

Bower Environmental and Sustainable Technologies LLC

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September 9th 2015.

Status Report.

MGRI Cache Unit, Spill #1, REM #7786, NWNW Section 2, T34N, R20W, N PM.

Monument Global Resources, Inc.,
Operator#10430.
Cache Unit, Montezuma County, Colorado.

Introduction

Subsequent to the Historic Spill event at the above named location, preliminary analysis, clean-up activities and reporting, Bower Environmental and Sustainable technologies LLC (BE@ST) undertook further investigation as COGCC Document #2315147 Form 27 COAs on behalf of MGRI.

Site works.

On August 13th 2015, BE@ST site personnel attending site to retrieve discreet samples of the previously impacted area from the location of the pipeline break and at 250ft intervals Shallow/Surface samples to a depth of approx. 3" to 8" deep was taken as the area is an intermittent stream bed sitting in places directly on the bedrock. The soil types is sandy/silty/gravel. In areas the stream bed is mainly rounded rock and bed rock which yielded nominal soil coverage and negated the ability to sample beyond 1000ft below the point of release which coincided with the local road crossing through the stream bed.

Site photographs was taken at 50ft intervals with a GPS capable camera (model Nikon S9300).

The samples taken was directly taken to Green Analytical Laboratories (GAL) in Durango, Colorado in GAL issued sampling media and cool storage.

Sample Analytics.

The soil samples were analyzed for an abbreviated constituent list which included pH, BTEX, As and speciated TPH as Form 27 COAs.

Previous reports submitted by Souder, Miller and Associates (SMA) and preliminary analytical results are appended.

SMA Status Report #5122434, Sept 13, 2013

SMA Status Update #5122434, Sept 19, 2013.

Latest Analytical Results from GAL are summarized in the table below and appended.
GAL Report Cache Unit Spill #1.

Analytical Review.

The Summary table of Spill 1 7786 below shows compliance with permissible concentrations for BTEX, Speciated TPH and pH.

The table shows elevated results for Arsenic for all samples. During sampling two additional Discreet As samples was obtained from approximately 50ft north of the stream bank, adjacent to disturbed areas and these resulted in 1.1 mg/kg and 1.3 mg/kg (GAL ref 1508195-07 and 1508195-08).

A Background sample was also taken during the investigation works carried out by SMA on 3/24/2015 as a composite from local hillsides and reported as 12.9 mg/kg.

The results obtained from the analytics are considerable higher than the permissible concentration on COGCC table 910-1 of 0.39 mg/kg, however the background sampling carried out and local published literature indicate than the normal background for As in the locale range from 3mg/kg and 40 mg/kg and all samples fit into this range and as such are representative of localized background criteria.

External References;

US Geological Survey PP1648, Geochemical Landscapes of the Conterminous United States, Nov 2001.

Arsenic Clean-up Criteria for Soils in the US and Abroad, Comparing Guidelines and Understanding Inconsistencies, Proceeding on the Annual International Conference on Soils, Sediments, Water and Energy: Vol. 15, Article 10.

Reclamation Works Review.

Visual inspection of the area along the original spill path reveals no residual hydrocarbons, staining or odors in the area. Photographs below.

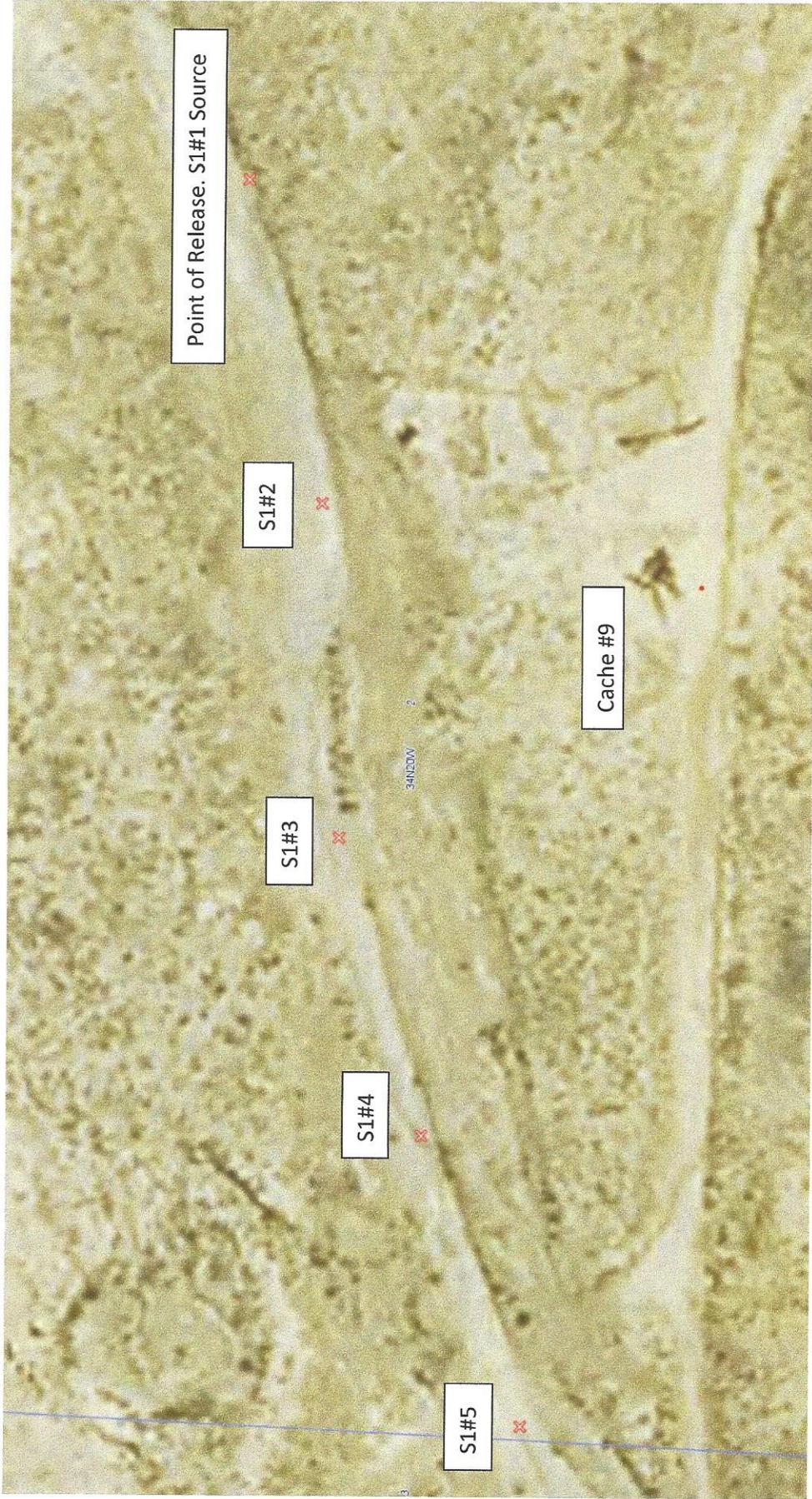
The pipeline ends was excavated, exposed and capped on 8/17/2015 Photographs taken by MGRI personnel below, note photographs are dated 08/01/2015 this is incorrect and an error on the camera.

