Daub & Associates, Inc.

Appendix II

Sampling and Analysis Plan for the Williams Production RMT MV 6-14 Pipeline Garfield County, CO

Form 27
Site Investigation and Remediation Workplan
Colorado Oil and Gas Conservation Commission
State of Colorado

Submitted to:
Williams Production RMT Company
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Denver, CO 80202

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INTRODUCTION

In response to a Notice of Alleged Violation (NOAV) issued to Williams Production RMT Company (Williams) by the Colorado Oil and Gas Conservation Commission (COGCC) for the WGV pad and contamination found in Prather Spring in Garfield County, Colorado, Williams, at its own discretion, plans to remove the abandoned MV 6-14 Pipeline. The area around the pipeline will be inspected, sampled for contamination, remediation performed if necessary and all activities documented. Williams has tasked Daub & Associates, Inc. (Daub) with coordinating the pipeline removal and subsequent sampling event. The Sampling and Analysis Plan (SAP) was developed by Daub for Williams in response to that request. The abandoned MV 6-14 Pipeline is located down slope of the WGV 21-23 pad, in Section 23, Township 6 South, Range 97 West, Garfield County, Colorado (Figure 1).

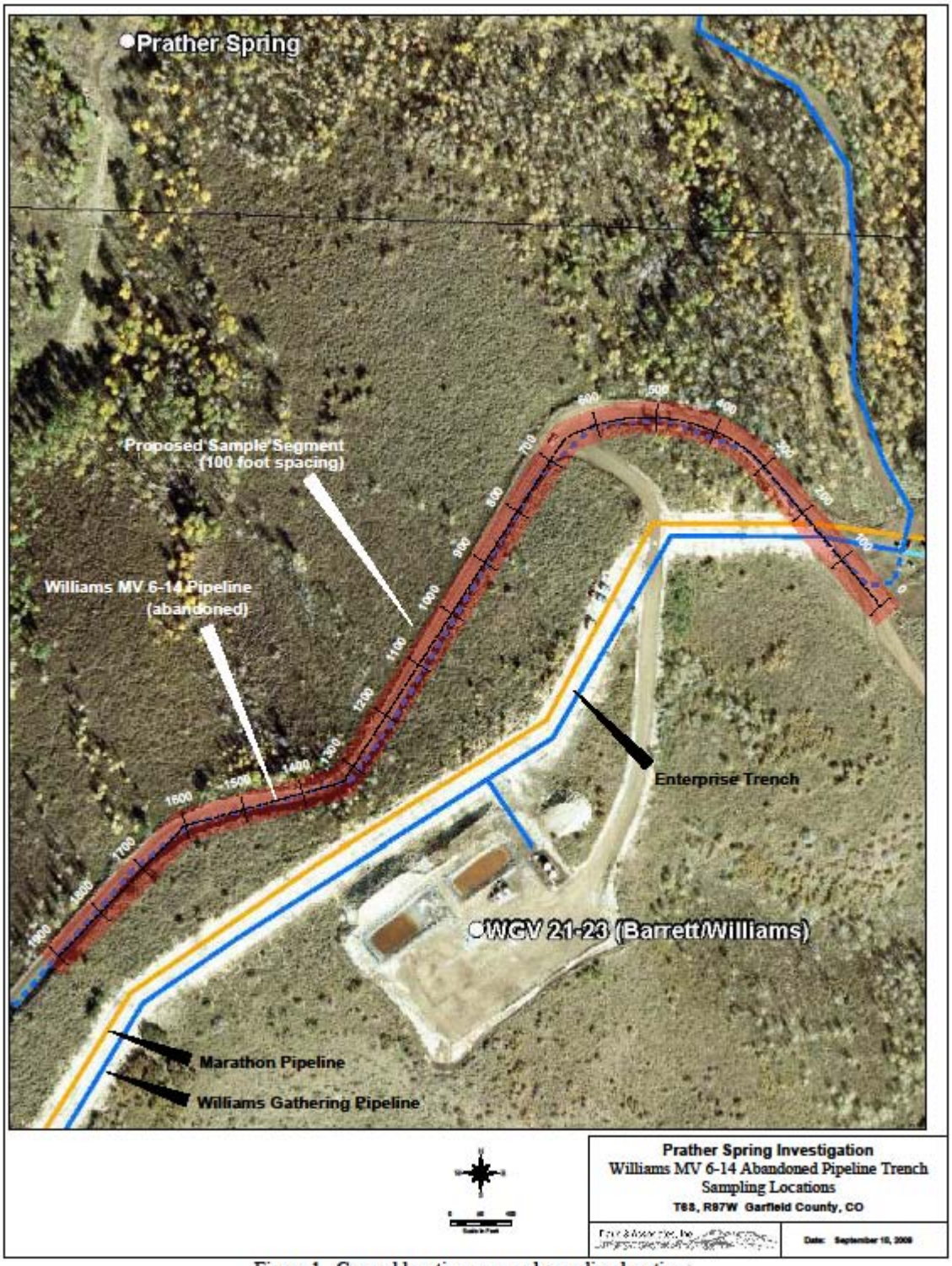

Figure 1. General location map and sampling locations.

PRE-SAMPLING PROCEDURES

The MV 6-14 Pipeline is a 2 ¾ inch aluminum, cathodic protected pipeline. It was buried at a shallow depth of approximately 2 feet. It is located on the south side of the road north of the Williams WGV Pad. Williams will remove and dispose of the pipeline, leaving a shallow trench. The trench will be used to collect solid subsurface samples downgradient of the WGV pad. Trench exposures facilitate the evaluation of subsurface contamination because of the undisturbed nature of the material exposed. Trenches offer the opportunity to visually observe the lithology and inspect for fluids, odors and staining. Williams will backfill the trench after sampling activities have been completed.

Approximately 1900 feet of the trench will be inspected, documented and selectively sampled by Daub. Samples will be collected on 100-foot centers. The sample locations are shown in Figure 1.

Safety training, layout map, work plan review, reconnaissance scan and field screening shall be performed prior to sampling as follows:

- The Williams Health and Safety Plan (HSP) shall be used for the duration of the sampling project and shall include but not be limited to specialized Trenching/Shoring training. Safety training shall be provided in accordance with the HSP by the Williams Health and Safety Officer (HSO) or an approved qualified person. Training shall be documented and shall be submitted to Daub upon request.
- The designated footage of the portion of the trench to be sampled shall be laid out completely using fiberglass measuring tapes incremented in tenths of a foot. Marker flags shall be placed to designate the zero point, the two contacts between the background and high density areas and the end point. The four points shall be surveyed by Williams using GPS.
- Two individuals will walk the entire length of the trench, observe the pipe removal, and inspect and document the soil conditions. Photo Ionization Detector (PID) measurements and a photographic record will be taken.. Representative background PID readings, elevated PID readings and areas of organic soil staining

will be recorded in the field log book and marked on the surface with designated flags for follow-up sampling.

- After the samples have been acquired from the trench, two individuals will walk the entire length of the road, and inspect and document the soil conditions. Photo Ionization Detector (PID) measurements and a photographic record will be taken. Representative background PID readings, elevated PID readings and areas of organic soil staining will be recorded in the field log book and marked on the surface with designated flags for follow-up sampling.

SAMPLING PROCEDURES

Because of the nature of volatile chemicals, it is important that the sampling occur soon after the soil is removed when the trench is safe and practical for entry and sampling. Volatile compounds will start to dissipate as soon as soil is removed, therefore the more elapsed time between opening and sampling, the less likelihood of finding volatile contamination.

Soil samples will be collected from the bottom of the trench. The spacing of sample locations will be one every 100 feet. A flag will be labeled with the sample number and used to mark each sample location. A digital camera shall be used to photograph the sample location and associated surface lithology. The sample number shall be visible in each photograph. The date, individual's name, sample location, sample number, photo number, lithology description and significant comments shall be recorded in the field notebook.[1] Additional samples may be collected at the discretion of the sample technician, i.e. where staining and/or elevated PID measurements, strong hydrocarbon odors or organic stains are detected.

