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# Magpie Operating, Inc.

2707 South County Road 11, Loveland, Colorado 80537



October 18, 2006

Mr. Randall Ferguson  
Colorado Oil and Gas Conservation Commission  
1120 Lincoln Street, Suite 801  
Denver, Colorado 80203

Re: Challis #1 Disposal Pit

Dear Randall:

As requested, Magpie and Tom Atwood performed an investigation of the Challis #1 Pit. Enclosed you will find the accompanying report.

Sincerely,

Ryan Warner  
Operations Manager

# Chalis #1 Disposal Pit Environmental Investigation Report



## Overview

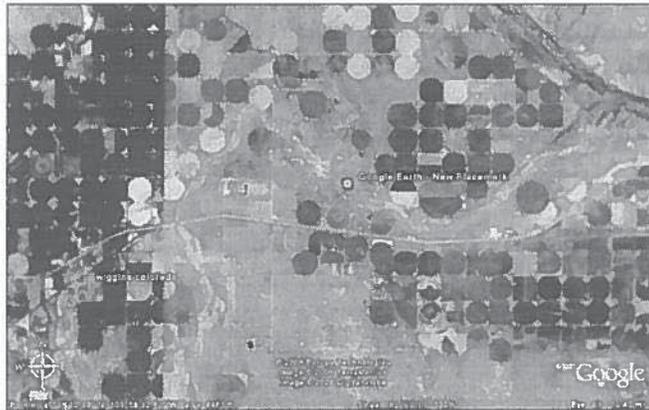
Chalis #1 is an inactive gas well site located in Morgan County, Colorado. Prior operations at this production well included a separator, condensate storage tank, and water disposal pit. The sub-grade disposal pit was previously closed by backfilling with locally-obtained sandy soil.

The Colorado Department of Natural Resources Oil & Gas Conservation Commission (OGCC) has requested an environmental investigation of the pit closure site. This report documents the results of the investigation.

## Site Description

The well site is located in a rural section of Morgan County, Colorado approximately 5 miles northeast of Wiggins and approximately 1 mile north of Interstate 76. Access is obtained via an unimproved private road that serves the local irrigation canal and also the well site. The former disposal pit measures approximately 24 feet wide by 38 feet long, and adjoins the southeast side of the separator and condensate tank.

Area View



Site Close-up View



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## Soil Sampling

As requested by OGCC, soil samples were obtained from two locations within the pit area and included a surface soil sample (0 to 6 inches), a sample at 5 feet below ground surface (bgs), and a sample at 10 feet bgs. Grab samples were obtained via hand auger and then transferred into glass containers, sealed, labeled, placed in a cooler. All sampling was conducted on September 21, 2006 and delivered to the laboratory on the same day. All sampling apparatus were decontaminated between each sampling event.

Pit Site



Surface Sampling Site



Subgrade Sample 5' bgs



Subgrade Sample 10' bgs



## Analytical Results

All samples were submitted to EMPACT Analytical Laboratory in Brighton, Colorado for the following analyzes.

- Total Recoverable Petroleum Hydrocarbons (TRPH)
- Sodium Absorption Ration (SAR)
- Conductivity
- pH

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Table of Results

Sample ID	TRPH	SAR	Conductivity	pH
SS-1, surface	15 mg/kg	34.00	2,100 umhos/cm	10.1
SS-1, 5' bgs	6,200 mg/kg	17.00	326 umhos/cm	6.43
SS-1, 10' bgs	2,800 mg/kg	41.00	587 umhos/cm	9.36
SS-2, surface	31 mg/kg	25.00	3,870 umhos/cm	8.13
SS-2, 5' bgs	2,500 mg/kg	44.00	1,980 umhos/cm	7.28
SS-2, 10' bgs	1,100 mg/kg	22.00	1,270 umhos/cm	9.41

## Assessment

Below grade soils have been impacted by petroleum hydrocarbons. Recommend excavation of all impacted soil and then treat on-site via enhanced landfarming to be performed in the Spring.