Spill 1 7786

COGCC table 910-1 (as Jan 30, 2015)

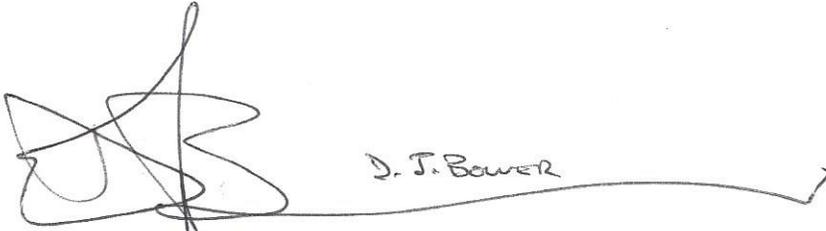
Lab ID	1508194-01	1508194-02	1508194-03	1508194-04	1508194-05	1508194-06
Date Sampled	8/13/2015	8/13/2015	8/13/2015	8/13/2015	8/13/2015	8/13/2015
Time Sampled	9.18	9.22	9.35	9.41	9.46	9.52
GPS	N 37.14367	37.14367	37.14359	37.14356	37.14345	37.14324
soil temp F	E -109.01449	-109.01452	-109.01496	-109.01545	-109.01582	-109.01639
	68	72.5	72.9	72.3	70.5	74.1

Contaminant of concern	unit	S1#1 Source	S1#2 Source	S1#3 +250	S1#4 +500	S1#5 +750	S1#6 +1000
Organics in Soil							
TPH (total Volatile and extractable petroleum hydrocarbons)	500 mg/kg	<10	<10	<10	<10	<10	<10
GRO C6 - C10		<10	<10	<10	<10	<10	<10
DRO >C10 - C28		<10	<10	<10	<10	<10	<10
EXT DRO >C28 - C35		<10	<10	<10	<10	<10	<10
Benzene	0.17 mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Toluene	85 mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Ethylbenzene	100 mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Xylenes (total)	175 mg/kg	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150
Total BTEX		<0.300	<0.300	<0.300	<0.300	<0.300	<0.300
Acenaphthene	1000 mg/kg						
Anthracene	1000 mg/kg						
Benz(a)anthracene	0.22 mg/kg						
Benzo(b)fluoranthene	0.22 mg/kg						
Benzo(k)fluoranthene	2.2 mg/kg						
Benzo(a)pyrene	0.022 mg/kg						
Chrysene	22 mg/kg						
Dibenzo(a,h)anthracene	0.022 mg/kg						
Fluoranthene	1000 mg/kg						
Fluorene	1000 mg/kg						
Indeno(1,2,3-c,d)pyrene	0.22 mg/kg						
Naphthalene	23 mg/kg						
Pyrene	1000 mg/kg						
Inorganics in Soil							
Electrical Conductivity (EC)	< 4 mmhos/cm or 2 x background						
Sodium Adsorption Ratio (SAR)	<12						
pH	6 to 9	8.44	8.38	8.51	8.86	8.67	8.57
Metals in Soils							
Arsenic	0.39 mg/kg	2.56	2.51	3	3.04	4.21	3.56
Barium (LNDR True Total Barium)	15000 mg/kg						
Boron (Hot Water Soluble)	2 mg/l						
Cadmium	70 mg/kg						
Chromium (III)	120000 mg/kg						
Chromium (VI)	23 mg/kg						
Copper	3100 mg/kg						
Lead (Inorganic)	400 mg/kg						
Mercury	23 mg/kg						
Nickel (soluble salts)	1600 mg/kg						
Selenium	390 mg/kg						
Silver	390 mg/kg						
Zinc	23000 mg/kg						
Liquid Hydrocarbons in Soils and Ground Water							
Liquid Hydrocarbons inc Condensate and oil	below detection level						



Spill Location #1 REM 7786. Sample Locations

If there any questions, issues or related items regarding this report, please call David Bower at Bower Environmental and Sustainable Technologies LLC on (303) 720 8324 (cell) or (303) 621 2461 at any time, or via email as shown below.

A handwritten signature in black ink, consisting of a large, stylized initial 'D' followed by 'J. BOWER' written in a cursive script.

