

State of Colorado  
Oil and Gas Conservation Commission



1120 Lincoln Street, Suite 801, Denver, Colorado 80203 Phone: (303)894-2100 Fax: (303)894-2109

SUNDRY NOTICE

Submit original plus one copy. This form is to be used for general, technical and environmental sundry information. For proposed or completed operations, describe in full on Technical Information Page (Page 2 of this form.) Identify well or other facility by API Number or by OGCC Facility ID. Operator shall send an informational copy of all sundry notices for wells located in High Density Areas to the Local Government Designee (Rule 603b.)

RECEIVED  
5/31/2011

1. OGCC Operator Number: <u>96850</u>	4. Contact Name <u>Karolina Blaney</u>	Complete the Attachment Checklist OP OGCC
2. Name of Operator: <u>Williams Production RMT</u>	Phone: <u>970 683 2295</u>	
3. Address: <u>1058 County Road 215</u> City: <u>Parachute</u> State: <u>CO</u> Zip: <u>81635</u>	Fax: <u>970 285 9573</u>	
5. API Number <u>05-</u>	OGCC Facility ID Number <u>414573</u>	Survey Plat
6. Well/Facility Name:	7. Well/Facility Number <u>RWF 24-4</u>	Directional Survey
8. Location (Qtr/Qtr, Sec, Twp, Rng, Meridian): <u>SESW- S4-T7S-R94W 6th PM</u>		Surface Eqmpt Diagram
9. County: <u>Garfield</u>	10. Field Name: <u>Rullison</u>	Technical Info Page
11. Federal, Indian or State Lease Number:		Other

General Notice

CHANGE OF LOCATION: Attach New Survey Plat (a change of surface qtr/qtr is substantive and requires a new permit)

Change of Surface Footage from Exterior Section Lines:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Change of Surface Footage to Exterior Section Lines:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Change of Bottomhole Footage from Exterior Section Lines:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Change of Bottomhole Footage to Exterior Section Lines:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Bottomhole location Qtr/Qtr, Sec, Twp, Rng, Mer                       
 Latitude                      Distance to nearest property line                      Distance to nearest bldg, public rd, utility or RR                       
 Longitude                      Distance to nearest lease line                      Is location in a High Density Area (rule 603b)? Yes/No                       
 Ground Elevation                      Distance to nearest well same formation                      Surface owner consultation date:                     

GPS DATA:  
Date of Measurement                      PDOP Reading                      Instrument Operator's Name                     

CHANGE SPACING UNIT  
Formation                      Formation Code                      Spacing order number                      Unit Acreage                      Unit configuration                     

Remove from surface bond  
Signed surface use agreement attached                     

CHANGE OF OPERATOR (prior to drilling):  
Effective Date:                       
Plugging Bond:  Blanket  Individual

CHANGE WELL NAME NUMBER  
From:                       
To:                       
Effective Date:                     

ABANDONED LOCATION:  
Was location ever built?  Yes  No  
Is site ready for inspection?  Yes  No  
Date Ready for Inspection:                     

NOTICE OF CONTINUED SHUT IN STATUS  
Date well shut in or temporarily abandoned:                       
Has Production Equipment been removed from site?  Yes  No  
MIT required if shut in longer than two years. Date of last MIT                     

SPUD DATE:                     

REQUEST FOR CONFIDENTIAL STATUS (6 mos from date casing set)

SUBSEQUENT REPORT OF STAGE, SQUEEZE OR REMEDIAL CEMENT WORK \*submit cbl and cement job summaries  
Method used                      Cementing tool setting/perf depth                      Cement volume                      Cement top                      Cement bottom                      Date                     

RECLAMATION: Attach technical page describing final reclamation procedures per Rule 1004.  
Final reclamation will commence on approximately                       Final reclamation is completed and site is ready for inspection.

Technical Engineering/Environmental Notice

Notice of Intent  
Approximate Start Date:                     

Report of Work Done  
Date Work Completed: 5/30/2011

Details of work must be described in full on Technical Information Page (Page 2 must be submitted.)

<input type="checkbox"/> Intent to Recomplete (submit form 2)	<input type="checkbox"/> Request to Vent or Flare	<input type="checkbox"/> E&P Waste Disposal
<input type="checkbox"/> Change Drilling Plans	<input type="checkbox"/> Repair Well	<input type="checkbox"/> Beneficial Reuse of E&P Waste
<input type="checkbox"/> Gross Interval Changed?	<input type="checkbox"/> Rule 502 variance requested	<input type="checkbox"/> Status Update/Change of Remediation Plans
<input type="checkbox"/> Casing/Cementing Program Change	<input checked="" type="checkbox"/> Other: <u>Form 15 COAs</u>	for Spills and Releases

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct and complete.

Signed: Karolina Blaney Date: 5/31/2011 Email: Karolina.Blaney@Williams.com  
Print Name: Karolina Blaney Title: Environmental Specialist

OGCC Approved: Richard Allison Title: OGLA - EPS II Date: 11/17/2011

CONDITIONS OF APPROVAL, IF ANY:

**TECHNICAL INFORMATION PAGE**



FOR OGCC USE ONLY

1. OGCC Operator Number: _____	API Number: _____
2. Name of Operator: _____	OGCC Facility ID # _____
3. Well/Facility Name: _____	Well/Facility Number: _____
4. Location (QtrQtr, Sec, Twp, Rng, Meridian): _____	

This form is to be completed whenever a Sundry Notice is submitted requiring detailed report of work to be performed or completed. This form shall be transmitted within 30 days of work completed as a "subsequent" report and must accompany Form 4, page 1.

5. **DESCRIBE PROPOSED OR COMPLETED OPERATIONS**

Form 15

FORM 15 Rev 6/99



01631099

m

State of Colorado



Oil and Gas Conservation Commission

FOR OGCC USE ONLY

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 (303)894-2100 Fax:(303)894-2109

EARTHEN PIT REPORT/PERMIT

This form is to be used for both reporting and permitting pits. Rule 903 describes when a Permit with prior approval, or a Report within 30 days, is required for pits. Submit required attachments and forms.

Complete the Attachment Checklist

FORM SUBMITTED FOR:

Pit Report Pit Permit

Attachment Checklist table with columns for Oper and OGCC, listing items like Detailed Site Plan, Topo Map, etc.

OGCC Operator Number: 96850
Name of Operator: Williams Production RMT Company
Address: 1058 CR 215
City: Parachute State: CO Zip: 81635

Contact Name and Telephone: Robert Bleil
No: (970) 285-9377
Fax: (970) 285-9573

API Number (of associated well): N/A OGCC Facility ID (of other associated facility): N/A 334-777
Pit Location (QtrQtr, Sec, Twp, Rng, Meridian): SE SW S4 T7S R94W 6th PM
Latitude: N 39.463434 Longitude: W 107.895619 County: Garfield
Pit Use: Special Purpose (Describe Use): RWF 24-4 CCF (See attachments)
Pit Type: Lined Surface Discharge Permit: No
Attach Form 26 to identify Source Wells and Form 25 to provide Produced Water Analysis results.

Existing Site Conditions

Is the location in a "Sensitive Area?" Yes
Distance (in feet) to nearest surface water: 450 ground water: 40 - 80 ft. water wells: 780 ft.
LAND USE (or attach copy of Form 2A if previously submitted for associated well) Select one which best describes land use: Rangeland
SOILS (or attach copy of Form 2A if previously submitted for associated well)
Soil map units form USNRCS survey: Sheet No: CO683 Soil Complex/Series No: 71
Soils Series Name: Villa Grove - Zoltay Loam Horizon thickness (in inches): A: 0 - 60" ; B: ; C:
Attach detailed site plan and topo map with pit location.

Pit Design and Construction

Size of pit (feet): Length: 300 Width: 150 Depth: 16
Calculated pit volume (bbls): 108000 76,993 Daily inflow rate (bbls/day): 1800 (annualized)
Daily disposal rates (attach calculations): Evaporation: N/A bbls/day Percolation: N/A bbls/day
Type of liner material: Synthetic Polypropylene Thickness: 36 mil 45 mil
Attach description of proposed design and construction (include sketches and calculations).
Method of treatment of produced water prior to discharge into pit (separator, heater treater, other): N/A
Is pit fenced? Yes Is pit netted? No

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete.

Print Name: Robert Bleil Signed: [Signature]
Title: Principal Regulatory Specialist Date: 6-6-08

OGCC Approved: [Signature] Title: OGLA SUPERVISOR Date: 3/22/2011

CONDITIONS OF APPROVAL, IF ANY:

FACILITY NUMBER: 414573

- OPERATOR WILL PROVIDE A LIST OF SOURCE WATER WITH A FORM 26
- OPERATOR WILL PROVIDE ANALYTICAL DATA FOR A GRAB SAMPLE COLLECTED FROM PIT WATER WITH A FORM 4
- OPERATOR WILL PROVIDE & DOCUMENT A HYDROSTATIC TEST OF PIT LINER BY 5/31/2011 TO OGCC
- OPERATOR WILL PROVIDE AS-BUILT DESIGN PLAN & CROSS SECTIONS TO OGCC WITH FORM 4

JAK

## Hydrostatic Test Results



The purpose for hydrostatic testing earthen pits is to comply with COGCC Form 15 conditions of approval by verifying the fluid holding integrity of the pit lining system. These procedures are specific to existing or active earthen pits holding oil and gas related fluids including, but not limited to, produced water. During testing, the pit shall have fluid level as high as practical, without encroaching into the 2 ft. freeboard, and the test shall be conducted for a minimum of 72 hours, if practical. Visible portions of the liner, including the anchor trench and seams, shall be inspected for defects. The test shall be scheduled and coordinated with Williams' production personnel to ensure that oil and gas activities do not interfere with the test. Testing procedures may be subject to changes as dictated by field and climatic factors. All personnel involved with testing, while onsite, shall comply with Williams' EH&S requirements.

- If practical, a sign shall be placed in a conspicuous location during the test stating "Hydrostatic Testing in Progress, Pit Closed to All Water Hauling Activities". Contact information shall also be placed on the sign.
- A datum point shall be established at the edge of the pit. The distance from the datum point to the fluid level along the pit sidewall, shall be measured and documented at the beginning and end of the test. The date and time of each measurement shall be documented.
- The pit fluid level surface area and the lined surface area tributary to the pit shall be measured and recorded at the beginning of the test. The date and time shall be documented.
- The pit sidewall slope, if unknown, shall be measured and documented recording the rise and run of the slope.
- A 4" diameter rain gauge with funnel inlet shall be installed at the pit site. Rainfall shall be recorded for the duration of the hydrostatic test.
- Evaporation during the test shall be accounted utilizing guidelines from the NOAA and the Colorado Division of Water Resources. Pan evaporation, for the subject location, shall be determined from evaporation atlases in NOAA Technical Report NWS 33, "Evaporation Atlas for the Contiguous 48 United States", by the U.S. Department of Commerce, dated June 1982. The total annual pan evaporation estimate from NOAA NWS 33 shall be distributed by the appropriate month. The monthly distribution for elevations below 6500 feet msl is: Jan - 3.0%, Feb - 3.5%, Mar - 5.5%, Apr - 9.0%, May - 12.0%, Jun - 14.5%, Jul - 15.0%, Aug - 13.5%, Sep - 10.0%, Oct - 7.0%, Nov - 4.0%, and Dec - 3.0%. The monthly distribution for elevations above 6500 feet msl is: Jan - 1.0%, Feb - 3.0%, Mar - 6.0%, Apr - 9.0%, May - 12.5%, Jun - 15.5%, Jul - 16.0%, Aug - 13.0%, Sep - 11.0%, Oct - 7.5%, Nov - 4.0%, and Dec - 1.5%. The calculated monthly pan evaporation shall be prorated for the three-day hydrostatic test period. Evaporation does not need to be calculated for an ice-cover period.
- For the duration of the test, all inflows and outflows, such as truck and piped transfers, shall cease. If the cessation of inflows and outflows is not practical, all pit inflows and outflows shall be accurately metered and documented during the test.
- The measured change in pit volume shall be the volume difference, as determined from the pit capacity table, between the slope or elevation measurements taken at beginning and end of the test.
- The calculated change in pit volume during the test is:  $\Delta S = P + I - O - E$

Where:  $\Delta S$  = Change in pit storage  
P = Precipitation Inflow  
I = Measured Inflows  
O = Measured Outflows  
E = Evaporation

- The measured change in storage shall be compared to the calculated change in volume during the test duration. The test procedures and results will be reviewed and analyzed for discrepancies. If the test results indicate integrity issues with the lining system, the test will be repeated.

## Hydrostatic Pit Test Data Collection & Computation Form

**Pit Owner:** Williams Production RMT Company  
**Pit Name:** Spruce Creek Pit (RWF 24-4 CCF)  
**COGCC Facility No.** 414573  
**Pit Location:** SE 1/4 SW 1/4, Section 4, T7S, R94W, 6th P.M.  
 Latitude: 39.463434° Longitude: 107.895619°  
 Garfield County, Colorado  
**Elevation:** 6166 ft. MSL  
**Test Conducted By:** David Fox, Fox Engineering Solutions

**Test Initiation:**

Date: May 23, 2011  
 Time: 4:30 PM  
 Total Duration: 72 hours

**Test Termination:**

Date: May 26, 2011  
 Time: 4:30 PM

	<u>Length</u>	<u>Width</u>	<u>Area</u>	<u>Comments</u>
<b>Tributary Pit Liner Surface Area (ft<sup>2</sup>):</b>	337	114.75	38670.8 ft. <sup>2</sup>	
Initial Pit Water Surface Area:	326	104.25	33985.5 ft. <sup>2</sup>	
Final Pit Water Surface Area:	326	104.25	33985.5 ft. <sup>2</sup>	
<b>Average Pit Surface Area:</b>			33985.5 ft. <sup>2</sup>	
<b>Initial Datum Side Slope Measurement:</b>	52.5 inches		<b>Initial Pit Volume:</b>	2945754 gallons
<b>Final Datum Side Slope Measurement:</b>	53.25 inches		<b>Final Pit Volume:</b>	2933952 gallons
<b>Annual Pan Evaporation:</b>	62.5 inches		<b>Monthly Evap Distribution:</b>	13%
<small>(NOAA Technical Report NWS 33)</small>			<b>72-hour Evaporation Rate:</b>	0.801 inches
			<b>72-Hour Pit Evaporation:</b>	16977 gallons
<b>Rain Gauge Installed:</b> Yes	Location: North Side of Pit		<b>Recorded Precipitation:</b>	0.25 inches
			<b>72-Hour Precip. Inflow:</b>	6026 gallons
<b>Metered Inflow/Outflow:</b>			<b>Metered Inflow:</b>	0.00 gallons
			<b>Metered Outflow:</b>	0.00 gallons
<b>Calculated Change in Storage:</b>				-10951 gallons
<small>(Precipitation - Evaporation + Metered Inflows - Metered Outflows)</small>				
<b>Measure Change in Storage:</b>	<small>(+ indicates storage increased)</small>			-11802 gallons
<small>Final Pit Volume - Initial Pit Volume</small>				
<small>(From Side Slope Measurements &amp; Corresponding Capacity Table Values)</small>				
<b>Difference between Calculated and Measured Volume:</b>				851 gallons

**Summary:** No observed loss of liner integrity. Difference between calculated and measured volume is estimated to be 851 gallons which is within an acceptable margin of measurement error.  
 (851 gallons / 12,012 gallons per inch of slope measurement = 0.07 inches.

