  
**ELEVATION:** EXISTING GROUND SURFACE

**PROJECT NO.:** 20092474V1  
**EXPLORATION DATE:** 9/18/09  
**EQUIPMENT:** DIEDRICH D-50 TRACK RIG  
**LOGGED BY:** SANCHEZ/BRINKERHOFF

**INITIAL DEPTH TO WATER:** NOT ENCOUNTERED  
**FINAL DEPTH TO WATER:** NOT ENCOUNTERED

**DATE MEASURED:** NA  
**DATE MEASURED:** NA

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	Pocket Penetrometer (tsf)	WELL CONSTRUCTION
		SP-SM	Yellowish brown (10YR 5/4) poorly graded silty SAND, trace gravel, dry and loose. Collect WHD-AS-BG05-0 (55% sand (95% fine sand, 5% medium sand), 45% silt, trace gravel  ...medium dense.  ...moist.  ...dense. Collect WHD-As-BG05-10.						
			END OF BORING AT 11.5 FEET						

The descriptions contained within this exploration log apply only at the specific exploration location and at the time the exploration was made. It is not intended to be representative of subsurface conditions at other locations or times.

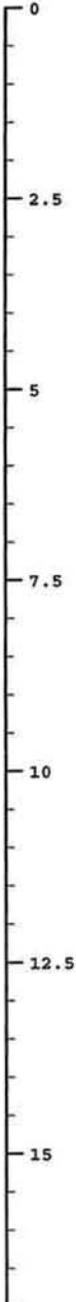
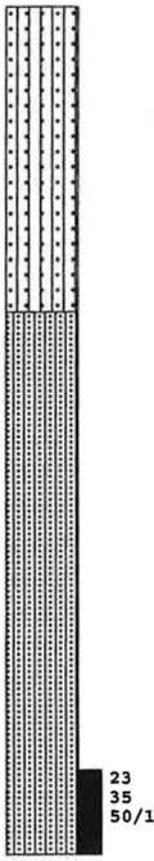
# EXPLORATION LOG WHD-AS-BH04

PROJECT: WESTERN HOOK SUB-AREA RE-SAMPLING  
 EXPLORATION LOCATION: HENDERSON, NEVADA  
 EXPLORATION SIZE (dia.): 6 1/4" O.D. AUGERS  
 ELEVATION: EXISTING GROUND SURFACE

PROJECT NO.: 20092474V1  
 EXPLORATION DATE: 9/18/09  
 EQUIPMENT: DIEDRICH D-50 TRACK RIG  
 LOGGED BY: SANCHEZ/BRINKERHOFF

INITIAL DEPTH TO WATER: NOT ENCOUNTERED  
 FINAL DEPTH TO WATER: NOT ENCOUNTERED

DATE MEASURED: NA  
 DATE MEASURED: NA

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	Pocket Penetrometer (tsf)	WELL CONSTRUCTION
		SP-SM	Yellowish brown (10YR 5/4) poorly graded silty SAND, trace gravel, dry and loose (60% sand, 35% silt, 50% gravel).						
		SM	Yellowish brown (10YR 5/4) silty SAND with gravel, dry and medium dense (60 % silt, 25% poorly graded sand (100% fine sand), 15% gravel (95% fine gravel, trace coarse gravel)).  ...weak to moderately cemented and very dense to hard. ...Collect WHD-As-BH04-10.						
			END OF BORING AT 11.1 FEET						

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# EXPLORATION LOG WHD-AS-BN01

PROJECT: WESTERN HOOK SUB-AREA RE-SAMPLING  
 EXPLORATION LOCATION: HENDERSON, NEVADA  
 EXPLORATION SIZE (dia.): 6 1/4" O.D. AUGERS  
 ELEVATION: EXISTING GROUND SURFACE

PROJECT NO.: 20092474V1  
 EXPLORATION DATE: 9/18/09  
 EQUIPMENT: DIEDRICH D-50 TRACK RIG  
 LOGGED BY: SANCHEZ/BRINKERHOFF

INITIAL DEPTH TO WATER: NOT ENCOUNTERED  
 FINAL DEPTH TO WATER: NOT ENCOUNTERED

DATE MEASURED: NA  
 DATE MEASURED: NA

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	Pocket Penetrometer (tsf)	WELL CONSTRUCTION
		SP-SM	<p>Light brown (7.5YR 6/3) silty SAND with gravel, trace cobbles, dry and loose (65% sand, 10% silt, 25% gravel).</p> <p style="text-align: center;">...Collect WHD-As-BN01-12.</p>						
			<b>END OF BORING AT 13.5 FEET</b>						

The descriptions contained within this exploration log apply only at the specific exploration location and at the time the exploration was made. It is not intended to be representative of subsurface conditions at other locations or times.

# EXPLORATION LOG WHD-AS-BP03

**PROJECT:** WESTERN HOOK SUB-AREA RE-SAMPLING  
**EXPLORATION LOCATION:** HENDERSON, NEVADA  
**EXPLORATION SIZE (dia.):** 6 1/4" O.D. AUGERS  
**ELEVATION:** EXISTING GROUND SURFACE

**PROJECT NO.:** 20092474V1  
**EXPLORATION DATE:** 9/21/09  
**EQUIPMENT:** DIEDRICH D-50 TRACK RIG  
**LOGGED BY:** SANCHEZ/COOKE

**INITIAL DEPTH TO WATER:** NOT ENCOUNTERED  
**FINAL DEPTH TO WATER:** NOT ENCOUNTERED

**DATE MEASURED:** NA  
**DATE MEASURED:** NA

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	Pocket Penetrometer (tsf)	WELL CONSTRUCTION
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> <p>0</p> <p>2.5</p> <p>5</p> <p>7.5</p> <p>10</p> <p>12.5</p> <p>15</p> </div> </div>		SM	Light brown (7.5YR 6/3) silty SAND with gravel, trace cobbles, dry and medium dense (60% sand, 15% silt, 25% gravel).						
		CL	...Collect WHD-As-BP03-11. Reddish brown (5YR 5/3) clayey SAND, dry and dense. Reddish brown (5YR 5/3) sandy lean CLAY, dry and very stiff. END OF BORING AT 12.5 FEET						

The descriptions contained within this exploration log apply only at the specific exploration location and at the time the exploration was made. It is not intended to be representative of subsurface conditions at other locations or times.