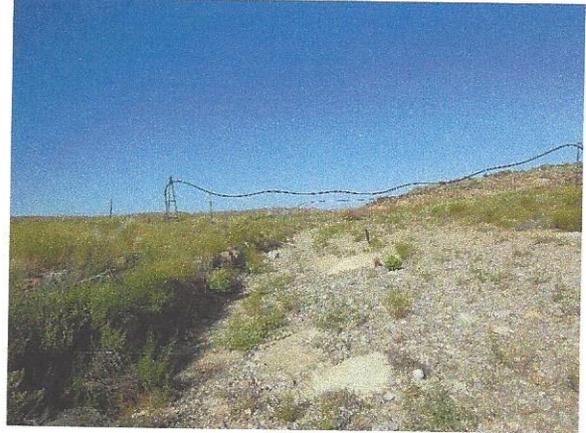
David J Bower
Principle Scientist
Bower Environmental and Sustainable Technologies LLC
Bower.dj@gmail.com

Spill Path Pictures.

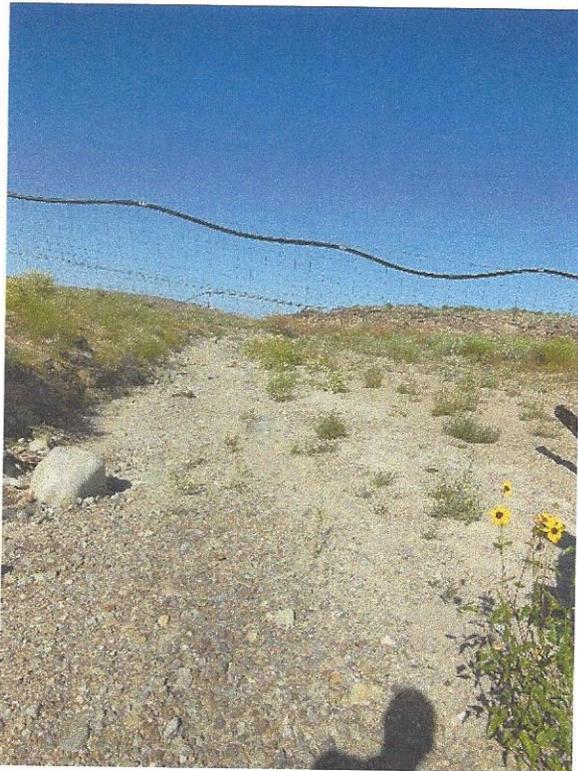
Pipeline excavated for capping.



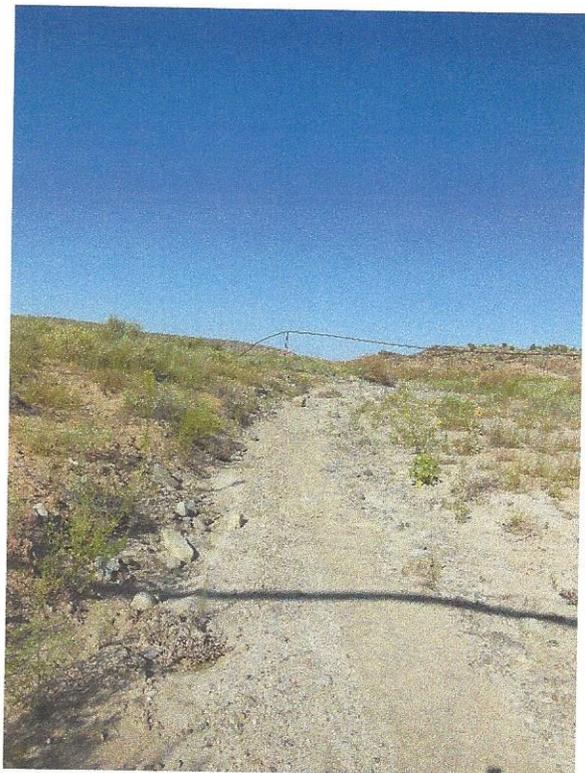
Looking East at point of release.



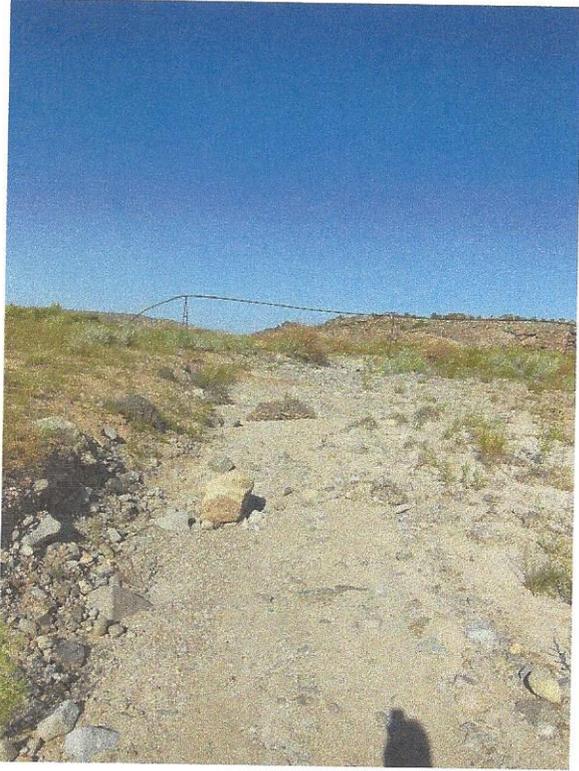
East along spill path +50ft.