**Liner Condition:**

Visible portion of liner, approximately the top 3 -4 ft., had no apparent tears, delamination or seam failures.

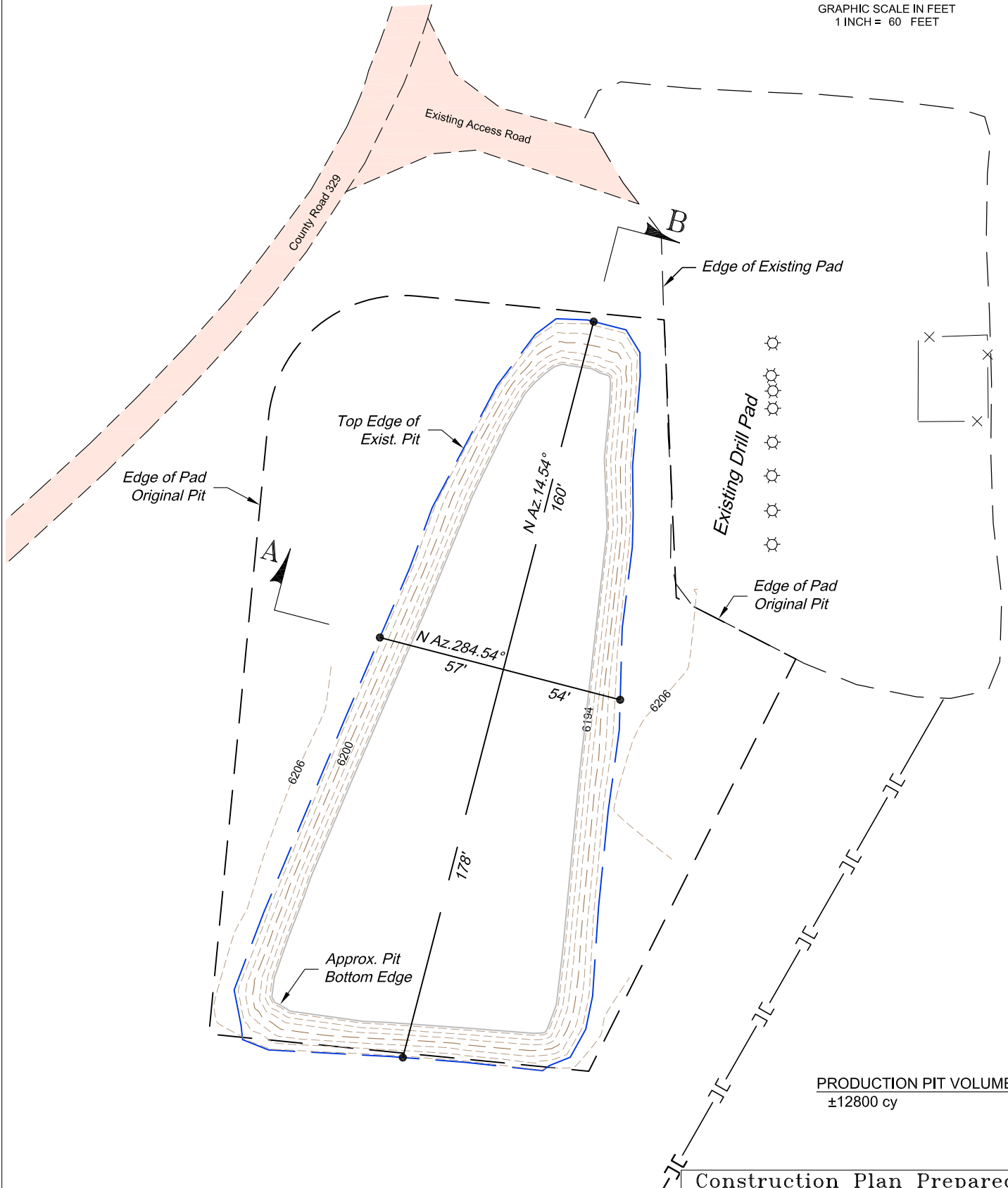
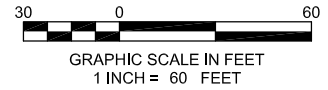
**Comments:**

Regarding the Capacity Table, each inch of slope measurement equates to 12,012 gallons or 286 barrels.  
 Williams staff, Bryan O'Dell and Chuck Smith, notified about 72-hour hydrostatic testing.



## As-built Plat & Cross Sections

Section 4  
T. 7 S., R. 94 W



PRODUCTION PIT VOLUME:  
±12800 cy

Construction Plan Prepared for:  
**Williams** Williams Production, RMT

RWF 24-4 Production Pit  
AS - CONSTRUCTED

SCALE:	1" = 60'
DATE:	5/4/11
PLAT:	1 of 2
PROJECT:	Williams Valley
DFT:	cvs

136 East Third Street  
Rifle, Colorado 81650  
Ph. (970) 625-2720  
Fax (970) 625-2773

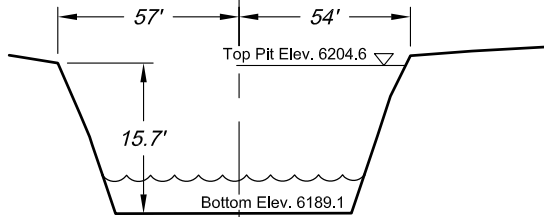


K:\2010 Williams Valley\RWF 24-4\RWF 24-4.dwg, 5/4/2011 12:15:43 PM

WELLS

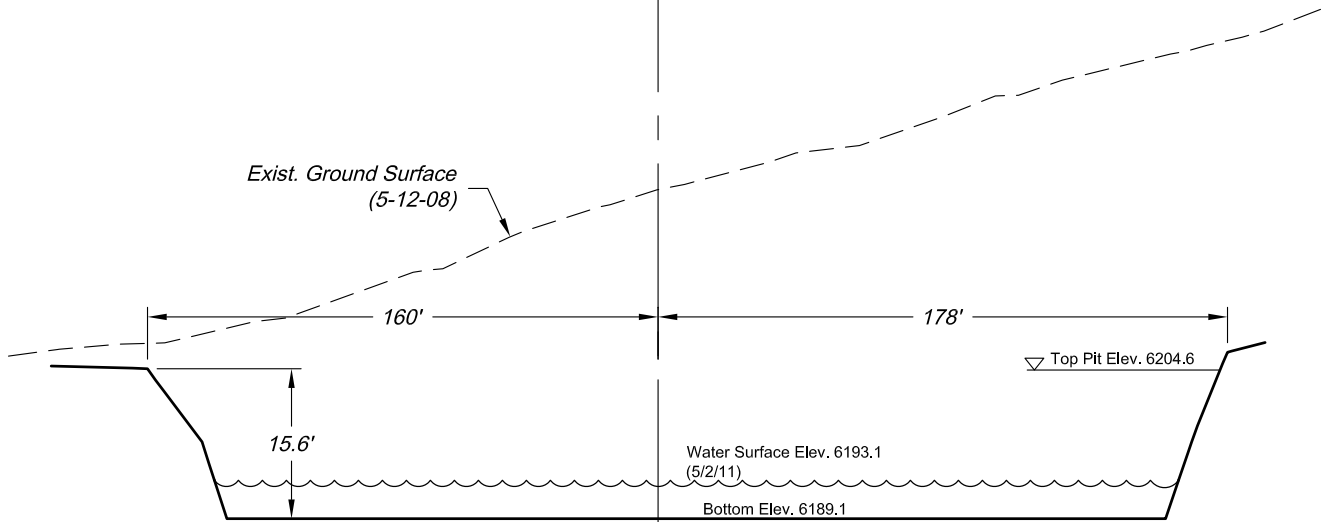
Exist. Ground Surface  
(5-12-08)

A



Exist. Ground Surface  
(5-12-08)

B



SCALE: Horiz.: 1" = 60'  
Vert. : 1" = 20'

K:\2010 Williams Valley\RWF 24-4\RWF 24-4.dwg, 5/4/2011 12:16:09 PM

136 East Third Street  
Rifle, Colorado 81650  
Ph. (970) 625-2720  
Fax: (970) 625-2773



SCALE: As Noted  
DATE: 5/4/11  
PLAT: 2 of 2  
PROJECT: Williams Valley  
DFT: cws

Construction Plan Prepared for:  
**Williams** Williams Production, RMT  
*RWF 24-4 Production Pit*  
*As-CONSTRUCTED CROSS SECTIONS*

Analytical Data

Client Sample ID:	RWF 24-4	RWF 24-4
Lab Sample ID:	T74162-1F	T74162-1
Date Sampled:	4/21/2011	4/21/2011

## GC/MS Volatiles

Acetone	ug/l	NA	75000	
Benzene	ug/l	NA	2990	
Bromobenzene	ug/l	NA	ND	U
Bromochloromethane	ug/l	NA	ND	U
Bromodichloromethane	ug/l	NA	ND	U
Bromoform	ug/l	NA	ND	U
n-Butylbenzene	ug/l	NA	ND	U
sec-Butylbenzene	ug/l	NA	ND	U
tert-Butylbenzene	ug/l	NA	ND	U
Chlorobenzene	ug/l	NA	ND	U
Chloroethane	ug/l	NA	ND	U
Chloroform	ug/l	NA	ND	U
o-Chlorotoluene	ug/l	NA	ND	U
p-Chlorotoluene	ug/l	NA	ND	U
Carbon disulfide	ug/l	NA	ND	U
Carbon tetrachloride	ug/l	NA	ND	U
1,1-Dichloroethane	ug/l	NA	ND	U
1,1-Dichloroethylene	ug/l	NA	ND	U
1,1-Dichloropropene	ug/l	NA	ND	U
1,2-Dibromo-3-chloropropane	ug/l	NA	ND	U
1,2-Dibromoethane	ug/l	NA	ND	U
1,2-Dichloroethane	ug/l	NA	ND	U
1,2-Dichloropropane	ug/l	NA	ND	U
1,3-Dichloropropane	ug/l	NA	ND	U
2,2-Dichloropropane	ug/l	NA	ND	U
Dibromochloromethane	ug/l	NA	ND	U
Dichlorodifluoromethane	ug/l	NA	ND	U
cis-1,2-Dichloroethylene	ug/l	NA	ND	U
cis-1,3-Dichloropropene	ug/l	NA	ND	U
m-Dichlorobenzene	ug/l	NA	ND	U
o-Dichlorobenzene	ug/l	NA	ND	U
p-Dichlorobenzene	ug/l	NA	ND	U
trans-1,2-Dichloroethylene	ug/l	NA	ND	U
trans-1,3-Dichloropropene	ug/l	NA	ND	U
Ethylbenzene	ug/l	NA	130	
2-Hexanone	ug/l	NA	12.8	
Hexachlorobutadiene	ug/l	NA	ND	U
Isopropylbenzene	ug/l	NA	15.7	
p-Isopropyltoluene	ug/l	NA	9.4	
4-Methyl-2-pentanone	ug/l	NA	19.3	
Methyl bromide	ug/l	NA	ND	U
Methyl chloride	ug/l	NA	ND	U
Methylene bromide	ug/l	NA	ND	U
Methylene chloride	ug/l	NA	1.7	J
Methyl ethyl ketone	ug/l	NA	166	
Methyl Tert Butyl Ether	ug/l	NA	ND	U

Client Sample ID:		RWF 24-4	RWF 24-4	
Lab Sample ID:		T74162-1F	T74162-1	
Date Sampled:		4/21/2011	4/21/2011	
Naphthalene	ug/l	NA	238	J
n-Propylbenzene	ug/l	NA	18.3	
Styrene	ug/l	NA	ND	U
1,1,1,2-Tetrachloroethane	ug/l	NA	ND	U
1,1,1-Trichloroethane	ug/l	NA	ND	U
1,1,2,2-Tetrachloroethane	ug/l	NA	4.2	
1,1,2-Trichloroethane	ug/l	NA	ND	U
1,2,3-Trichlorobenzene	ug/l	NA	ND	U
1,2,3-Trichloropropane	ug/l	NA	ND	U
1,2,4-Trichlorobenzene	ug/l	NA	ND	U
1,2,4-Trimethylbenzene	ug/l	NA	295	
1,3,5-Trimethylbenzene	ug/l	NA	234	
Tetrachloroethylene	ug/l	NA	ND	U
Toluene	ug/l	NA	3810	
Trichloroethylene	ug/l	NA	ND	U
Trichlorofluoromethane	ug/l	NA	ND	U
Vinyl chloride	ug/l	NA	ND	U
Xylene (total)	ug/l	NA	2230	
m,p-Xylene	ug/l	NA	1890	
o-Xylene	ug/l	NA	341	

## GC/MS Semi-volatiles

Benzoic Acid	ug/l	NA	ND	U
2-Chlorophenol	ug/l	NA	ND	U
4-Chloro-3-methyl phenol	ug/l	NA	ND	U
2,4-Dichlorophenol	ug/l	NA	ND	U
2,4-Dimethylphenol	ug/l	NA	ND	U
2,4-Dinitrophenol	ug/l	NA	ND	U
4,6-Dinitro-o-cresol	ug/l	NA	ND	U
2-Methylphenol	ug/l	NA	23.9	J
3&4-Methylphenol	ug/l	NA	17.9	J
2-Nitrophenol	ug/l	NA	ND	U
4-Nitrophenol	ug/l	NA	ND	U
Pentachlorophenol	ug/l	NA	ND	U
Phenol	ug/l	NA	32.9	J
2,4,5-Trichlorophenol	ug/l	NA	ND	U
2,4,6-Trichlorophenol	ug/l	NA	ND	U
Acenaphthene	ug/l	NA	ND	U
Acenaphthylene	ug/l	NA	ND	U
Aniline	ug/l	NA	ND	U
Anthracene	ug/l	NA	ND	U
Benzdine	ug/l	NA	ND	U
Benzo(a)anthracene	ug/l	NA	ND	U
Benzo(a)pyrene	ug/l	NA	ND	U
Benzo(b)fluoranthene	ug/l	NA	ND	U
Benzo(g,h,i)perylene	ug/l	NA	ND	U
Benzo(k)fluoranthene	ug/l	NA	ND	U
4-Bromophenyl phenyl ether	ug/l	NA	ND	U
Butyl benzyl phthalate	ug/l	NA	ND	U