# EXPLORATION LOG WHD-AS-BP08

PROJECT: WESTERN HOOK SUB-AREA RE-SAMPLING  
 EXPLORATION LOCATION: HENDERSON, NEVADA  
 EXPLORATION SIZE (dia.): 6 1/4" O.D. AUGERS  
 ELEVATION: EXISTING GROUND SURFACE

PROJECT NO.: 20092474V1  
 EXPLORATION DATE: 9/21/09  
 EQUIPMENT: DIEDRICH D-50 TRACK RIG  
 LOGGED BY: SANCHEZ/COOKE

INITIAL DEPTH TO WATER: NOT ENCOUNTERED  
 FINAL DEPTH TO WATER: NOT ENCOUNTERED

DATE MEASURED: NA  
 DATE MEASURED: NA

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	Pocket Penetrometer (tsf)	WELL CONSTRUCTION
		SM	<p>Light brown (7.5YR 6/3) silty SAND with gravel, dry and medium dense (55% sand, 15% silt, 35% gravel). Collect WHD-As-BP08-0.</p> <p>...collect WHD-As-BN08-4.</p>						
			END OF BORING AT 5.5 FEET						

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# EXPLORATION LOG WHD-AS-BK03

PROJECT: WESTERN HOOK SUB-AREA RE-SAMPLING  
 EXPLORATION LOCATION: HENDERSON, NEVADA  
 EXPLORATION SIZE (dia.): 6 1/4" O.D. AUGERS  
 ELEVATION: EXISTING GROUND SURFACE

PROJECT NO.: 20092474V1  
 EXPLORATION DATE: 9/21/09  
 EQUIPMENT: DIEDRICH D-50 TRACK RIG  
 LOGGED BY: SANCHEZ/COOKE

INITIAL DEPTH TO WATER: NOT ENCOUNTERED  
 FINAL DEPTH TO WATER: NOT ENCOUNTERED

DATE MEASURED: NA  
 DATE MEASURED: NA

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	Pocket Penetrometer (tsf)	WELL CONSTRUCTION
		SM	<p>Light brown (7.5YR 6/3) silty SAND with gravel, trace cobbles, dry and medium dense (60% sand, 10% silt, 30% gravel).</p> <p>...dense.</p> <p>...Collect WHD-As-BK03-12.</p>						
			END OF BORING AT 13.5 FEET						

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**CHAIN-OF-CUSTODY FORMS  
AND  
TAILGATE SAFETY MEETING FORMS**











TAILGATE SAFETY MEETING FORM

Date: 9-18-09 Time: 12:00 pm Job Number: 20092474V1  
Client: BRC  
Site Specific Location: Western Hook Sub Area

Safety Topics Presented

Protective Clothing/Equipment: Level D PPE  
Chemical Hazards: Metals (As)  
Physical Hazards: Trip hazards, sharp objects (gun, nails)  
Special Equipment: NA  
Other: NA  
Emergency Procedures: Call 911

Hospital: St. Rose Phone: 911 Ambulance Phone: 911  
Hospital Address and Route: Boulder Hwy + Lake mead Pkwy

ATTENDEES

<u>NAME PRINTED</u>	<u>SIGNATURE</u>
<u>Richard Cooke</u>	<u>Richard Cooke</u>
<u>Phil Brinkerhoff</u>	<u>Phil Brinkerhoff</u>
<u>Eduardo Sanchez</u>	<u>Eduardo Sanchez</u>
<u>Clint</u>	<u>Clint Beckham</u>

Meeting Conducted By: P. Brinkerhoff Name Printed      Phil Brinkerhoff Signature

On-Site Safety Officer: P. Brinkerhoff Project Manager: R. Cooke

**TAILGATE SAFETY MEETING FORM**

Date: 9-21-09 Time: 12:00 pm Job Number: 20092474V1

Client: BRC

Site Specific Location: Western Hook Sub Area

**Safety Topics Presented**

Protective Clothing/Equipment: Level D PPE

Chemical Hazards: Metals (As)

Physical Hazards: Trip hazards, sharp objects (gun, nails)

Special Equipment: NA

Other: NA

Emergency Procedures: Call 911

Hospital: St. Rose Phone: 911 Ambulance Phone: 911

Hospital Address and Route: Boulder Hwy + Lake mead Pkwy

**ATTENDEES**

<u>NAME PRINTED</u>	<u>SIGNATURE</u>
<u>Richard Cooke</u>	<u>Richard Cooke</u>
<u>Phil Brinkerhoff</u>	<u>Phil Brinkerhoff</u>
<u>Eduardo Sanchez</u>	<u>Eduardo Sanchez</u>
<u>Clint</u>	<u>Clint Beckham</u>

Meeting Conducted By: P. Brinkerhoff Name Printed      Phil Brinkerhoff Signature

On-Site Safety Officer: P. Brinkerhoff Project Manager: R. Cooke