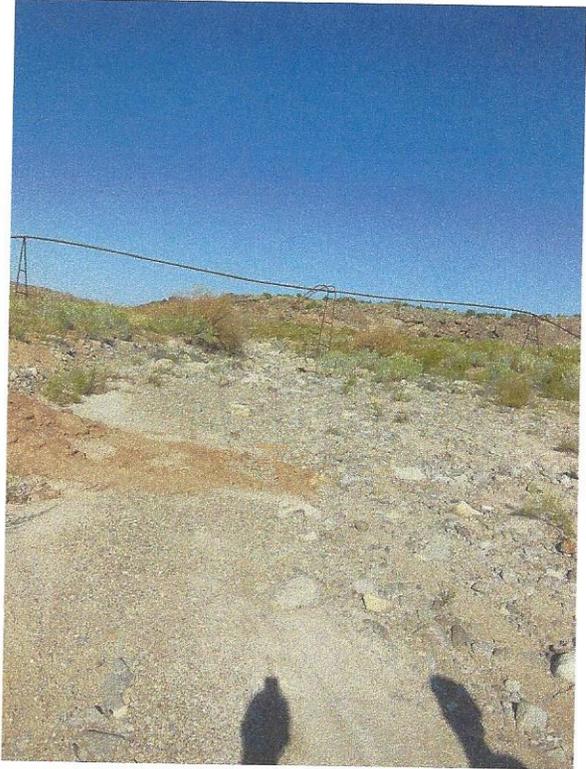
East +100ft



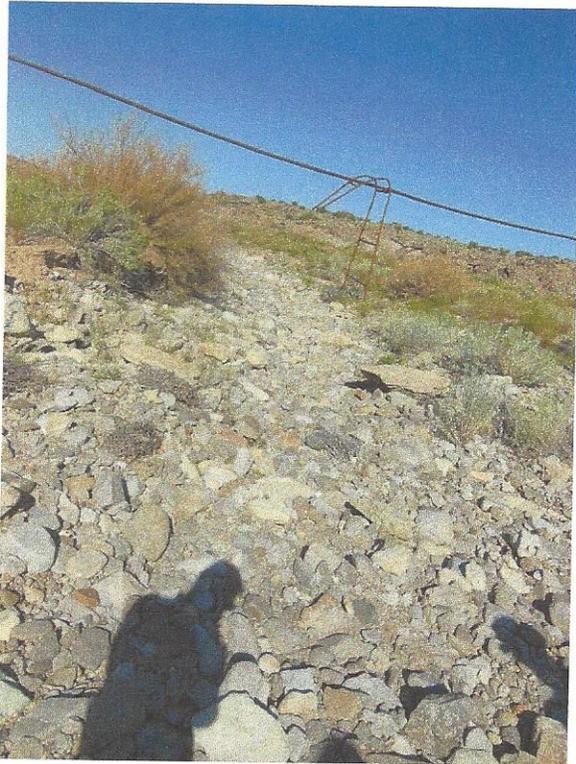
East +150 ft.