Client Sample ID:		RWF 24-4	RWF 24-4	
Lab Sample ID:		T74162-1F	T74162-1	
Date Sampled:		4/21/2011	4/21/2011	
Benzyl Alcohol	ug/l	NA	ND	U
2-Chloronaphthalene	ug/l	NA	ND	U
4-Chloroaniline	ug/l	NA	ND	U
Carbazole	ug/l	NA	ND	U
Chrysene	ug/l	NA	ND	U
bis(2-Chloroethoxy)methane	ug/l	NA	ND	U
bis(2-Chloroethyl)ether	ug/l	NA	ND	U
bis(2-Chloroisopropyl)ether	ug/l	NA	ND	U
4-Chlorophenyl phenyl ether	ug/l	NA	ND	U
1,2-Dichlorobenzene	ug/l	NA	ND	U
1,2-Diphenylhydrazine	ug/l	NA	ND	U
1,3-Dichlorobenzene	ug/l	NA	ND	U
1,4-Dichlorobenzene	ug/l	NA	ND	U
2,4-Dinitrotoluene	ug/l	NA	ND	U
2,6-Dinitrotoluene	ug/l	NA	ND	U
3,3'-Dichlorobenzidine	ug/l	NA	ND	U
Dibenzo(a,h)anthracene	ug/l	NA	ND	U
Dibenzofuran	ug/l	NA	ND	U
Di-n-butyl phthalate	ug/l	NA	ND	U
Di-n-octyl phthalate	ug/l	NA	ND	U
Diethyl phthalate	ug/l	NA	ND	U
Dimethyl phthalate	ug/l	NA	ND	U
bis(2-Ethylhexyl)phthalate	ug/l	NA	ND	U
Fluoranthene	ug/l	NA	ND	U
Fluorene	ug/l	NA	ND	U
Hexachlorobenzene	ug/l	NA	ND	U
Hexachlorobutadiene	ug/l	NA	ND	U
Hexachlorocyclopentadiene	ug/l	NA	ND	U
Hexachloroethane	ug/l	NA	ND	U
Indeno(1,2,3-cd)pyrene	ug/l	NA	ND	U
Isophorone	ug/l	NA	ND	U
1-Methylnaphthalene	ug/l	NA	81.3	
2-Methylnaphthalene	ug/l	NA	212	
2-Nitroaniline	ug/l	NA	ND	U
3-Nitroaniline	ug/l	NA	ND	U
4-Nitroaniline	ug/l	NA	ND	U
Naphthalene	ug/l	NA	192	
Nitrobenzene	ug/l	NA	ND	U
n-Nitrosodimethylamine	ug/l	NA	ND	U
N-Nitroso-di-n-propylamine	ug/l	NA	ND	U
N-Nitrosodiphenylamine	ug/l	NA	ND	U
Phenanthrene	ug/l	NA	ND	U
Pyrene	ug/l	NA	ND	U
Pyridine	ug/l	NA	ND	U
1,2,4-Trichlorobenzene	ug/l	NA	ND	U

## Metals Analysis

Calcium	ug/l	281000	NA	
Iron	ug/l	52300	NA	

Client Sample ID:		RWF 24-4	RWF 24-4
Lab Sample ID:		T74162-1F	T74162-1
Date Sampled:		4/21/2011	4/21/2011
Magnesium	ug/l	43600	NA
Manganese	ug/l	424	NA
Potassium	ug/l	89700	NA
Sodium	ug/l	8170000	NA

## General Chemistry

Specific Conductivity	umhos/cm	NA	39100	
pH	su	NA	6.50	
Alkalinity, Total as CaCO3	mg/l	NA	524	
Solids, Total Dissolved	mg/l	NA	26200	
Alkalinity, Bicarbonate	mg/l	NA	524	
Alkalinity, Carbonate	mg/l	NA	0.66	U
Hydroxide Alkalinity	mg/l	NA	0.66	U
Chloride	mg/l	NA	13100	
Bromide	mg/l	NA	71.4	
Sulfate	mg/l	NA	0.15	U

**Technical Report for**

**Williams Production RMT Company**

**RWF 24-4 Pit**

**Accutest Job Number: T74162**

**Sampling Date: 04/21/11**

**Report to:**

**Williams Production RMT Company**

**karolina.blaney@williams.com**

**ATTN: Karolina Blaney**

**Total number of pages in report: 46**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.



**Paul Canevaro**  
**Laboratory Director**

**Client Service contact: Sylvia Garza 713-271-4700**

Certifications: TX (T104704220-10-3) AR (88-0756) FL (E87628) KS (E-10366) LA (85695/04004) OK (9103)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.  
Test results relate only to samples analyzed.

# Table of Contents

-1-

<b>Section 1: Sample Summary</b> .....	<b>3</b>
<b>Section 2: Sample Results</b> .....	<b>4</b>
<b>2.1:</b> T74162-1: RWF 24-4 .....	5
<b>2.2:</b> T74162-1F: RWF 24-4 .....	12
<b>Section 3: Misc. Forms</b> .....	<b>13</b>
<b>3.1:</b> Chain of Custody .....	14
<b>Section 4: GC/MS Volatiles - QC Data Summaries</b> .....	<b>17</b>
<b>4.1:</b> Method Blank Summary .....	18
<b>4.2:</b> Blank Spike Summary .....	21
<b>4.3:</b> Matrix Spike/Matrix Spike Duplicate Summary .....	24
<b>Section 5: GC/MS Semi-volatiles - QC Data Summaries</b> .....	<b>27</b>
<b>5.1:</b> Method Blank Summary .....	28
<b>5.2:</b> Blank Spike Summary .....	31
<b>5.3:</b> Matrix Spike/Matrix Spike Duplicate Summary .....	34
<b>Section 6: Metals Analysis - QC Data Summaries</b> .....	<b>37</b>
<b>6.1:</b> Prep QC MP14527: Ca,Fe,Mg,Mn,K,Na .....	38
<b>Section 7: General Chemistry - QC Data Summaries</b> .....	<b>43</b>
<b>7.1:</b> Method Blank and Spike Results Summary .....	44
<b>7.2:</b> Duplicate Results Summary .....	45
<b>7.3:</b> Matrix Spike Results Summary .....	46

1

2

3

4

5

6

7



## Sample Summary

Williams Production RMT Company

Job No: T74162

RWF 24-4 Pit

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
T74162-1	04/21/11	08:00	04/22/11	AQ	Water	RWF 24-4
T74162-1F	04/21/11	08:00	04/22/11	AQ	Water Filtered	RWF 24-4

Sample Results

---

Report of Analysis

---

## Report of Analysis

<b>Client Sample ID:</b>	RWF 24-4	<b>Date Sampled:</b>	04/21/11
<b>Lab Sample ID:</b>	T74162-1	<b>Date Received:</b>	04/22/11
<b>Matrix:</b>	AQ - Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	SW846 8260B		
<b>Project:</b>	RWF 24-4 Pit		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0006299.D	1	04/29/11	JL	n/a	n/a	VE334
Run #2	E0006314.D	50	04/29/11	JL	n/a	n/a	VE334
Run #3	E0006313.D	200	04/29/11	JL	n/a	n/a	VE334

Run #	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml
Run #3	5.0 ml

## VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	75000 <sup>a</sup>	10000	940	ug/l	
71-43-2	Benzene	2990 <sup>b</sup>	100	25	ug/l	
108-86-1	Bromobenzene	ND	2.0	0.82	ug/l	
74-97-5	Bromochloromethane	ND	2.0	1.6	ug/l	
75-27-4	Bromodichloromethane	ND	2.0	0.49	ug/l	
75-25-2	Bromoform	ND	2.0	1.4	ug/l	
104-51-8	n-Butylbenzene	ND	2.0	0.63	ug/l	
135-98-8	sec-Butylbenzene	ND	2.0	0.52	ug/l	
98-06-6	tert-Butylbenzene	ND	2.0	1.3	ug/l	
108-90-7	Chlorobenzene	ND	2.0	0.56	ug/l	
75-00-3	Chloroethane	ND	2.0	0.92	ug/l	
67-66-3	Chloroform	ND	2.0	0.64	ug/l	
95-49-8	o-Chlorotoluene	ND	2.0	0.70	ug/l	
106-43-4	p-Chlorotoluene	ND	2.0	0.56	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.53	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	0.66	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	0.52	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	0.50	ug/l	
563-58-6	1,1-Dichloropropene	ND	2.0	0.78	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	1.9	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	0.55	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	0.62	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	0.62	ug/l	
142-28-9	1,3-Dichloropropane	ND	2.0	0.54	ug/l	
594-20-7	2,2-Dichloropropane	ND	2.0	0.62	ug/l	
124-48-1	Dibromochloromethane	ND	2.0	0.61	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.1	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	2.0	0.56	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	0.48	ug/l	
541-73-1	m-Dichlorobenzene	ND	2.0	1.0	ug/l	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b>	RWF 24-4	<b>Date Sampled:</b>	04/21/11
<b>Lab Sample ID:</b>	T74162-1	<b>Date Received:</b>	04/22/11
<b>Matrix:</b>	AQ - Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	SW846 8260B		
<b>Project:</b>	RWF 24-4 Pit		

### VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-50-1	o-Dichlorobenzene	ND	2.0	0.69	ug/l	
106-46-7	p-Dichlorobenzene	ND	2.0	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	2.0	0.45	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	0.68	ug/l	
100-41-4	Ethylbenzene	130	2.0	0.55	ug/l	
591-78-6	2-Hexanone	12.8	10	3.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	2.0	1.3	ug/l	
98-82-8	Isopropylbenzene	15.7	2.0	0.51	ug/l	
99-87-6	p-Isopropyltoluene	9.4	2.0	0.65	ug/l	
108-10-1	4-Methyl-2-pentanone	19.3	10	9.9	ug/l	
74-83-9	Methyl bromide	ND	2.0	0.94	ug/l	
74-87-3	Methyl chloride	ND	2.0	0.84	ug/l	
74-95-3	Methylene bromide	ND	2.0	0.65	ug/l	
75-09-2	Methylene chloride	1.7	5.0	0.41	ug/l	J
78-93-3	Methyl ethyl ketone	166	10	3.9	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	2.0	0.73	ug/l	
91-20-3	Naphthalene	238 <sup>b</sup>	250	33	ug/l	J
103-65-1	n-Propylbenzene	18.3	2.0	0.57	ug/l	
100-42-5	Styrene	ND	2.0	0.56	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	2.0	0.80	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	0.62	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	4.2	2.0	1.2	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	0.98	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	2.0	1.1	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	2.0	1.3	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	2.0	0.82	ug/l	
95-63-6	1,2,4-Trimethylbenzene	295 <sup>b</sup>	100	33	ug/l	
108-67-8	1,3,5-Trimethylbenzene	234 <sup>b</sup>	100	35	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	0.91	ug/l	
108-88-3	Toluene	3810 <sup>b</sup>	100	22	ug/l	
79-01-6	Trichloroethylene	ND	2.0	0.52	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	1.2	ug/l	
75-01-4	Vinyl chloride	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	2230 <sup>b</sup>	300	84	ug/l	
	m,p-Xylene	1890 <sup>b</sup>	200	57	ug/l	
95-47-6	o-Xylene	341 <sup>b</sup>	100	27	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
1868-53-7	Dibromofluoromethane	98%	97%	99%	79-122%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> RWF 24-4	<b>Date Sampled:</b> 04/21/11
<b>Lab Sample ID:</b> T74162-1	<b>Date Received:</b> 04/22/11
<b>Matrix:</b> AQ - Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8260B	
<b>Project:</b> RWF 24-4 Pit	

## VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
17060-07-0	1,2-Dichloroethane-D4	89%	85%	87%	75-121%
2037-26-5	Toluene-D8	107%	102%	102%	87-119%
460-00-4	4-Bromofluorobenzene	97%	96%	97%	80-133%

(a) Result is from Run# 3

(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b>	RWF 24-4	<b>Date Sampled:</b>	04/21/11
<b>Lab Sample ID:</b>	T74162-1	<b>Date Received:</b>	04/22/11
<b>Matrix:</b>	AQ - Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	SW846 8270C SW846 3510C		
<b>Project:</b>	RWF 24-4 Pit		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	P17636.D	10	04/30/11	GJ	04/27/11	OP18290	EP837
Run #2							

Run #	Initial Volume	Final Volume
Run #1	990 ml	1.0 ml
Run #2		

## ABN Full List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	100	50	ug/l	
95-57-8	2-Chlorophenol	ND	51	12	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	51	12	ug/l	
120-83-2	2,4-Dichlorophenol	ND	51	22	ug/l	
105-67-9	2,4-Dimethylphenol	ND	51	13	ug/l	
51-28-5	2,4-Dinitrophenol	ND	250	150	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	100	14	ug/l	
95-48-7	2-Methylphenol	23.9	51	8.4	ug/l	J
	3&4-Methylphenol	17.9	51	16	ug/l	J
88-75-5	2-Nitrophenol	ND	51	20	ug/l	
100-02-7	4-Nitrophenol	ND	250	67	ug/l	
87-86-5	Pentachlorophenol	ND	250	130	ug/l	
108-95-2	Phenol	32.9	51	7.6	ug/l	J
95-95-4	2,4,5-Trichlorophenol	ND	51	12	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	51	12	ug/l	
83-32-9	Acenaphthene	ND	51	16	ug/l	
208-96-8	Acenaphthylene	ND	51	12	ug/l	
62-53-3	Aniline	ND	51	46	ug/l	
120-12-7	Anthracene	ND	51	11	ug/l	
92-87-5	Benzidine	ND	250	60	ug/l	
56-55-3	Benzo(a)anthracene	ND	51	11	ug/l	
50-32-8	Benzo(a)pyrene	ND	51	11	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	51	8.8	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	51	17	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	51	11	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	51	14	ug/l	
85-68-7	Butyl benzyl phthalate	ND	51	16	ug/l	
100-51-6	Benzyl Alcohol	ND	51	13	ug/l	
91-58-7	2-Chloronaphthalene	ND	51	14	ug/l	
106-47-8	4-Chloroaniline	ND	51	43	ug/l	
86-74-8	Carbazole	ND	51	15	ug/l	
218-01-9	Chrysene	ND	51	9.9	ug/l	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b>	RWF 24-4	<b>Date Sampled:</b>	04/21/11
<b>Lab Sample ID:</b>	T74162-1	<b>Date Received:</b>	04/22/11
<b>Matrix:</b>	AQ - Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	SW846 8270C SW846 3510C		
<b>Project:</b>	RWF 24-4 Pit		

