

TABLE 1
WERNER
SOIL ANALYTICAL RESULTS
MAMM CREEK FIELD
BILL BARRETT CORPORATION

Parameter	Standard	BG01	BG02	BG03	BG04
Depth (feet)		0.0-0.5	0.0-0.5	0.0-0.5	0.0-0.5
Sample Date		6/29/2012	6/29/2012	6/29/2012	6/29/2012

Inorganics

Electrical Conductivity (mmhos/cm)	4
SAR (none)	12
pH, Lab (Standard Units)	6 to 9

Metals

Arsenic (mg/Kg)	0.39	3.61	9.81	5.61	3.97
Barium (mg/Kg)	15000				
Cadmium (mg/Kg)	70				
Chromium+3 Calculated (mg/Kg)	120000				
Chromium, Hexavalent (mg/Kg)	23				
Copper (mg/Kg)	3100				
Lead (mg/Kg)	400				
Mercury (mg/Kg)	23				
Nickel (mg/Kg)	1600				
Selenium (mg/Kg)	390				
Silver (mg/Kg)	390				
Zinc (mg/Kg)	23000				

Organic Compounds

TPH-DRO (mg/Kg)	
TPH-GRO (mg/kg)	
TPH-Total (mg/kg)	500
Benzene (mg/kg)	0.17
Toluene (mg/kg)	85
Ethylbenzene (mg/kg)	100
Xylenes, Total (mg/kg)	175
Acenaphthene (mg/kg)	1000
Anthracene (mg/kg)	1000
Benzo (a) anthracene (mg/kg)	0.22
Benzo (b) fluoranthene (mg/kg)	0.22
Benzo (k) fluoranthene (mg/kg)	2.2
Benzo (a) pyrene (mg/kg)	0.022
Chrysene (mg/kg)	22
Dibenz (a,h) anthracene (mg/kg)	0.022
Fluoranthene (mg/kg)	1000
Fluorene (mg/kg)	1000
Indeno (1,2,3-cd) pyrene (mg/kg)	0.22
Naphthalene (mg/kg)	23
Pyrene (mg/kg)	1000

Notes:

< - less than stated laboratory reporting limit
Bold indicates result is equal to or exceeds the applicable standard
Basic Standards for Soil are from 2 CCR 404-1, Table 910-1, effective April 2009
GRO - Gasoline range organics
TPH-Total - sum of TPH-GRO and TPH-DRO

mg/kg - milligrams per kilogram
mmhos/cm - millimhos per centimeter
TPH - Total petroleum hydrocarbons (C6-C28)
DRO - Diesel range organics
SAR - Sodium adsorption ratio



TABLE 1 (Continued)
WERNER
SOIL ANALYTICAL RESULTS
MAMM CREEK FIELD
BILL BARRETT CORPORATION

Parameter	Standard	PB01	PB02	PB03	PB04
Depth (feet)					
Sample Date		7/2/2014	7/2/2014	7/2/2014	7/2/2014

Inorganics

Electrical Conductivity (mmhos/cm)	4	13	10	7.5	6.5
SAR (none)	12	17	22	7.9	8.1
pH, Lab (Standard Units)	6 to 9	9.2	8.8	8.6	8.6

Metals

Arsenic (mg/Kg)	0.39	3.4	6.6	7.2	11
Barium (mg/Kg)	15000	1200	160	210	140
Cadmium (mg/Kg)	70	<0.92	<0.90	<0.82	<0.75
Chromium+3 Calculated (mg/Kg)	120000	11	15	11	12
Chromium, Hexavalent (mg/Kg)	23	<0.58	<0.58	<0.56	<0.59
Copper (mg/Kg)	3100	14	17	20	25
Lead (mg/Kg)	400	21	20	17	23
Mercury (mg/Kg)	23	0.043	0.050	0.083	0.16
Nickel (mg/Kg)	1600	7.2	9.3	16	19
Selenium (mg/Kg)	390	<2.3	<2.2	2.5	2.1
Silver (mg/Kg)	390	<2.3	<2.2	<2.0	<1.9
Zinc (mg/Kg)	23000	29	43	78	87

Organic Compounds

TPH-DRO (mg/Kg)		<4.9	<4.7	<8.9	<4.9
TPH-GRO (mg/kg)		<2.9	<2.9	<2.8	<3
TPH-Total (mg/kg)	500	<7.8	<7.6	<11.7	<7.9
Benzene (mg/kg)	0.17	<0.035	<0.035	<0.034	<0.036
Toluene (mg/kg)	85	<0.035	<0.035	<0.034	<0.036
Ethylbenzene (mg/kg)	100	<0.035	<0.035	<0.034	<0.036
Xylenes, Total (mg/kg)	175	<0.11	<0.1	<0.1	<0.11
Acenaphthene (mg/kg)	1000	<0.0078	<0.0076	<0.014	<0.0078
Anthracene (mg/kg)	1000	<0.0078	<0.0076	<0.014	<0.0078
Benzo (a) anthracene (mg/kg)	0.22	<0.0078	<0.0076	0.033	<0.0078
Benzo (b) fluoranthene (mg/kg)	0.22	<0.0078	<0.0076	<0.014	<0.0078
Benzo (k) fluoranthene (mg/kg)	2.2	<0.0078	<0.0076	<0.014	<0.0078
Benzo (a) pyrene (mg/kg)	0.022	<0.0078	<0.0076	<0.014	<0.0078
Chrysene (mg/kg)	22	<0.0078	<0.0076	<0.014	<0.0078
Dibenz (a,h) anthracene (mg/kg)	0.022	<0.0078	<0.0076	<0.014	<0.0078
Fluoranthene (mg/kg)	1000	<0.0078	<0.0076	<0.014	<0.0078
Fluorene (mg/kg)	1000	<0.0078	<0.0076	<0.014	<0.0078
Indeno (1,2,3-cd) pyrene (mg/kg)	0.22	<0.0078	<0.0076	<0.014	<0.0078
Naphthalene (mg/kg)	23	<0.0078	<0.0076	<0.014	<0.0078
Pyrene (mg/kg)	1000	<0.0078	<0.0076	<0.014	<0.0078

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