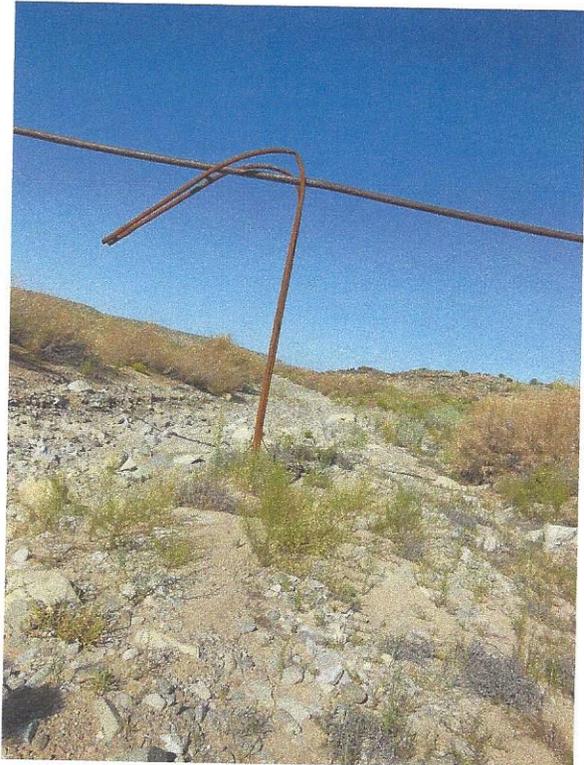
East +200ft



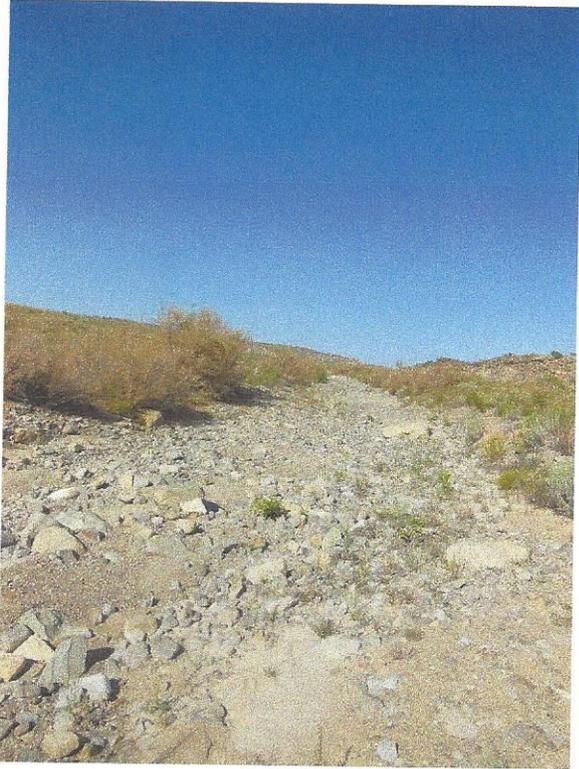
East +250ft



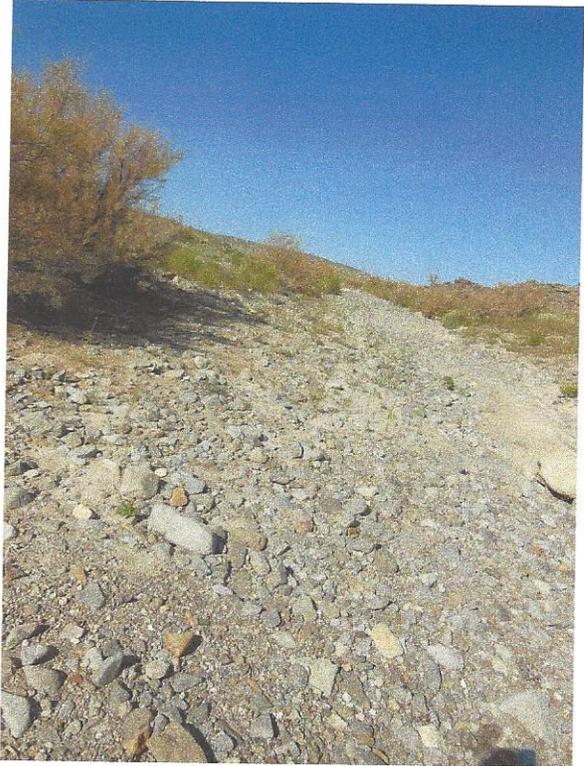
East +300ft



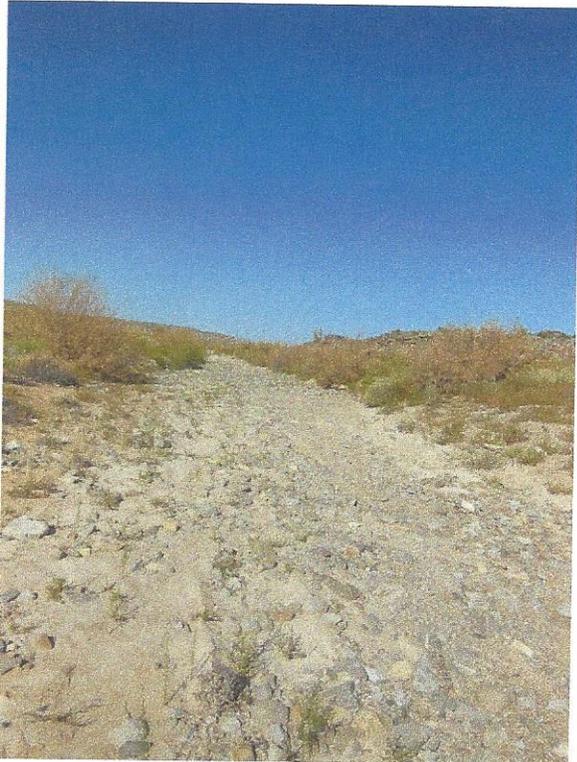
East +350ft



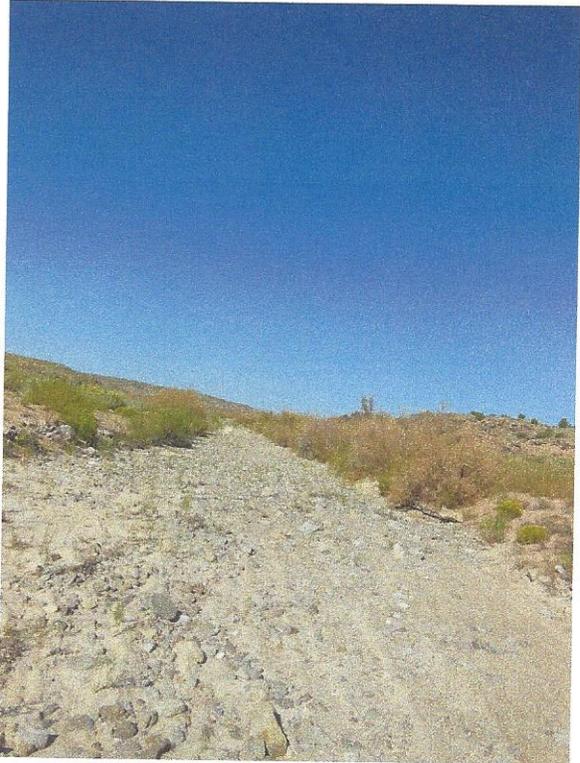
East +400ft