## ABN Full List

CAS No.	Compound	Result	RL	MDL	Units	Q
111-91-1	bis(2-Chloroethoxy)methane	ND	51	13	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	51	13	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	51	20	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	51	13	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	51	13	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	51	14	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	51	13	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	51	13	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	51	14	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	51	13	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	100	32	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	51	16	ug/l	
132-64-9	Dibenzofuran	ND	51	13	ug/l	
84-74-2	Di-n-butyl phthalate	ND	51	10	ug/l	
117-84-0	Di-n-octyl phthalate	ND	51	13	ug/l	
84-66-2	Diethyl phthalate	ND	51	11	ug/l	
131-11-3	Dimethyl phthalate	ND	51	11	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	51	18	ug/l	
206-44-0	Fluoranthene	ND	51	9.8	ug/l	
86-73-7	Fluorene	ND	51	14	ug/l	
118-74-1	Hexachlorobenzene	ND	51	14	ug/l	
87-68-3	Hexachlorobutadiene	ND	51	11	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	100	52	ug/l	
67-72-1	Hexachloroethane	ND	51	9.8	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	51	18	ug/l	
78-59-1	Isophorone	ND	51	12	ug/l	
90-12-0	1-Methylnaphthalene	81.3	51	11	ug/l	
91-57-6	2-Methylnaphthalene	212	51	13	ug/l	
88-74-4	2-Nitroaniline	ND	51	14	ug/l	
99-09-2	3-Nitroaniline	ND	51	34	ug/l	
100-01-6	4-Nitroaniline	ND	51	24	ug/l	
91-20-3	Naphthalene	192	51	11	ug/l	
98-95-3	Nitrobenzene	ND	51	17	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	51	9.8	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	51	14	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	51	17	ug/l	
85-01-8	Phenanthrene	ND	51	9.8	ug/l	
129-00-0	Pyrene	ND	51	17	ug/l	
110-86-1	Pyridine	ND	51	10	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	51	13	ug/l	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b>	RWF 24-4	<b>Date Sampled:</b>	04/21/11
<b>Lab Sample ID:</b>	T74162-1	<b>Date Received:</b>	04/22/11
<b>Matrix:</b>	AQ - Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	SW846 8270C SW846 3510C		
<b>Project:</b>	RWF 24-4 Pit		

### ABN Full List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	14%		10-66%
4165-62-2	Phenol-d5	0% <sup>b</sup>		10-53%
118-79-6	2,4,6-Tribromophenol	7% <sup>b</sup>		32-128%
4165-60-0	Nitrobenzene-d5	14% <sup>b</sup>		29-115%
321-60-8	2-Fluorobiphenyl	9% <sup>b</sup>		34-113%
1718-51-0	Terphenyl-d14	5% <sup>b</sup>		12-145%

- (a) Elevated reporting limits due to matrix interference. High concentration of non-target compounds were detected in the sample.
- (b) Outside control limits due to dilution.

ND = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> RWF 24-4	<b>Date Sampled:</b> 04/21/11
<b>Lab Sample ID:</b> T74162-1	<b>Date Received:</b> 04/22/11
<b>Matrix:</b> AQ - Water	<b>Percent Solids:</b> n/a
<b>Project:</b> RWF 24-4 Pit	

## General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Alkalinity, Bicarbonate	524	5.0	0.66	mg/l	1	05/03/11	MC	SM 4500 CO2 D
Alkalinity, Carbonate	0.66 U	5.0	0.66	mg/l	1	05/03/11	MC	SM18 2320B
Alkalinity, Total as CaCO <sub>3</sub>	524	20	6.7	mg/l	1	05/02/11 13:00	MC	SM 2320B
Bromide	71.4	2.5	0.50	mg/l	5	05/03/11 19:06	BF	EPA 300/SW846 9056
Chloride	13100	500	190	mg/l	1000	05/04/11 14:59	BF	EPA 300/SW846 9056
Hydroxide Alkalinity	0.66 U	5.0	0.66	mg/l	1	05/03/11	MC	SM18 4500CO2D
Solids, Total Dissolved	26200	250	65	mg/l	1	04/28/11	BG	SM 2540C
Specific Conductivity	39100	1.0		umhos/cm	1	04/23/11 13:00	KD	EPA 120.1
Sulfate	0.15 U	0.50	0.15	mg/l	1	05/02/11 16:00	BF	EPA 300/SW846 9056
pH	6.50			su	1	04/22/11 14:00	KD	SM 4500H+ B/9040

RL = Reporting Limit  
MDL = Method Detection Limit

U = Indicates a result < MDL  
J = Indicates a result > = MDL but < RL

## Report of Analysis

<b>Client Sample ID:</b> RWF 24-4	<b>Date Sampled:</b> 04/21/11
<b>Lab Sample ID:</b> T74162-1F	<b>Date Received:</b> 04/22/11
<b>Matrix:</b> AQ - Water Filtered	<b>Percent Solids:</b> n/a
<b>Project:</b> RWF 24-4 Pit	

### Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	281000	5000	25	ug/l	1	04/23/11	04/25/11 TW	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Iron	52300	100	23	ug/l	1	04/23/11	04/25/11 TW	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Magnesium	43600	5000	7.9	ug/l	1	04/23/11	04/25/11 TW	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Manganese	424	15	1.9	ug/l	1	04/23/11	04/25/11 TW	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Potassium	89700	5000	45	ug/l	1	04/23/11	04/25/11 TW	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Sodium	8170000	130000	2600	ug/l	25	04/23/11	04/26/11 TW	SW846 6010B <sup>2</sup>	SW846 3010A <sup>3</sup>

- (1) Instrument QC Batch: MA5667
- (2) Instrument QC Batch: MA5670
- (3) Prep QC Batch: MP14527

RL = Reporting Limit  
 MDL = Method Detection Limit

U = Indicates a result < MDL  
 J = Indicates a result > = MDL but < RL

## Misc. Forms

---

### Custody Documents and Other Forms

---

Includes the following where applicable:

- Chain of Custody



SAMPLE INSPECTION FORM

Accutest Job Number: T74162 Client: Williams Production Date/Time Received: 4/22/11 940
# of Coolers Received: 1 Thermometer #: 1K Gun of Temperature Adjustment Factor: 0.1
Cooler Temperatures (initial/adjusted): #1: 5.1/5.0 #2: #3: #4: #5:
#6: #7: #8: #9: #10: #11: #12:
Method of Delivery: FEDEX UPS Accutest Courier Greyhound Delivery Other

- COOLER INFORMATION
Custody seal missing or not intact
Temperature criteria not met
Wet ice received in cooler

- CHAIN OF CUSTODY
Chain of Custody not received
Sample D/T unclear or missing
Analyses unclear or missing
COC not properly executed

- SAMPLE INFORMATION
Sample containers received broken
VOC vials have headspace
Sample labels missing or illegible
ID on COC does not match label(s)
D/T on COC does not match label(s)
Sample/Bottles rcvd but no analysis on COC
Sample listed on COC, but not received
Bottles missing for requested analysis
Insufficient volume for analysis
Sample received improperly preserved

- TRIP BLANK INFORMATION
Trip Blank on COC but not received
Trip Blank received but not on COC
Trip Blank not intact
Received Water Trip Blank
Received Soil TB

Number of Encores?
Number of 5035 kits?
Number of lab-filtered metals?

Summary of Discrepancies:

Summary of Discrepancies section with horizontal lines for notes.

TECHNICIAN SIGNATURE/DATE: [Signature] 4/22/11
INFORMATION AND SAMPLE LABELING VERIFIED BY: [Signature] 4/23/11

CORRECTIVE ACTIONS

Client Representative Notified:
By Accutest Representative:
Client Instructions:
Date:
Via: Phone Email

\\nwalker\forms\samplemanagement SM023 Revised 8/11/10

**SAMPLE RECEIPT LOG**

JOB #: T74162 DATE/TIME RECEIVED: 4/22/11 9:40  
 CLIENT: Williams Production INITIALS: W

COOLER#	SAMPLE ID	FIELD ID	DATE	MATRIX	VOL	BOTTLE #	LOCATION	PRESERV	PH
1	1	RWF 24-4	4/21/11 800	W	117th	1-2	10	① 2 3 4 5 6 7 8	<2 >12
↓	↓	↓	↓	↓	1000	3-5	31	① 2 3 4 5 6 7 8	<2 >12
↓	↓	↓	↓	↓	500	6	10	① 2 3 4 5 6 7 8	<2 >12
↓	2	TRIS Blank	3/29/11 1337	↓	40	7-9	VR	① 2 3 4 5 6 7 8	<2 >12
					40	10	VR	① 2 3 4 5 6 7 8	<2 >12
								① 2 3 4 5 6 7 8	<2 >12
								① 2 3 4 5 6 7 8	<2 >12
								① 2 3 4 5 6 7 8	<2 >12
								① 2 3 4 5 6 7 8	<2 >12
								① 2 3 4 5 6 7 8	<2 >12
								① 2 3 4 5 6 7 8	<2 >12
								① 2 3 4 5 6 7 8	<2 >12
								① 2 3 4 5 6 7 8	<2 >12
								① 2 3 4 5 6 7 8	<2 >12
								① 2 3 4 5 6 7 8	<2 >12
								① 2 3 4 5 6 7 8	<2 >12
								① 2 3 4 5 6 7 8	<2 >12
								① 2 3 4 5 6 7 8	<2 >12
								① 2 3 4 5 6 7 8	<2 >12
								① 2 3 4 5 6 7 8	<2 >12
								① 2 3 4 5 6 7 8	<2 >12
								① 2 3 4 5 6 7 8	<2 >12
								① 2 3 4 5 6 7 8	<2 >12
								① 2 3 4 5 6 7 8	<2 >12

PRESERVATIVES: 1: None 2: HCL 3: HNO3 4: H2SO4 5: NAOH 6: DI 7: MeOH 8: Other  
 LOCATION: 1: Walk-In #1 (Waters) 2: Walk-In #2 (Soils) VR: Volatile Fridge M: Metals SUB: Subcontract EF: Encore Freezer  
 Rev 8/13/01 ewp

31  
3

## GC/MS Volatiles

---

### QC Data Summaries

---

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

## Method Blank Summary

**Job Number:** T74162  
**Account:** WPRMTCOP Williams Production RMT Company  
**Project:** RWF 24-4 Pit

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE334-MB	E0006290.D	1	04/29/11	JL	n/a	n/a	VE334

The QC reported here applies to the following samples:

Method: SW846 8260B

T74162-1

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	4.7	ug/l	
71-43-2	Benzene	ND	2.0	0.50	ug/l	
108-86-1	Bromobenzene	ND	2.0	0.82	ug/l	
74-97-5	Bromochloromethane	ND	2.0	1.6	ug/l	
75-27-4	Bromodichloromethane	ND	2.0	0.49	ug/l	
75-25-2	Bromoform	ND	2.0	1.4	ug/l	
104-51-8	n-Butylbenzene	ND	2.0	0.63	ug/l	
135-98-8	sec-Butylbenzene	ND	2.0	0.52	ug/l	
98-06-6	tert-Butylbenzene	ND	2.0	1.3	ug/l	
108-90-7	Chlorobenzene	ND	2.0	0.56	ug/l	
75-00-3	Chloroethane	ND	2.0	0.92	ug/l	
67-66-3	Chloroform	ND	2.0	0.64	ug/l	
95-49-8	o-Chlorotoluene	ND	2.0	0.70	ug/l	
106-43-4	p-Chlorotoluene	ND	2.0	0.56	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.53	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	0.66	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	0.52	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	0.50	ug/l	
563-58-6	1,1-Dichloropropene	ND	2.0	0.78	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	1.9	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	0.55	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	0.62	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	0.62	ug/l	
142-28-9	1,3-Dichloropropane	ND	2.0	0.54	ug/l	
594-20-7	2,2-Dichloropropane	ND	2.0	0.62	ug/l	
124-48-1	Dibromochloromethane	ND	2.0	0.61	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.1	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	2.0	0.56	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	0.48	ug/l	
541-73-1	m-Dichlorobenzene	ND	2.0	1.0	ug/l	
95-50-1	o-Dichlorobenzene	ND	2.0	0.69	ug/l	
106-46-7	p-Dichlorobenzene	ND	2.0	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	2.0	0.45	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	0.68	ug/l	
100-41-4	Ethylbenzene	ND	2.0	0.55	ug/l	
591-78-6	2-Hexanone	ND	10	3.2	ug/l	

# Method Blank Summary

**Job Number:** T74162  
**Account:** WPRMTCOP Williams Production RMT Company  
**Project:** RWF 24-4 Pit

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE334-MB	E0006290.D	1	04/29/11	JL	n/a	n/a	VE334

The QC reported here applies to the following samples:

Method: SW846 8260B

T74162-1

CAS No.	Compound	Result	RL	MDL	Units	Q
87-68-3	Hexachlorobutadiene	ND	2.0	1.3	ug/l	
98-82-8	Isopropylbenzene	ND	2.0	0.51	ug/l	
99-87-6	p-Isopropyltoluene	ND	2.0	0.65	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	9.9	ug/l	
74-83-9	Methyl bromide	ND	2.0	0.94	ug/l	
74-87-3	Methyl chloride	ND	2.0	0.84	ug/l	
74-95-3	Methylene bromide	ND	2.0	0.65	ug/l	
75-09-2	Methylene chloride	ND	5.0	0.41	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	3.9	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	2.0	0.73	ug/l	
91-20-3	Naphthalene	ND	5.0	0.65	ug/l	
103-65-1	n-Propylbenzene	ND	2.0	0.57	ug/l	
100-42-5	Styrene	ND	2.0	0.56	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	2.0	0.80	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	0.62	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	1.2	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	0.98	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	2.0	1.1	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	2.0	1.3	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	2.0	0.82	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	0.65	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	0.70	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	0.91	ug/l	
108-88-3	Toluene	ND	2.0	0.43	ug/l	
79-01-6	Trichloroethylene	ND	2.0	0.52	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	1.2	ug/l	
75-01-4	Vinyl chloride	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	1.7	ug/l	
	m,p-Xylene	ND	4.0	1.1	ug/l	
95-47-6	o-Xylene	ND	2.0	0.53	ug/l	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	98% 79-122%
17060-07-0	1,2-Dichloroethane-D4	87% 75-121%

## Method Blank Summary

**Job Number:** T74162  
**Account:** WPRMTCOP Williams Production RMT Company  
**Project:** RWF 24-4 Pit

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE334-MB	E0006290.D	1	04/29/11	JL	n/a	n/a	VE334

The QC reported here applies to the following samples:

Method: SW846 8260B

T74162-1

CAS No.	Surrogate Recoveries	Limits	
2037-26-5	Toluene-D8	102%	87-119%
460-00-4	4-Bromofluorobenzene	96%	80-133%

4.1.1  
4

# Blank Spike Summary

**Job Number:** T74162  
**Account:** WPRMTCOP Williams Production RMT Company  
**Project:** RWF 24-4 Pit

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE334-BS	E0006288.D	1	04/29/11	JL	n/a	n/a	VE334

The QC reported here applies to the following samples:

Method: SW846 8260B

T74162-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	97.7	78	62-124
71-43-2	Benzene	25	22.2	89	76-118
108-86-1	Bromobenzene	25	22.8	91	72-110
74-97-5	Bromochloromethane	25	22.7	91	69-110
75-27-4	Bromodichloromethane	25	20.7	83	68-107
75-25-2	Bromoform	25	21.2	85	64-103
104-51-8	n-Butylbenzene	25	21.6	86	74-114
135-98-8	sec-Butylbenzene	25	23.1	92	76-118
98-06-6	tert-Butylbenzene	25	21.1	84	72-116
108-90-7	Chlorobenzene	25	22.3	89	74-111
75-00-3	Chloroethane	25	25.4	102	75-135
67-66-3	Chloroform	25	21.4	86	75-117
95-49-8	o-Chlorotoluene	25	21.2	85	74-113
106-43-4	p-Chlorotoluene	25	21.3	85	72-114
75-15-0	Carbon disulfide	25	22.6	90	57-126
56-23-5	Carbon tetrachloride	25	19.2	77	75-125
75-34-3	1,1-Dichloroethane	25	21.8	87	76-121
75-35-4	1,1-Dichloroethylene	25	21.5	86	71-128
563-58-6	1,1-Dichloropropene	25	22.4	90	76-122
96-12-8	1,2-Dibromo-3-chloropropane	25	18.7	75	55-121
106-93-4	1,2-Dibromoethane	25	21.7	87	69-106
107-06-2	1,2-Dichloroethane	25	19.1	76	70-111
78-87-5	1,2-Dichloropropane	25	21.9	88	71-113
142-28-9	1,3-Dichloropropane	25	21.4	86	69-106
594-20-7	2,2-Dichloropropane	25	20.7	83	68-130
124-48-1	Dibromochloromethane	25	21.6	86	69-104
75-71-8	Dichlorodifluoromethane	25	20.2	81	28-120
156-59-2	cis-1,2-Dichloroethylene	25	24.0	96	68-113
10061-01-5	cis-1,3-Dichloropropene	25	22.2	89	71-111
541-73-1	m-Dichlorobenzene	25	23.9	96	74-110
95-50-1	o-Dichlorobenzene	25	22.7	91	72-108
106-46-7	p-Dichlorobenzene	25	23.0	92	74-110
156-60-5	trans-1,2-Dichloroethylene	25	21.1	84	70-125
10061-02-6	trans-1,3-Dichloropropene	25	22.1	88	75-111
100-41-4	Ethylbenzene	25	21.8	87	75-112
591-78-6	2-Hexanone	125	94.5	76	60-113

# Blank Spike Summary

**Job Number:** T74162  
**Account:** WPRMTCOP Williams Production RMT Company  
**Project:** RWF 24-4 Pit

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE334-BS	E0006288.D	1	04/29/11	JL	n/a	n/a	VE334

The QC reported here applies to the following samples:

Method: SW846 8260B

T74162-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
87-68-3	Hexachlorobutadiene	25	23.4	94	72-123
98-82-8	Isopropylbenzene	25	25.8	103	75-123
99-87-6	p-Isopropyltoluene	25	22.9	92	76-116
108-10-1	4-Methyl-2-pentanone	125	101	81	63-115
74-83-9	Methyl bromide	25	23.0	92	59-132
74-87-3	Methyl chloride	25	23.5	94	56-150
74-95-3	Methylene bromide	25	21.7	87	68-114
75-09-2	Methylene chloride	25	21.8	87	70-113
78-93-3	Methyl ethyl ketone	125	104	83	62-117
1634-04-4	Methyl Tert Butyl Ether	25	19.8	79	65-113
91-20-3	Naphthalene	25	23.4	94	53-127
103-65-1	n-Propylbenzene	25	21.8	87	74-115
100-42-5	Styrene	25	22.8	91	66-100
630-20-6	1,1,1,2-Tetrachloroethane	25	21.4	86	72-108
71-55-6	1,1,1-Trichloroethane	25	21.2	85	76-125
79-34-5	1,1,2,2-Tetrachloroethane	25	20.8	83	67-110
79-00-5	1,1,2-Trichloroethane	25	21.9	88	69-107
87-61-6	1,2,3-Trichlorobenzene	25	24.5	98	51-128
96-18-4	1,2,3-Trichloropropane	25	20.6	82	55-116
120-82-1	1,2,4-Trichlorobenzene	25	24.0	96	63-114
95-63-6	1,2,4-Trimethylbenzene	25	22.1	88	73-111
108-67-8	1,3,5-Trimethylbenzene	25	21.6	86	74-115
127-18-4	Tetrachloroethylene	25	25.0	100	77-120
108-88-3	Toluene	25	22.6	90	77-114
79-01-6	Trichloroethylene	25	23.0	92	74-117
75-69-4	Trichlorofluoromethane	25	19.7	79	64-132
75-01-4	Vinyl chloride	25	23.0	92	64-121
1330-20-7	Xylene (total)	75	66.2	88	75-111
	m,p-Xylene	50	44.6	89	75-112
95-47-6	o-Xylene	25	21.6	86	74-110

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	107%	79-122%
17060-07-0	1,2-Dichloroethane-D4	93%	75-121%

4.2.1  
4

## Blank Spike Summary

**Job Number:** T74162  
**Account:** WPRMTCOP Williams Production RMT Company  
**Project:** RWF 24-4 Pit

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE334-BS	E0006288.D	1	04/29/11	JL	n/a	n/a	VE334

The QC reported here applies to the following samples:

Method: SW846 8260B

T74162-1

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	110%	87-119%
460-00-4	4-Bromofluorobenzene	103%	80-133%

# Matrix Spike/Matrix Spike Duplicate Summary

**Job Number:** T74162  
**Account:** WPRMTCOP Williams Production RMT Company  
**Project:** RWF 24-4 Pit

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T73854-1MS	E0006292.D	50	04/29/11	JL	n/a	n/a	VE334
T73854-1MSD	E0006293.D	50	04/29/11	JL	n/a	n/a	VE334
T73854-1	E0006291.D	50	04/29/11	JL	n/a	n/a	VE334

The QC reported here applies to the following samples:

Method: SW846 8260B

T74162-1

CAS No.	Compound	T73854-1 ug/l	Spike Q	ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	2010	J	6250	6430	71	6890	78	7	62-124/21
71-43-2	Benzene	409		1250	1490	86	1430	82	4	76-118/16
108-86-1	Bromobenzene	ND		1250	1090	87	1090	87	0	72-110/12
74-97-5	Bromochloromethane	ND		1250	1070	86	1080	86	1	69-110/12
75-27-4	Bromodichloromethane	ND		1250	935	75	901	72	4	68-107/12
75-25-2	Bromoform	ND		1250	752	60*	745	60*	1	64-103/14
104-51-8	n-Butylbenzene	ND		1250	1090	87	1100	88	1	74-114/12
135-98-8	sec-Butylbenzene	ND		1250	1100	88	1100	88	0	76-118/12
98-06-6	tert-Butylbenzene	ND		1250	1000	80	982	79	2	72-116/14
108-90-7	Chlorobenzene	ND		1250	1080	86	1040	83	4	74-111/11
75-00-3	Chloroethane	ND		1250	1040	83	998	80	4	75-135/15
67-66-3	Chloroform	ND		1250	1040	83	1000	80	4	75-117/12
95-49-8	o-Chlorotoluene	ND		1250	1110	89	1090	87	2	74-113/12
106-43-4	p-Chlorotoluene	ND		1250	1100	88	1100	88	0	72-114/12
75-15-0	Carbon disulfide	ND		1250	1120	90	980	78	13	57-126/13
56-23-5	Carbon tetrachloride	ND		1250	829	66*	777	62*	6	75-125/12
75-34-3	1,1-Dichloroethane	ND		1250	1050	84	1030	82	2	76-121/13
75-35-4	1,1-Dichloroethylene	ND		1250	1030	82	963	77	7	71-128/19
563-58-6	1,1-Dichloropropene	ND		1250	1080	86	1030	82	5	76-122/12
96-12-8	1,2-Dibromo-3-chloropropane	ND		1250	821	66	960	77	16	55-121/33
106-93-4	1,2-Dibromoethane	ND		1250	1040	83	1050	84	1	69-106/13
107-06-2	1,2-Dichloroethane	ND		1250	919	74	919	74	0	70-111/14
78-87-5	1,2-Dichloropropane	ND		1250	1060	85	1060	85	0	71-113/12
142-28-9	1,3-Dichloropropane	ND		1250	1030	82	1010	81	2	69-106/12
594-20-7	2,2-Dichloropropane	ND		1250	1000	80	971	78	3	68-130/14
124-48-1	Dibromochloromethane	ND		1250	881	70	862	69	2	69-104/12
75-71-8	Dichlorodifluoromethane	ND		1250	762	61	718	57	6	28-120/21
156-59-2	cis-1,2-Dichloroethylene	ND		1250	1130	90	1110	89	2	68-113/13
10061-01-5	cis-1,3-Dichloropropene	ND		1250	1030	82	920	74	11	71-111/12
541-73-1	m-Dichlorobenzene	ND		1250	1130	90	1090	87	4	74-110/12
95-50-1	o-Dichlorobenzene	ND		1250	1070	86	1060	85	1	72-108/12
106-46-7	p-Dichlorobenzene	ND		1250	1080	86	1080	86	0	74-110/12
156-60-5	trans-1,2-Dichloroethylene	ND		1250	1000	80	954	76	5	70-125/14
10061-02-6	trans-1,3-Dichloropropene	ND		1250	1010	81	921	74*	9	75-111/12
100-41-4	Ethylbenzene	144		1250	1200	84	1160	81	3	75-112/12
591-78-6	2-Hexanone	ND		6250	4490	72	4840	77	8	60-113/18

4.3.1  
4

# Matrix Spike/Matrix Spike Duplicate Summary

**Job Number:** T74162  
**Account:** WPRMTCOP Williams Production RMT Company  
**Project:** RWF 24-4 Pit

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T73854-1MS	E0006292.D	50	04/29/11	JL	n/a	n/a	VE334
T73854-1MSD	E0006293.D	50	04/29/11	JL	n/a	n/a	VE334
T73854-1	E0006291.D	50	04/29/11	JL	n/a	n/a	VE334

The QC reported here applies to the following samples:

Method: SW846 8260B

T74162-1

CAS No.	Compound	T73854-1 ug/l	Spike Q	ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
87-68-3	Hexachlorobutadiene	ND		1250	1090	87	1130	90	4	72-123/17
98-82-8	Isopropylbenzene	36.9	J	1250	1270	99	1230	95	3	75-123/12
99-87-6	p-Isopropyltoluene	44.1	J	1250	1110	85	1120	86	1	76-116/12
108-10-1	4-Methyl-2-pentanone	ND		6250	4860	78	5300	85	9	63-115/21
74-83-9	Methyl bromide	ND		1250	790	63	799	64	1	59-132/15
74-87-3	Methyl chloride	ND		1250	879	70	850	68	3	56-150/17
74-95-3	Methylene bromide	ND		1250	1030	82	1060	85	3	68-114/13
75-09-2	Methylene chloride	62.3	J	1250	1080	81	1050	79	3	70-113/13
78-93-3	Methyl ethyl ketone	ND		6250	5020	80	5640	90	12	62-117/21
1634-04-4	Methyl Tert Butyl Ether	ND		1250	951	76	952	76	0	65-113/13
91-20-3	Naphthalene	398		1250	1500	88	1660	101	10	53-127/34
103-65-1	n-Propylbenzene	56.3	J	1250	1090	83	1070	81	2	74-115/12
100-42-5	Styrene	ND		1250	902	72	917	73	2	66-100/11
630-20-6	1,1,1,2-Tetrachloroethane	ND		1250	1020	82	981	78	4	72-108/11
71-55-6	1,1,1-Trichloroethane	ND		1250	1010	81	965	77	5	76-125/11
79-34-5	1,1,2,2-Tetrachloroethane	ND		1250	1020	82	1080	86	6	67-110/20
79-00-5	1,1,2-Trichloroethane	ND		1250	1050	84	1080	86	3	69-107/14
87-61-6	1,2,3-Trichlorobenzene	ND		1250	1120	90	1230	98	9	51-128/31
96-18-4	1,2,3-Trichloropropane	ND		1250	1030	82	1060	85	3	55-116/27
120-82-1	1,2,4-Trichlorobenzene	ND		1250	1090	87	1160	93	6	63-114/21
95-63-6	1,2,4-Trimethylbenzene	1110		1250	2170	85	2190	86	1	73-111/13
108-67-8	1,3,5-Trimethylbenzene	842		1250	1880	83	1910	85	2	74-115/12
127-18-4	Tetrachloroethylene	ND		1250	1210	97	1230	98	2	77-120/13
108-88-3	Toluene	1510		1250	2640	90	2520	81	5	77-114/12
79-01-6	Trichloroethylene	ND		1250	1110	89	1080	86	3	74-117/12
75-69-4	Trichlorofluoromethane	ND		1250	582	47*	590	47*	1	64-132/18
75-01-4	Vinyl chloride	ND		1250	951	76	898	72	6	64-121/19
1330-20-7	Xylene (total)	2940		3750	6210	87	6040	83	3	75-111/12
	m,p-Xylene	2500		2500	4730	89	4600	84	3	75-112/12
95-47-6	o-Xylene	435		1250	1480	84	1440	80	3	74-110/11

CAS No.	Surrogate Recoveries	MS	MSD	T73854-1	Limits
1868-53-7	Dibromofluoromethane	103%	103%	99%	79-122%
17060-07-0	1,2-Dichloroethane-D4	89%	90%	88%	75-121%

# Matrix Spike/Matrix Spike Duplicate Summary

**Job Number:** T74162  
**Account:** WPRMTCOP Williams Production RMT Company  
**Project:** RWF 24-4 Pit

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T73854-1MS	E0006292.D	50	04/29/11	JL	n/a	n/a	VE334
T73854-1MSD	E0006293.D	50	04/29/11	JL	n/a	n/a	VE334
T73854-1	E0006291.D	50	04/29/11	JL	n/a	n/a	VE334

The QC reported here applies to the following samples:

Method: SW846 8260B

T74162-1

CAS No.	Surrogate Recoveries	MS	MSD	T73854-1	Limits
2037-26-5	Toluene-D8	105%	105%	104%	87-119%
460-00-4	4-Bromofluorobenzene	99%	100%	98%	80-133%

4.3.1  
4

## GC/MS Semi-volatiles

5

### QC Data Summaries

---

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

## Method Blank Summary

**Job Number:** T74162  
**Account:** WPRMTCOP Williams Production RMT Company  
**Project:** RWF 24-4 Pit

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP18290-MB	P17565.D	1	04/28/11	GJ	04/27/11	OP18290	EP835

The QC reported here applies to the following samples:

Method: SW846 8270C

T74162-1

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	10	5.0	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	1.2	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.0	1.2	ug/l	
120-83-2	2,4-Dichlorophenol	ND	5.0	2.2	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.0	1.3	ug/l	
51-28-5	2,4-Dinitrophenol	ND	25	15	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	1.4	ug/l	
95-48-7	2-Methylphenol	ND	5.0	0.83	ug/l	
	3&4-Methylphenol	ND	5.0	1.6	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	2.0	ug/l	
100-02-7	4-Nitrophenol	ND	25	6.7	ug/l	
87-86-5	Pentachlorophenol	ND	25	13	ug/l	
108-95-2	Phenol	ND	5.0	0.75	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.0	1.2	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	1.1	ug/l	
83-32-9	Acenaphthene	ND	5.0	1.6	ug/l	
208-96-8	Acenaphthylene	ND	5.0	1.2	ug/l	
62-53-3	Aniline	ND	5.0	4.6	ug/l	
120-12-7	Anthracene	ND	5.0	1.1	ug/l	
92-87-5	Benzidine	ND	25	6.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	5.0	1.1	ug/l	
50-32-8	Benzo(a)pyrene	ND	5.0	1.1	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	5.0	0.87	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	5.0	1.7	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	5.0	1.1	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	1.4	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	1.6	ug/l	
100-51-6	Benzyl Alcohol	ND	5.0	1.3	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	1.4	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	4.3	ug/l	
86-74-8	Carbazole	ND	5.0	1.5	ug/l	
218-01-9	Chrysene	ND	5.0	0.98	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	1.3	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	1.3	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	2.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	1.3	ug/l	

## Method Blank Summary

**Job Number:** T74162  
**Account:** WPRMTCOP Williams Production RMT Company  
**Project:** RWF 24-4 Pit

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP18290-MB	P17565.D	1	04/28/11	GJ	04/27/11	OP18290	EP835

The QC reported here applies to the following samples:

Method: SW846 8270C

T74162-1

CAS No.	Compound	Result	RL	MDL	Units	Q
95-50-1	1,2-Dichlorobenzene	ND	5.0	1.3	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.0	1.4	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	5.0	1.3	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	5.0	1.3	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	5.0	1.4	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	5.0	1.3	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	10	3.2	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	5.0	1.6	ug/l	
132-64-9	Dibenzofuran	ND	5.0	1.3	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.0	1.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	1.3	ug/l	
84-66-2	Diethyl phthalate	ND	5.0	1.1	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	1.1	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	5.0	1.8	ug/l	
206-44-0	Fluoranthene	ND	5.0	0.97	ug/l	
86-73-7	Fluorene	ND	5.0	1.3	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	1.3	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	1.1	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	5.2	ug/l	
67-72-1	Hexachloroethane	ND	5.0	0.97	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	5.0	1.8	ug/l	
78-59-1	Isophorone	ND	5.0	1.2	ug/l	
90-12-0	1-Methylnaphthalene	ND	5.0	1.1	ug/l	
91-57-6	2-Methylnaphthalene	ND	5.0	1.3	ug/l	
88-74-4	2-Nitroaniline	ND	5.0	1.4	ug/l	
99-09-2	3-Nitroaniline	ND	5.0	3.3	ug/l	
100-01-6	4-Nitroaniline	ND	5.0	2.3	ug/l	
91-20-3	Naphthalene	ND	5.0	1.1	ug/l	
98-95-3	Nitrobenzene	ND	5.0	1.7	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.0	0.97	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	1.4	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	1.7	ug/l	
85-01-8	Phenanthrene	ND	5.0	0.97	ug/l	
129-00-0	Pyrene	ND	5.0	1.7	ug/l	
110-86-1	Pyridine	ND	5.0	0.99	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	1.3	ug/l	

## Method Blank Summary

**Job Number:** T74162  
**Account:** WPRMTCOP Williams Production RMT Company  
**Project:** RWF 24-4 Pit

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP18290-MB	P17565.D	1	04/28/11	GJ	04/27/11	OP18290	EP835

The QC reported here applies to the following samples:

Method: SW846 8270C

T74162-1

CAS No.	Surrogate Recoveries	Limits
367-12-4	2-Fluorophenol	38% 10-66%
4165-62-2	Phenol-d5	26% 10-53%
118-79-6	2,4,6-Tribromophenol	67% 32-128%
4165-60-0	Nitrobenzene-d5	63% 29-115%
321-60-8	2-Fluorobiphenyl	65% 34-113%
1718-51-0	Terphenyl-d14	82% 12-145%

# Blank Spike Summary

**Job Number:** T74162  
**Account:** WPRMTCOP Williams Production RMT Company  
**Project:** RWF 24-4 Pit

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP18290-BS	W5129.D	1	04/27/11	AM	04/27/11	OP18290	EW266

The QC reported here applies to the following samples:

Method: SW846 8270C

T74162-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
65-85-0	Benzoic Acid	50	25.4	51	10-68
95-57-8	2-Chlorophenol	50	27.5	55	39-93
59-50-7	4-Chloro-3-methyl phenol	50	32.4	65	43-109
120-83-2	2,4-Dichlorophenol	50	30.2	60	42-106
105-67-9	2,4-Dimethylphenol	50	31.7	63	27-87
51-28-5	2,4-Dinitrophenol	50	27.5	55	43-107
534-52-1	4,6-Dinitro-o-cresol	50	32.2	64	47-112
95-48-7	2-Methylphenol	50	26.0	52	25-84
	3&4-Methylphenol	100	47.9	48	25-77
88-75-5	2-Nitrophenol	50	29.4	59	38-96
100-02-7	4-Nitrophenol	50	18.4	37	13-70
87-86-5	Pentachlorophenol	50	33.7	67	46-153
108-95-2	Phenol	50	16.7	33	10-53
95-95-4	2,4,5-Trichlorophenol	50	35.7	71	40-101
88-06-2	2,4,6-Trichlorophenol	50	33.5	67	41-102
83-32-9	Acenaphthene	50	32.6	65	41-110
208-96-8	Acenaphthylene	50	33.8	68	49-113
62-53-3	Aniline	50	27.8	56	24-132
120-12-7	Anthracene	50	37.0	74	59-105
56-55-3	Benzo(a)anthracene	50	35.7	71	64-112
50-32-8	Benzo(a)pyrene	50	33.4	67	62-116
205-99-2	Benzo(b)fluoranthene	50	32.9	66	62-114
191-24-2	Benzo(g,h,i)perylene	50	33.2	66	55-124
207-08-9	Benzo(k)fluoranthene	50	39.1	78	62-119
101-55-3	4-Bromophenyl phenyl ether	50	34.9	70	56-99
85-68-7	Butyl benzyl phthalate	50	36.6	73	52-125
100-51-6	Benzyl Alcohol	50	27.3	55	28-83
91-58-7	2-Chloronaphthalene	50	24.9	50	42-97
106-47-8	4-Chloroaniline	50	28.3	57	37-128
86-74-8	Carbazole	50	35.5	71	59-142
218-01-9	Chrysene	50	36.9	74	67-112
111-91-1	bis(2-Chloroethoxy)methane	50	31.8	64	38-96
111-44-4	bis(2-Chloroethyl)ether	50	29.2	58	37-91
108-60-1	bis(2-Chloroisopropyl)ether	50	29.0	58	36-102
7005-72-3	4-Chlorophenyl phenyl ether	50	35.6	71	48-101
95-50-1	1,2-Dichlorobenzene	50	24.4	49	33-86

# Blank Spike Summary

**Job Number:** T74162  
**Account:** WPRMTCOP Williams Production RMT Company  
**Project:** RWF 24-4 Pit

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP18290-BS	W5129.D	1	04/27/11	AM	04/27/11	OP18290	EW266

The QC reported here applies to the following samples:

Method: SW846 8270C

T74162-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
122-66-7	1,2-Diphenylhydrazine	50	36.1	72	39-118
541-73-1	1,3-Dichlorobenzene	50	22.5	45	21-88
106-46-7	1,4-Dichlorobenzene	50	23.6	47	31-86
121-14-2	2,4-Dinitrotoluene	50	37.7	75	55-112
606-20-2	2,6-Dinitrotoluene	50	36.1	72	57-105
91-94-1	3,3'-Dichlorobenzidine	50	32.6	65	50-142
53-70-3	Dibenzo(a,h)anthracene	50	33.0	66	55-123
132-64-9	Dibenzofuran	50	34.2	68	45-99
84-74-2	Di-n-butyl phthalate	50	38.6	77	64-114
117-84-0	Di-n-octyl phthalate	50	36.2	72	55-118
84-66-2	Diethyl phthalate	50	37.8	76	52-113
131-11-3	Dimethyl phthalate	50	36.4	73	38-112
117-81-7	bis(2-Ethylhexyl)phthalate	50	38.6	77	56-131
206-44-0	Fluoranthene	50	37.1	74	62-116
86-73-7	Fluorene	50	35.8	72	47-99
118-74-1	Hexachlorobenzene	50	35.8	72	62-102
87-68-3	Hexachlorobutadiene	50	23.9	48	37-91
77-47-4	Hexachlorocyclopentadiene	50	23.8	48	23-102
67-72-1	Hexachloroethane	50	22.8	46	33-86
193-39-5	Indeno(1,2,3-cd)pyrene	50	33.1	66	52-126
78-59-1	Isophorone	50	32.7	65	42-105
90-12-0	1-Methylnaphthalene	50	28.0	56	35-89
91-57-6	2-Methylnaphthalene	50	26.9	54	36-91
88-74-4	2-Nitroaniline	50	35.2	70	49-109
99-09-2	3-Nitroaniline	50	33.8	68	46-139
100-01-6	4-Nitroaniline	50	38.1	76	73-174
91-20-3	Naphthalene	50	27.3	55	37-89
98-95-3	Nitrobenzene	50	31.4	63	42-97
62-75-9	n-Nitrosodimethylamine	50	21.9	44	16-63
621-64-7	N-Nitroso-di-n-propylamine	50	32.3	65	42-102
86-30-6	N-Nitrosodiphenylamine	50	32.8	66	64-119
85-01-8	Phenanthrene	50	37.2	74	59-103
129-00-0	Pyrene	50	36.8	74	58-110
110-86-1	Pyridine	50	16.6	33	10-63
120-82-1	1,2,4-Trichlorobenzene	50	23.3	47	37-88

## Blank Spike Summary

**Job Number:** T74162  
**Account:** WPRMTCOP Williams Production RMT Company  
**Project:** RWF 24-4 Pit

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP18290-BS	W5129.D	1	04/27/11	AM	04/27/11	OP18290	EW266

The QC reported here applies to the following samples:

Method: SW846 8270C

T74162-1

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	37%	10-66%
4165-62-2	Phenol-d5	30%	10-53%
118-79-6	2,4,6-Tribromophenol	62%	32-128%
4165-60-0	Nitrobenzene-d5	62%	29-115%
321-60-8	2-Fluorobiphenyl	67%	34-113%
1718-51-0	Terphenyl-d14	67%	12-145%

# Matrix Spike/Matrix Spike Duplicate Summary

**Job Number:** T74162  
**Account:** WPRMTCOP Williams Production RMT Company  
**Project:** RWF 24-4 Pit

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP18290-MS	P17582.D	1	04/29/11	GJ	04/27/11	OP18290	EP835
OP18290-MSD	P17583.D	1	04/29/11	GJ	04/27/11	OP18290	EP835
T74201-16	P17581.D	1	04/29/11	GJ	04/27/11	OP18290	EP835

The QC reported here applies to the following samples:

Method: SW846 8270C

T74162-1

CAS No.	Compound	T74201-16 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic Acid	10 U	106	66.8	63	71.3	67	7	10-68/27
95-57-8	2-Chlorophenol	5.2 U	106	42.4	40	47.0	44	10	39-93/28
59-50-7	4-Chloro-3-methyl phenol	5.2 U	106	50.9	48	54.6	51	7	43-109/28
120-83-2	2,4-Dichlorophenol	5.2 U	106	46.9	44	51.5	48	9	42-106/25
105-67-9	2,4-Dimethylphenol	5.2 U	106	48.1	45	52.7	50	9	27-87/26
51-28-5	2,4-Dinitrophenol	26 U	106	62.1	58	67.0	63	8	43-107/44
534-52-1	4,6-Dinitro-o-cresol	10 U	106	67.1	63	71.9	68	7	47-112/24
95-48-7	2-Methylphenol	5.2 U	106	39.8	37	45.0	42	12	25-84/31
	3&4-Methylphenol	5.2 U	213	76.2	36	87.5	41	14	25-77/25
88-75-5	2-Nitrophenol	5.2 U	106	42.0	39	45.2	42	7	38-96/26
100-02-7	4-Nitrophenol	26 U	106	45.5	43	52.8	50	15	13-70/25
87-86-5	Pentachlorophenol	26 U	106	72.6	68	79.2	74	9	46-153/18
108-95-2	Phenol	5.2 U	106	27.4	26	32.7	31	18	10-53/35
95-95-4	2,4,5-Trichlorophenol	5.2 U	106	60.4	57	64.4	61	6	40-101/22
88-06-2	2,4,6-Trichlorophenol	5.2 U	106	53.2	50	56.2	53	5	41-102/22
83-32-9	Acenaphthene	5.2 U	106	50.7	48	54.8	52	8	41-110/21
208-96-8	Acenaphthylene	5.2 U	106	50.9	48*	54.4	51	7	49-113/23
62-53-3	Aniline	5.2 U	106	33.0	31	33.9	32	3	24-132/44
120-12-7	Anthracene	5.2 U	106	74.2	70	81.7	77	10	59-105/18
56-55-3	Benzo(a)anthracene	5.2 U	106	80.2	75	88.6	83	10	64-112/20
50-32-8	Benzo(a)pyrene	5.2 U	106	63.4	60*	73.4	69	15	62-116/23
205-99-2	Benzo(b)fluoranthene	5.2 U	106	63.7	60*	74.9	70	16	62-114/22
191-24-2	Benzo(g,h,i)perylene	5.2 U	106	72.2	68	78.7	74	9	55-124/36
207-08-9	Benzo(k)fluoranthene	5.2 U	106	80.8	76	92.4	87	13	62-119/30
101-55-3	4-Bromophenyl phenyl ether	5.2 U	106	64.1	60	67.5	63	5	56-99/20
85-68-7	Butyl benzyl phthalate	5.2 U	106	88.3	83	96.5	91	9	52-125/25
100-51-6	Benzyl Alcohol	5.2 U	106	43.0	40	48.4	45	12	28-83/32
91-58-7	2-Chloronaphthalene	5.2 U	106	38.9	37*	42.5	40*	9	42-97/27
106-47-8	4-Chloroaniline	5.2 U	106	36.5	34*	38.7	36*	6	37-128/29
86-74-8	Carbazole	5.2 U	106	69.5	65	77.4	73	11	59-142/19
218-01-9	Chrysene	5.2 U	106	76.8	72	85.5	80	11	67-112/19
111-91-1	bis(2-Chloroethoxy)methane	5.2 U	106	45.9	43	50.0	47	9	38-96/30
111-44-4	bis(2-Chloroethyl)ether	5.2 U	106	41.3	39	44.8	42	8	37-91/33
108-60-1	bis(2-Chloroisopropyl)ether	5.2 U	106	41.8	39	46.0	43	10	36-102/32
7005-72-3	4-Chlorophenyl phenyl ether	5.2 U	106	57.3	54	61.4	58	7	48-101/21
95-50-1	1,2-Dichlorobenzene	5.2 U	106	43.1	41	46.8	44	8	33-86/29