- [1] Detailed descriptions of lithology, moisture content, fracturing and other pertinent information (e.g. textural changes or calcite cement) shall be recorded in the field logbook along with the number of a representative photograph of each lithologic unit. If possible, approximately 0.1 cu. ft. (1 gallon) of contaminant free sample for each lithologic unit shall be collected for archival purposes. The samples shall be stored for one year at the Daub facility.

For each sample location, the sample name shall include the sequential trench footage (using the beginning point as zero) and the sample depth (using the surface as zero). Duplicate samples shall be taken every tenth sample and identified with the designation *DUP*. Samples to be submitted for laboratory testing will be placed in laboratory-supplied containers (Table 1) and stored in a cooler at the proper temperature prior to shipping.

Portions of each sample shall be placed in sealable plastic bags or glass jars for field headspace testing using a PID. The PID used for field headspace testing shall be capable of detecting volatile organic compounds at approximate concentrations of 1 part per million (1 ppm). Field headspace measurements will be made after samples have been in closed plastic bags for approximately 10 minutes. Sample numbers, retention times and instrument readings shall be recorded in the field logbook.

Analytical test samples will be selected based on the following criteria:

- The six samples with the highest PID measurements shall be submitted for analytical testing as primary samples.
- Four representative samples with the highest PID measurements shall be collected as duplicates.
- In the event that PID measurements do not exceed background values, only one bedrock sample and one sample representative of each lithologic unit shall be collected.
- Disposable sampling equipment will be used to collect samples. To avoid cross contamination, non-dedicated sampling equipment will be thoroughly cleaned prior to initiation of sampling activities, and as necessary based on specific sampling procedures.

After the trench has been sampled in its entirety, the road along the pipeline trench will be PID scanned. Any areas of suspected contamination shall be sampled according to the procedures outlined above. The sample locations shall be clearly marked with flags and

photos taken of the sample locations showing the sample number. The samples shall be containerized, appropriately labeled and sent to the laboratory for analysis.

Samples for off-site analytical testing will be shipped under chain-of-custody procedures to:

Accutest Laboratories
4405 Vineland Road, C-15
Orlando, FL 32811
407-425-6700 Phone
407-425-0707 Fax

Samples shall be analyzed using a gas chromatograph (GC) for total volatile and extractable petroleum hydrocarbons (TVPH and TEPH) using USEPA SW846 Modified Method 8015A. The laboratory shall run samples for VOCs using USEPA SW846 Method 8260B and for SVOCs using USEPA SW846 Method 8270 (Table 1).[2] The additional data shall be evaluated.

[2] Note: Holding times will vary depending on threshold limits, data evaluation and method used.

Analysis	Bottle Requirements	Preservation Requirements	Holding Time
TEPH Modified Method 8015A	1 4 oz or 8 oz jar	<6 deg. C	14 days
TVPH Modified Method 8015A	1 4 oz or 8 oz jar	<6 deg. C	14 days
VOC Method 8260B	1 4 oz or 8 oz jar	<6 deg. C	14 days
SVOC Method 8270C	1 4 oz or 8 oz jar	<6 deg. C	14 days

Table 1. Analytical Methods and Sample Requirements

Duplicate samples will be shipped under chain-of-custody procedures to a designated independent laboratory. These duplicate sample analyses will provide quality assessment/quality control (QA/QC), and may facilitate further evaluation of hydrocarbon contamination undetected in the field.

The duplicate samples will be sent to an independent laboratory at the address below:

Sample Management
Accutest Labs of New England
495 Technology Center West, Bldg 1
Marlborough, MA 01752
Office: 1-508-481-6200 X212
Fax: 1-508-481-7753

POST SAMPLING PROCEDURES

The laboratories shall provide the analytical data results in both electronic and hard copy format. Daub shall verify the electronic data against the hard copy report at frequency of ten percent.

Daub shall prepare the final report on *Sampling and Analysis of the MV 6-14 Abandoned*

Pipeline below the WGV pad, Garfield County, Colorado. The report shall include documentation of safety training, field activities (written and photographic evidence of SAP implementation), and analytical results with verification. The report will be submitted to Williams within three weeks after all of the analytical results (initial analyses and split sample analyses if necessary) has been received. Williams is responsible for submitting the final report to the COGCC.