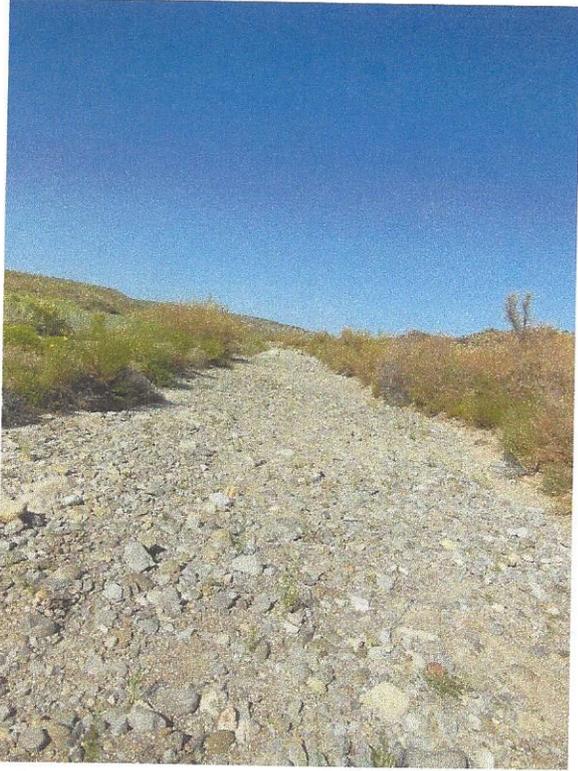
East +450ft



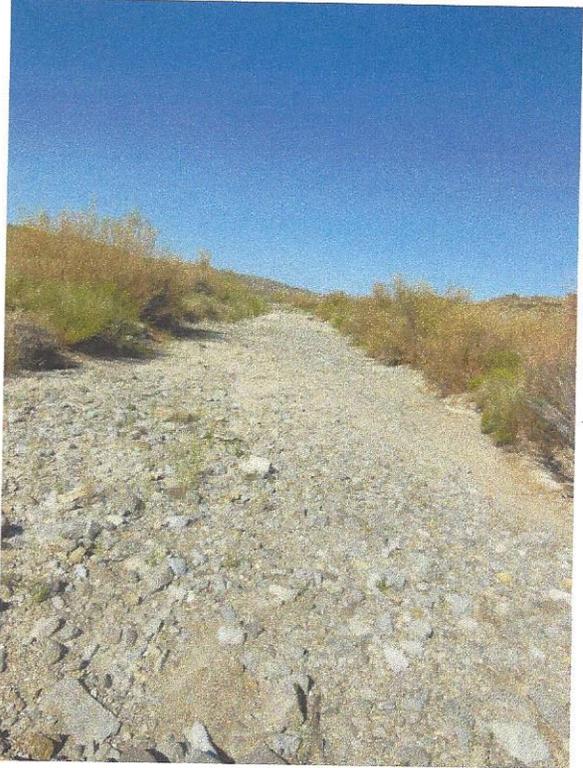
East +500ft



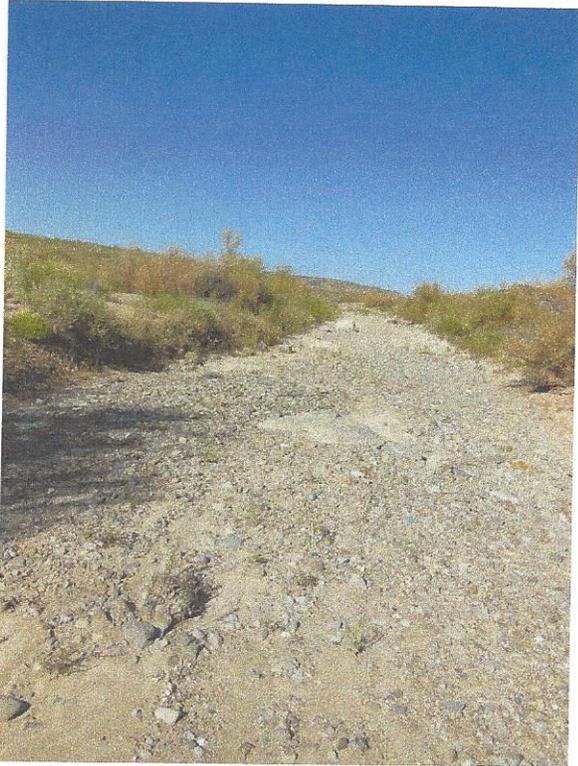
East +550ft



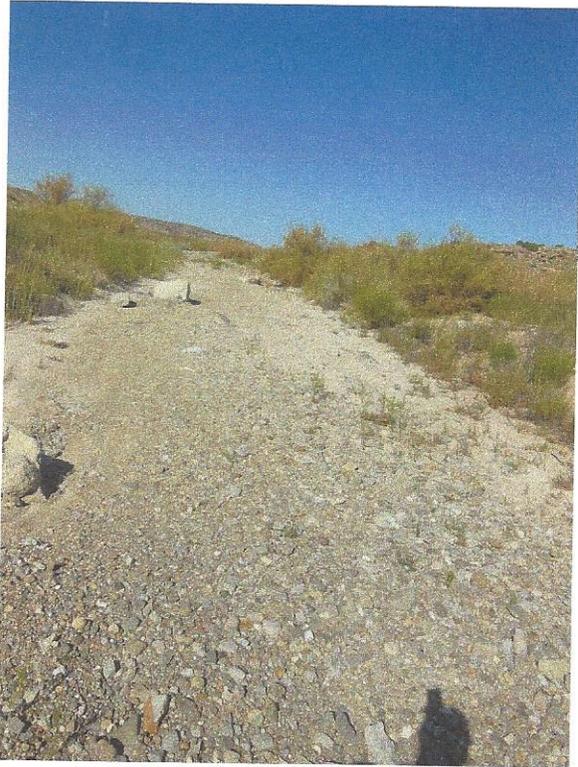
East +600ft



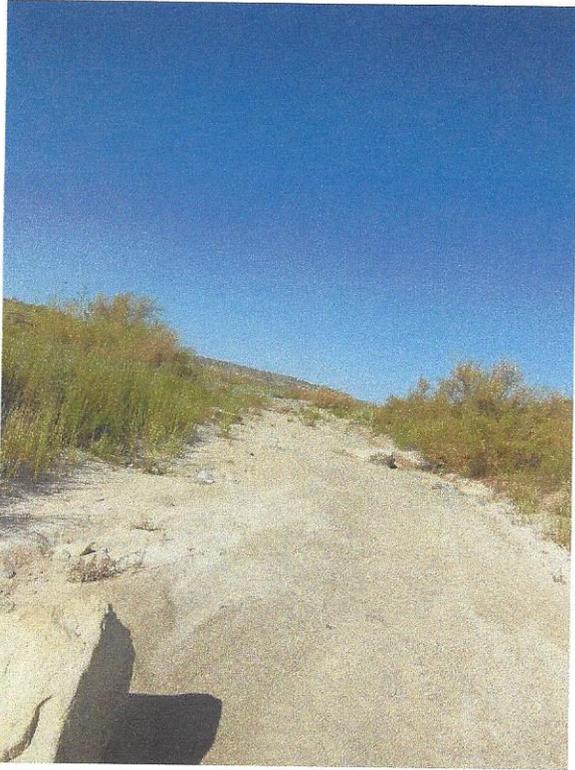
East +650ft