5.3.1  
5

# Matrix Spike/Matrix Spike Duplicate Summary

**Job Number:** T74162  
**Account:** WPRMTCOP Williams Production RMT Company  
**Project:** RWF 24-4 Pit

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP18290-MS	P17582.D	1	04/29/11	GJ	04/27/11	OP18290	EP835
OP18290-MSD	P17583.D	1	04/29/11	GJ	04/27/11	OP18290	EP835
T74201-16	P17581.D	1	04/29/11	GJ	04/27/11	OP18290	EP835

The QC reported here applies to the following samples:

Method: SW846 8270C

T74162-1

CAS No.	Compound	T74201-16 ug/l	Spike Q	ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
122-66-7	1,2-Diphenylhydrazine	5.2 U		106	56.5	53	59.3	56	5	30-122/34
541-73-1	1,3-Dichlorobenzene	5.2 U		106	40.0	38	43.6	41	9	32-88/32
106-46-7	1,4-Dichlorobenzene	5.2 U		106	41.6	39	45.2	42	8	31-86/36
121-14-2	2,4-Dinitrotoluene	5.2 U		106	71.5	67	79.0	74	10	55-112/23
606-20-2	2,6-Dinitrotoluene	5.2 U		106	61.4	58	66.0	62	7	57-105/23
91-94-1	3,3'-Dichlorobenzidine	10 U		106	46.7	44*	52.6	49*	12	50-142/21
53-70-3	Dibenzo(a,h)anthracene	5.2 U		106	75.2	71	83.0	78	10	55-123/37
132-64-9	Dibenzofuran	5.2 U		106	53.2	50	57.2	54	7	45-99/20
84-74-2	Di-n-butyl phthalate	5.2 U		106	86.2	81	94.5	89	9	64-114/16
117-84-0	Di-n-octyl phthalate	5.2 U		106	87.6	82	106	100	19	55-118/25
84-66-2	Diethyl phthalate	5.2 U		106	72.9	69	80.1	75	9	52-113/20
131-11-3	Dimethyl phthalate	5.2 U		106	61.4	58	65.4	61	6	38-112/19
117-81-7	bis(2-Ethylhexyl)phthalate	1.9	J	106	99.9	92	111	103	11	56-131/19
206-44-0	Fluoranthene	5.2 U		106	74.0	70	83.8	79	12	62-116/24
86-73-7	Fluorene	5.2 U		106	58.7	55	63.4	60	8	47-99/22
118-74-1	Hexachlorobenzene	5.2 U		106	69.6	65	75.0	70	7	62-102/21
87-68-3	Hexachlorobutadiene	5.2 U		106	42.1	40	45.9	43	9	37-91/28
77-47-4	Hexachlorocyclopentadiene	10 U		106	25.7	24	30.0	28	15	23-102/34
67-72-1	Hexachloroethane	5.2 U		106	40.0	38	44.3	42	10	33-86/30
193-39-5	Indeno(1,2,3-cd)pyrene	5.2 U		106	74.6	70	83.5	78	11	52-126/30
78-59-1	Isophorone	5.2 U		106	46.2	43	49.9	47	8	42-105/28
90-12-0	1-Methylnaphthalene	5.2 U		106	47.1	44	51.4	48	9	35-89/25
91-57-6	2-Methylnaphthalene	5.2 U		106	47.2	44	51.0	48	8	36-91/29
88-74-4	2-Nitroaniline	5.2 U		106	58.1	55	62.2	58	7	49-109/22
99-09-2	3-Nitroaniline	5.2 U		106	60.1	56	66.6	63	10	46-139/23
100-01-6	4-Nitroaniline	5.2 U		106	64.3	60*	71.8	67*	11	73-174/24
91-20-3	Naphthalene	5.2 U		106	47.1	44	50.4	47	7	37-89/24
98-95-3	Nitrobenzene	5.2 U		106	45.9	43	50.0	47	9	42-97/26
62-75-9	n-Nitrosodimethylamine	5.2 U		106	36.0	34	41.0	39	13	16-63/28
621-64-7	N-Nitroso-di-n-propylamine	5.2 U		106	45.4	43	50.2	47	10	42-102/27
86-30-6	N-Nitrosodiphenylamine	5.2 U		106	60.5	57*	66.1	62*	9	64-119/27
85-01-8	Phenanthrene	5.2 U		106	75.8	71	82.6	78	9	59-103/19
129-00-0	Pyrene	5.2 U		106	91.9	86	99.4	93	8	58-110/25
110-86-1	Pyridine	5.2 U		106	23.5	22	19.5	18	19	10-63/48
120-82-1	1,2,4-Trichlorobenzene	5.2 U		106	44.2	42	48.0	45	8	37-88/23

5.3.1  
5

# Matrix Spike/Matrix Spike Duplicate Summary

**Job Number:** T74162  
**Account:** WPRMTCOP Williams Production RMT Company  
**Project:** RWF 24-4 Pit

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP18290-MS	P17582.D	1	04/29/11	GJ	04/27/11	OP18290	EP835
OP18290-MSD	P17583.D	1	04/29/11	GJ	04/27/11	OP18290	EP835
T74201-16	P17581.D	1	04/29/11	GJ	04/27/11	OP18290	EP835

The QC reported here applies to the following samples:

Method: SW846 8270C

T74162-1

CAS No.	Surrogate Recoveries	MS	MSD	T74201-16	Limits
367-12-4	2-Fluorophenol	29%	33%	26%	10-66%
4165-62-2	Phenol-d5	26%	31%	19%	10-53%
118-79-6	2,4,6-Tribromophenol	67%	72%	64%	32-128%
4165-60-0	Nitrobenzene-d5	40%	44%	43%	29-115%
321-60-8	2-Fluorobiphenyl	44%	49%	48%	34-113%
1718-51-0	Terphenyl-d14	79%	87%	94%	12-145%

5.3.1  
5

## Metals Analysis

---

## QC Data Summaries

---

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: T74162  
Account: WPRMTCOP - Williams Production RMT Company  
Project: RWF 24-4 Pit

QC Batch ID: MP14527  
Matrix Type: AQUEOUS

Methods: SW846 6010B  
Units: ug/l

Prep Date: 04/23/11

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	8.3	12		
Antimony	5.0	1	1		
Arsenic	5.0	1.7	1		
Barium	200	.97	3.4		
Beryllium	5.0	.056	.16		
Boron	100	1.4	7.8		
Cadmium	4.0	.11	.09		
Calcium	5000	7.4	25	7.0	<5000
Chromium	10	.23	.27		
Cobalt	50	.15	.22		
Copper	25	1.1	5.9		
Iron	100	1.1	23	4.7	<100
Lead	3.0	1	1.8		
Lithium	300	2	2		
Magnesium	5000	7.7	7.9	-12	<5000
Manganese	15	.054	1.9	0.23	<15
Molybdenum	10	.39	.2		
Nickel	40	.69	1.4		
Potassium	5000	39	45	-21	<5000
Selenium	5.0	1.5	.98		
Silver	10	1.2	.24		
Sodium	5000	9.2	100	-27	<5000
Strontium	10	.061	.4		
Thallium	10	.67	1.2		
Tin	20	.69	2.8		
Titanium	20	.29	.3		
Vanadium	50	.3	.3		
Zinc	20	.51	3.5		

Associated samples MP14527: T74162-1F

Results < IDL are shown as zero for calculation purposes  
(\* ) Outside of QC limits  
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: T74162  
 Account: WPRMTCOP - Williams Production RMT Company  
 Project: RWF 24-4 Pit

QC Batch ID: MP14527  
 Matrix Type: AQUEOUS

Methods: SW846 6010B  
 Units: ug/l

Prep Date: 04/23/11 04/23/11

Metal	T74161-1F Original DUP		RPD	QC Limits	T74161-1F Original MS		Spikelot MPTW4	% Rec	QC Limits
Aluminum									
Antimony									
Arsenic	anr								
Barium									
Beryllium									
Boron									
Cadmium	anr								
Calcium	300000	325000	8.0	0-20	300000	379000	50000	158.0(a)	80-120
Chromium	anr								
Cobalt									
Copper									
Iron	1010	1110	9.4	0-20	1010	49000	50000	96.0	80-120
Lead	anr								
Lithium									
Magnesium	39900	43700	9.1	0-20	39900	89900	50000	100.0	80-120
Manganese	287	313	8.7	0-20	287	711	400	106.0	80-120
Molybdenum									
Nickel									
Potassium	89400	98300	9.5	0-20	89400	152000	50000	125.2N(b)	80-120
Selenium	anr								
Silver	anr								
Sodium	10000000007000000		0.9	0-20	10000000007120000		50000	360.0(a)	80-120
Strontium									
Thallium									
Tin									
Titanium									
Vanadium									
Zinc									

Associated samples MP14527: T74162-1F

Results < IDL are shown as zero for calculation purposes

(\*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

(b) Spike recovery indicates possible matrix interference.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: T74162  
 Account: WPRMTCOP - Williams Production RMT Company  
 Project: RWF 24-4 Pit

QC Batch ID: MP14527  
 Matrix Type: AQUEOUS

Methods: SW846 6010B  
 Units: ug/l

Prep Date: 04/23/11

Metal	T74161-1F Original MSD	SpikeLot MPTW4	% Rec	MSD RPD	QC Limit	
Aluminum						
Antimony						
Arsenic	anr					
Barium	anr					
Beryllium						
Boron						
Cadmium	anr					
Calcium	300000	354000	50000	108.0	6.8	20
Chromium	anr					
Cobalt						
Copper						
Iron	1010	45500	50000	89.0	7.4	20
Lead	anr					
Lithium						
Magnesium	39900	83500	50000	87.2	7.4	20
Manganese	287	653	400	91.5	8.5	20
Molybdenum						
Nickel						
Potassium	89400	140000	50000	101.2	8.2	20
Selenium	anr					
Silver	anr					
Sodium	10000000007250000	50000	620.0(a)	1.8		20
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc						

Associated samples MP14527: T74162-1F

Results < IDL are shown as zero for calculation purposes

(\*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: T74162  
 Account: WPRMTCOP - Williams Production RMT Company  
 Project: RWF 24-4 Pit

QC Batch ID: MP14527  
 Matrix Type: AQUEOUS

Methods: SW846 6010B  
 Units: ug/l

Prep Date: 04/23/11

Metal	BSP Result	Spikelot MPTW4	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	anr			
Beryllium				
Boron				
Cadmium	anr			
Calcium	52000	50000	104.0	80-120
Chromium	anr			
Cobalt				
Copper				
Iron	50000	50000	100.0	80-120
Lead	anr			
Lithium				
Magnesium	48800	50000	97.6	80-120
Manganese	413	400	103.3	80-120
Molybdenum				
Nickel				
Potassium	48500	50000	97.0	80-120
Selenium	anr			
Silver	anr			
Sodium	48700	50000	97.4	80-120
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP14527: T74162-1F

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits  
 (anr) Analyte not requested

6.1.3  
 6

SERIAL DILUTION RESULTS SUMMARY

Login Number: T74162  
 Account: WPRMTCOP - Williams Production RMT Company  
 Project: RWF 24-4 Pit

QC Batch ID: MP14527  
 Matrix Type: AQUEOUS

Methods: SW846 6010B  
 Units: ug/l

Prep Date: 04/23/11

Metal	T74161-1F Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	anr			
Beryllium				
Boron				
Cadmium	anr			
Calcium	300000	287000	4.3	0-10
Chromium	anr			
Cobalt				
Copper				
Iron	1010	969	3.9	0-10
Lead	anr			
Lithium				
Magnesium	39900	38500	3.5	0-10
Manganese	287	269	6.1	0-10
Molybdenum				
Nickel				
Potassium	89400	77400	13.4*(a)	0-10
Selenium	anr			
Silver	anr			
Sodium	10000000007440000		7.3	0-10
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP14527: T74162-1F

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits  
 (anr) Analyte not requested  
 (a) Serial dilution indicates possible matrix interference.

6.1.4  
 6

## General Chemistry

---

### QC Data Summaries

---

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: T74162  
Account: WPRMTCOP - Williams Production RMT Company  
Project: RWF 24-4 Pit

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Alkalinity, Bicarbonate	GN30828	5.0	2.0	mg/l				
Alkalinity, Carbonate	GN30827	5.0	0.0	mg/l				
Alkalinity, Total as CaCO3	GN30822	5.0	2.0	mg/l	2500	2380	95.0	80-120%
Bromide	GP12815/GN30850	0.50	0.0	mg/l	10	9.11	91.1	90-110%
Chloride	GP12822/GN30863	0.50	0.0	mg/l	10	9.74	97.4	90-110%
Fluoride	GP12815/GN30850	0.50	0.0	mg/l	10	9.70	97.0	90-110%
Hydroxide Alkalinity	GN30829	5.0	0.0	mg/l				
Solids, Total Dissolved	GN30701	10	0.0	mg/l	500	494	98.8	80-120%
Specific Conductivity	GN30555	1.0	<1.0	umhos/cm				
Sulfate	GP12793/GN30804	0.50	0.0	mg/l	10	9.16	91.6	90-110%

Associated Samples:

Batch GN30555: T74162-1  
Batch GN30701: T74162-1  
Batch GN30822: T74162-1  
Batch GN30827: T74162-1  
Batch GN30828: T74162-1  
Batch GN30829: T74162-1  
Batch GP12793: T74162-1  
Batch GP12815: T74162-1  
Batch GP12822: T74162-1  
(\* ) Outside of QC limits

7.1  
7

DUPLICATE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: T74162  
Account: WPRMTCOP - Williams Production RMT Company  
Project: RWF 24-4 Pit

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Alkalinity, Total as CaCO3	GN30822	T74088-2	mg/l	135	137	1.5	0-10%
Bromide	GP12815/GN30850	T74698-1	mg/l	0.18	0.18	0.0	0-20%
Chloride	GP12822/GN30863	T74162-1	mg/l	13100	12700	3.1	0-20%
Fluoride	GP12815/GN30850	T74698-1	mg/l	0.42	0.44	4.7	0-20%
Solids, Total Dissolved	GN30701	T74047-1	mg/l	553	543	1.8	0-5%
Specific Conductivity	GN30555	T73230-2	umhos/cm	1020	1020	0.0	0-20%
Sulfate	GP12793/GN30804	T74577-1	mg/l	128	129	0.8	0-20%
pH	GN30542	T74161-1	su	6.65	6.66	0.1	0-6.8%

Associated Samples:

Batch GN30542: T74162-1  
Batch GN30555: T74162-1  
Batch GN30701: T74162-1  
Batch GN30822: T74162-1  
Batch GP12793: T74162-1  
Batch GP12815: T74162-1  
Batch GP12822: T74162-1  
(\* ) Outside of QC limits

7.2  
7

MATRIX SPIKE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: T74162  
Account: WPRMTCOP - Williams Production RMT Company  
Project: RWF 24-4 Pit

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Alkalinity, Total as CaCO3	GN30822	T74088-2	mg/l	135	25	161	104.0	79-122%
Bromide	GP12815/GN30850	T74698-1	mg/l	0.18	10	9.1	89.2	80-120%
Chloride	GP12822/GN30863	T74162-1	mg/l	13100	20000	29800	83.5	80-120%
Fluoride	GP12815/GN30850	T74698-1	mg/l	0.42	10	10.1	96.8	80-120%
Sulfate	GP12793/GN30804	T74577-1	mg/l	128	200	310	91.0	80-120%

Associated Samples:

Batch GN30822: T74162-1

Batch GP12793: T74162-1

Batch GP12815: T74162-1

Batch GP12822: T74162-1

(\*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

7.3

7

Form 26

State of Colorado  
**Oil and Gas Conservation Commission**



1120 Lincoln Street, Suite 801, Denver, Colorado 80203 (303)894-2100 Fax:(303)894-2109

FOR OGCC USE ONLY

**SOURCE OF PRODUCED WATER FOR DISPOSAL**

This form must be completed for any new disposal site and for any change in sources of produced water for an existing disposal site.