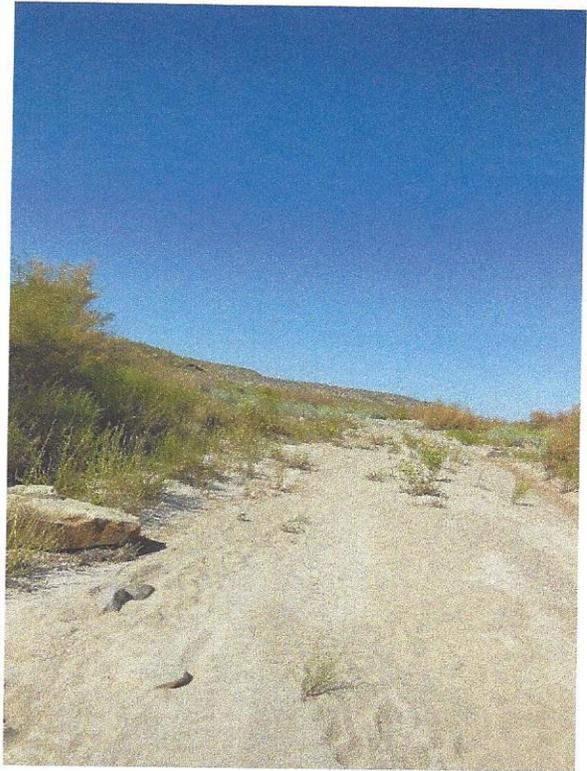
East +700ft



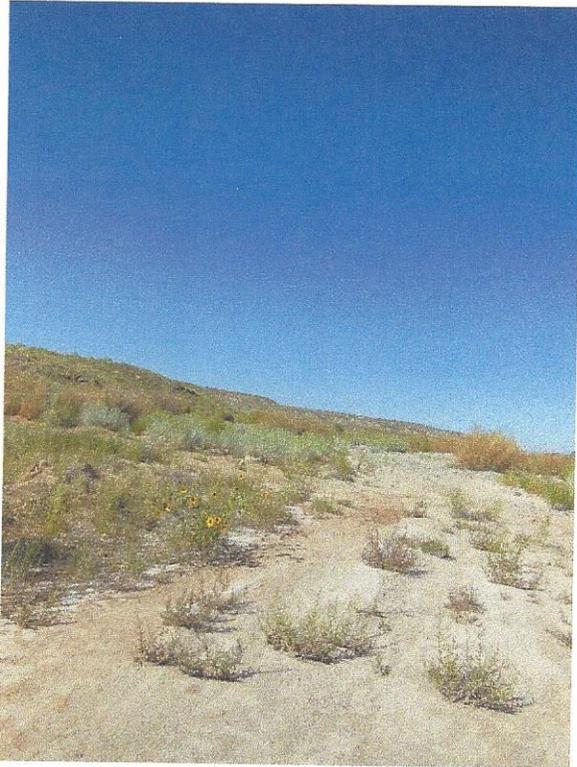
East +750ft



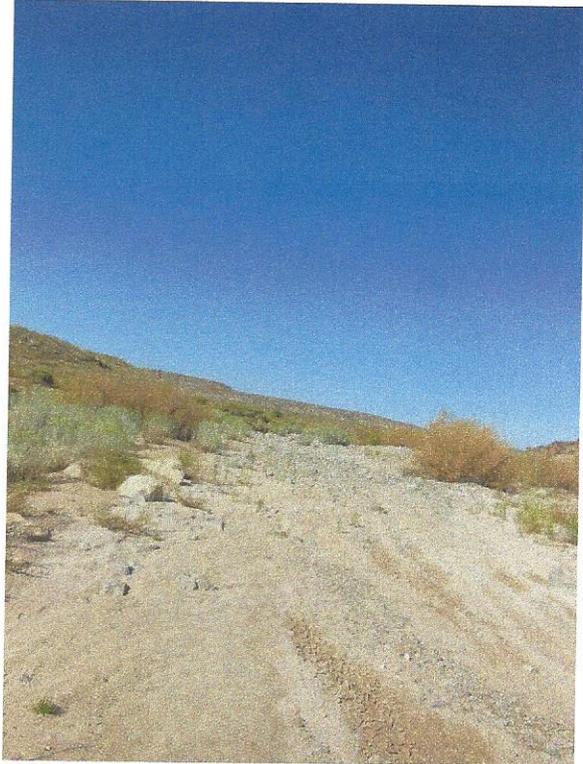
East +800ft



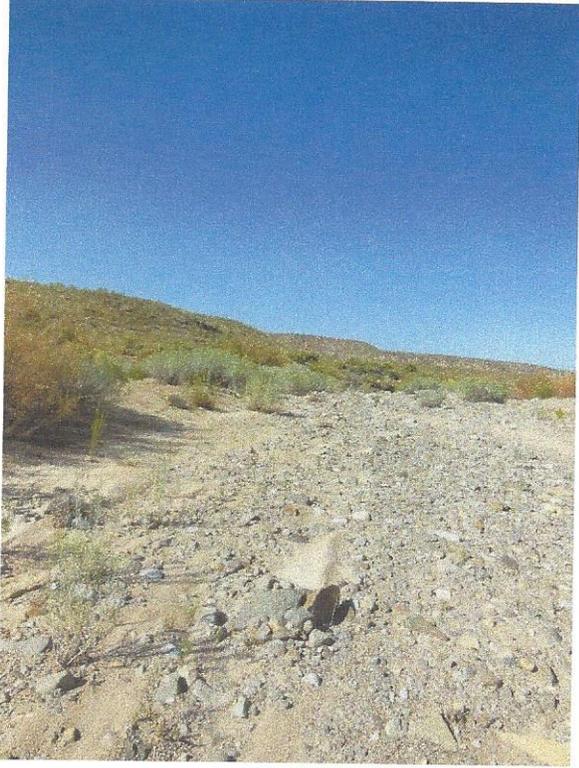
East +850ft



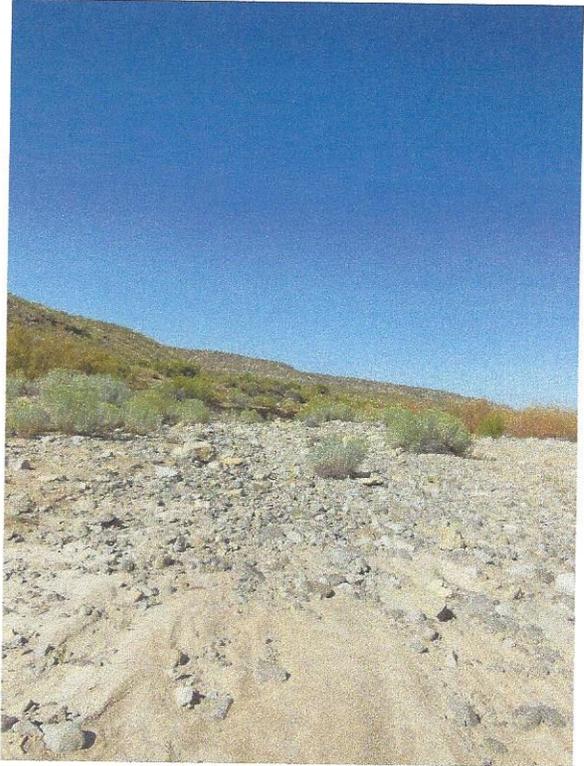
East +900ft



East +950ft



East +1000ft

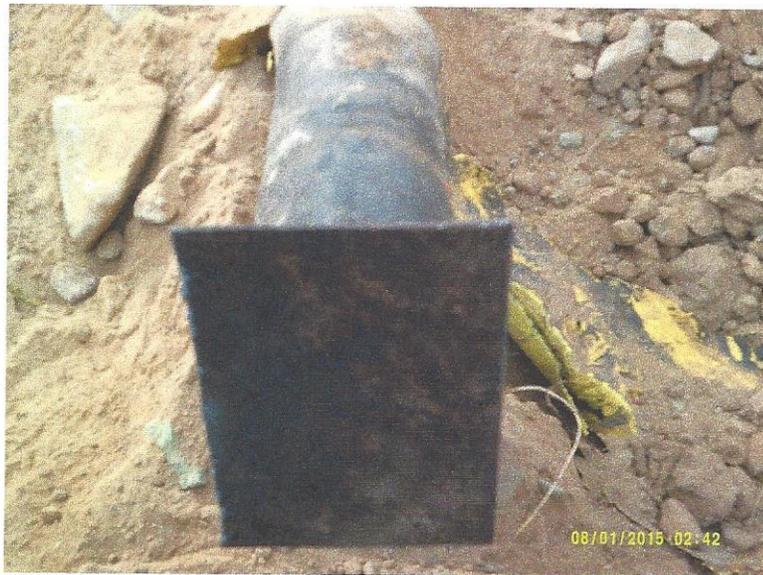


Pipeline capping (both sides of stream crossing).

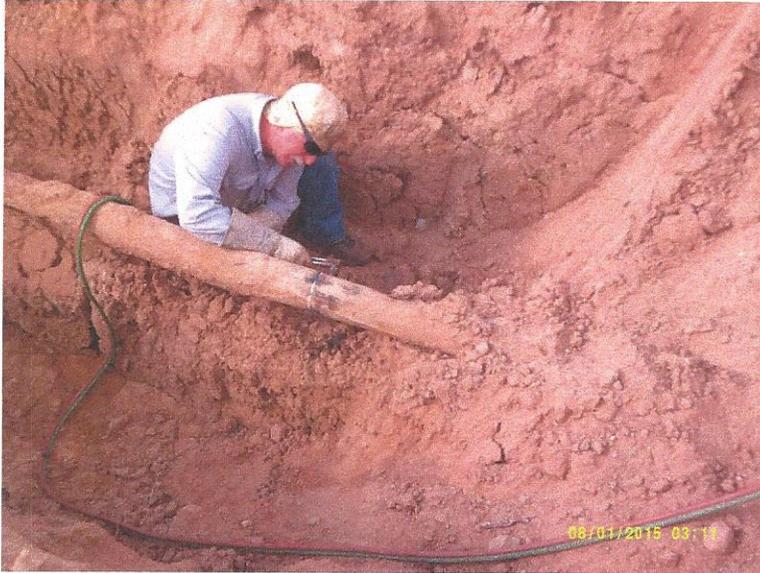
South side (at spill source)



South Side Capped.



North Side Excavated and cut out.



North Side Capped.