**Complete the Attachment Checklist**

OGCC Operator Number: _____	Contact Name and Telephone: _____
Name of Operator: _____	_____
Address: _____	No: _____
City: _____ State: _____ Zip: _____	Fax: _____

	Oper	OGCC
Chemical Analysis of fluid		

OGCC Disposal Facility Number: \_\_\_\_\_

Operator's Disposal Facility Name: \_\_\_\_\_ Operator's Disposal Facility Number: \_\_\_\_\_

Location (QtrQtr, Sec, Twp, Rng, Meridian): \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_ County: \_\_\_\_\_

If more space is required, attach additional sheet.

**Add Source:** OGCC Lease No: \_\_\_\_\_ API No: \_\_\_\_\_ Well Name & No: \_\_\_\_\_  
Operator Name: \_\_\_\_\_ Operator No: \_\_\_\_\_

**Delete Source:** Location: QtrQtr: \_\_\_\_\_ Section: \_\_\_\_\_ Township: \_\_\_\_\_ Range: \_\_\_\_\_ Producing Formation: \_\_\_\_\_  
Analysis Attached? Yes No Transported to disposal site via: Pipeline Truck TDS: \_\_\_\_\_

**Add Source:** OGCC Lease No: \_\_\_\_\_ API No: \_\_\_\_\_ Well Name & No: \_\_\_\_\_  
Operator Name: \_\_\_\_\_ Operator No: \_\_\_\_\_

**Delete Source:** Location: QtrQtr: \_\_\_\_\_ Section: \_\_\_\_\_ Township: \_\_\_\_\_ Range: \_\_\_\_\_ Producing Formation: \_\_\_\_\_  
Analysis Attached? Yes No Transported to disposal site via: Pipeline Truck TDS: \_\_\_\_\_

**Add Source:** OGCC Lease No: \_\_\_\_\_ API No: \_\_\_\_\_ Well Name & No: \_\_\_\_\_  
Operator Name: \_\_\_\_\_ Operator No: \_\_\_\_\_

**Delete Source:** Location: QtrQtr: \_\_\_\_\_ Section: \_\_\_\_\_ Township: \_\_\_\_\_ Range: \_\_\_\_\_ Producing Formation: \_\_\_\_\_  
Analysis Attached? Yes No Transported to disposal site via: Pipeline Truck TDS: \_\_\_\_\_

**Add Source:** OGCC Lease No: \_\_\_\_\_ API No: \_\_\_\_\_ Well Name & No: \_\_\_\_\_  
Operator Name: \_\_\_\_\_ Operator No: \_\_\_\_\_

**Delete Source:** Location: QtrQtr: \_\_\_\_\_ Section: \_\_\_\_\_ Township: \_\_\_\_\_ Range: \_\_\_\_\_ Producing Formation: \_\_\_\_\_  
Analysis Attached? Yes No Transported to disposal site via: Pipeline Truck TDS: \_\_\_\_\_

**Add Source:** OGCC Lease No: \_\_\_\_\_ API No: \_\_\_\_\_ Well Name & No: \_\_\_\_\_  
Operator Name: \_\_\_\_\_ Operator No: \_\_\_\_\_

**Delete Source:** Location: QtrQtr: \_\_\_\_\_ Section: \_\_\_\_\_ Township: \_\_\_\_\_ Range: \_\_\_\_\_ Producing Formation: \_\_\_\_\_  
Analysis Attached? Yes No Transported to disposal site via: Pipeline Truck TDS: \_\_\_\_\_

**Add Source:** OGCC Lease No: \_\_\_\_\_ API No: \_\_\_\_\_ Well Name & No: \_\_\_\_\_  
Operator Name: \_\_\_\_\_ Operator No: \_\_\_\_\_

**Delete Source:** Location: QtrQtr: \_\_\_\_\_ Section: \_\_\_\_\_ Township: \_\_\_\_\_ Range: \_\_\_\_\_ Producing Formation: \_\_\_\_\_  
Analysis Attached? Yes No Transported to disposal site via: Pipeline Truck TDS: \_\_\_\_\_

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete.

Print Name: \_\_\_\_\_ Signed: Karolina Blaney  
Title: \_\_\_\_\_ Date: \_\_\_\_\_

OGCC Approved: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

**CONDITIONS OF APPROVAL, IF ANY:**

List of Existing and Proposed Wells

Well Name	API Number	Reservoir	Location						Transport Method
			Qtr/Qtr	Section	Town.	Range			
SR 534-9	0504520002	Mesaverde	NWSE	9	7	S	94	W	Pipeline
SR 433-9	0504520001	Mesaverde	NWSE	9	7	S	94	W	Pipeline
SR 333-9	0504520000	Mesaverde	NWSE	9	7	S	94	W	Pipeline
SR 444-9	0504519998	Mesaverde	NWSE	9	7	S	94	W	Pipeline
SR 344-9	0504519995	Mesaverde	NWSE	9	7	S	94	W	Pipeline
SR 44-9	0504519994	Mesaverde	NWSE	9	7	S	94	W	Pipeline
SR 443-9	0504519993	Mesaverde	NWSE	9	7	S	94	W	Pipeline
SR 34-9	0504519990	Mesaverde	NWSE	9	7	S	94	W	Pipeline
SR 544-9	0504519987	Mesaverde	NWSE	9	7	S	94	W	Pipeline
SR 543-9	0504519985	Mesaverde	NWSE	9	7	S	94	W	Pipeline
SR 334-9	0504519984	Mesaverde	NWSE	9	7	S	94	W	Pipeline
SR 434-9	0504519981	Mesaverde	NWSE	9	7	S	94	W	Pipeline
RWF 334-32	0504519370	Mesaverde	SESE	32	6	S	94	W	Pipeline
RWF 444-32	0504519367	Mesaverde	SESE	32	6	S	94	W	Pipeline
RWF 433-32	0504519366	Mesaverde	SESE	32	6	S	94	W	Pipeline
RWF 434-32	0504519365	Mesaverde	SESE	32	6	S	94	W	Pipeline
RWF 543-32	0504519363	Mesaverde	SESE	32	6	S	94	W	Pipeline
RWF 34-32	0504519362	Mesaverde	SESE	32	6	S	94	W	Pipeline
RWF 333-32	0504519359	Mesaverde	SESE	32	6	S	94	W	Pipeline
RWF 533-32	0504519358	Mesaverde	SESE	32	6	S	94	W	Pipeline
RWF 33-32	0504519357	Mesaverde	SESE	32	6	S	94	W	Pipeline
RWF 443-32	0504519355	Mesaverde	SESE	32	6	S	94	W	Pipeline
RWF 343-32	0504519354	Mesaverde	SESE	32	6	S	94	W	Pipeline
RWF 534-32	0504519353	Mesaverde	SESE	32	6	S	94	W	Pipeline
RWF 344-32	0504519352	Mesaverde	SESE	32	6	S	94	W	Pipeline
RWF 544-32	0504519351	Mesaverde	SESE	32	6	S	94	W	Pipeline
RWF 43-32	0504519349	Mesaverde	SESE	32	6	S	94	W	Pipeline
RWF 44-32	0504519346	Mesaverde	SESE	32	6	S	94	W	Pipeline
SR 14-9	0504518125	Mesaverde	SESW	9	7	S	94	W	Pipeline
SR 314-9	0504518124	Mesaverde	SESW	9	7	S	94	W	Pipeline
SR 414-9	0504518123	Mesaverde	SESW	9	7	S	94	W	Pipeline
SR 514-9	0504518122	Mesaverde	SESW	9	7	S	94	W	Pipeline
SR 24-9	0504518121	Mesaverde	SESW	9	7	S	94	W	Pipeline
SR 424-9	0504518120	Mesaverde	SESW	9	7	S	94	W	Pipeline

List of Existing and Proposed Wells

Well Name	API Number	Reservoir	Location						Transport Method
			Qtr/Qtr	Section	Town.	Range			
SR 513-9	0504518119	Mesaverde	SESW	9	7	S	94	W	Pipeline
SR 324-9	0504518118	Mesaverde	SESW	9	7	S	94	W	Pipeline
SR 343-9	0504517103	Mesaverde	NWSE	9	7	S	94	W	Pipeline
SR 11-15	0504517102	Mesaverde	NWSE	9	7	S	94	W	Pipeline
SR 33-9	0504517101	Mesaverde	NWSE	9	7	S	94	W	Pipeline
SR 532-9	0504517100	Mesaverde	NWSE	9	7	S	94	W	Pipeline
SR 43-9	0504517099	Mesaverde	NWSE	9	7	S	94	W	Pipeline
SR 321-9	0504516884	Mesaverde	SWNW	9	7	S	94	W	Pipeline
SR 421-9	0504516883	Mesaverde	SWNW	9	7	S	94	W	Pipeline
SR 313-9	0504516882	Mesaverde	SWNW	9	7	S	94	W	Pipeline
SR 21-9	0504516881	Mesaverde	SWNW	9	7	S	94	W	Pipeline
SR 11-9	0504516880	Mesaverde	SWNW	9	7	S	94	W	Pipeline
SR 413-9	0504516879	Mesaverde	SWNW	9	7	S	94	W	Pipeline
SR 412-9	0504516878	Mesaverde	SWNW	9	7	S	94	W	Pipeline
SR 12-9	0504516877	Mesaverde	SWNW	9	7	S	94	W	Pipeline
SR 411-9	0504516876	Mesaverde	SWNW	9	7	S	94	W	Pipeline
SR 312-9	0504516875	Mesaverde	SWNW	9	7	S	94	W	Pipeline
SR 311-9	0504516874	Mesaverde	SWNW	9	7	S	94	W	Pipeline
SR 322-9	0504516873	Mesaverde	SWNW	9	7	S	94	W	Pipeline
SR 22-9	0504516872	Mesaverde	SWNW	9	7	S	94	W	Pipeline
SR 422-9	0504516871	Mesaverde	SWNW	9	7	S	94	W	Pipeline
SR 23-9	0504516870	Mesaverde	SWNW	9	7	S	94	W	Pipeline
RWF 343-4	0504516335	Mesaverde	SWSE	4	7	S	94	W	Pipeline
RWF 443-4	0504516334	Mesaverde	SWSE	4	7	S	94	W	Pipeline
RWF 433-4	0504516333	Mesaverde	SWSE	4	7	S	94	W	Pipeline
RWF 533-4	0504516332	Mesaverde	SWSE	4	7	S	94	W	Pipeline
RWF 44-4	0504516331	Mesaverde	SWSE	4	7	S	94	W	Pipeline
RWF 344-4	0504516330	Mesaverde	SWSE	4	7	S	94	W	Pipeline
RWF 444-4	0504516329	Mesaverde	SWSE	4	7	S	94	W	Pipeline
RWF 544-4	0504516328	Mesaverde	SWSE	4	7	S	94	W	Pipeline
RWF 43-4	0504516327	Mesaverde	SWSE	4	7	S	94	W	Pipeline
RWF 33-4	0504516326	Mesaverde	SWSE	4	7	S	94	W	Pipeline
RWF 333-4	0504516325	Mesaverde	SWSE	4	7	S	94	W	Pipeline
RWF 543-4	0504516324	Mesaverde	SWSE	4	7	S	94	W	Pipeline

List of Existing and Proposed Wells

Well Name	API Number	Reservoir	Location						Transport Method
			Qtr/Qtr	Section	Town.	Range			
RWF 34-4	0504516323	Mesaverde	SWSE	4	7	S	94	W	Pipeline
RWF 334-4	0504516322	Mesaverde	SWSE	4	7	S	94	W	Pipeline
SR 423-9	0504516272	Mesaverde	SESW	9	7	S	94	W	Pipeline
SR 523-9	0504516271	Mesaverde	SESW	9	7	S	94	W	Pipeline
SR 13-9	0504516270	Mesaverde	SESW	9	7	S	94	W	Pipeline
SR 323-9	0504516269	Mesaverde	SESW	9	7	S	94	W	Pipeline
FEDERAL 7-94-S 0-4	0504506671	Mesaverde	SWSE	4	7	S	94	W	Pipeline
RWF 12-3		Mesaverde	SWNW	3	7	S	94	W	Pipeline
RWF 13-3		Mesaverde	SESW	3	7	S	94	W	Pipeline
RWF 14-3		Mesaverde	NWSE	3	7	S	94	W	Pipeline
RWF 21-3		Mesaverde	NENW	3	7	S	94	W	Pipeline
RWF 221-3		Mesaverde	NENW	3	7	S	94	W	Pipeline
RWF 22-3		Mesaverde	SESW	3	7	S	94	W	Pipeline
RWF 23-3		Mesaverde	SESW	3	7	S	94	W	Pipeline
RWF 24-3		Mesaverde	NWSE	3	7	S	94	W	Pipeline
RWF 311-3		Mesaverde	NWNW	3	7	S	94	W	Pipeline
RWF 312-3		Mesaverde	SWNW	3	7	S	94	W	Pipeline
RWF 313-3		Mesaverde	NWSW	3	7	S	94	W	Pipeline
RWF 314-3		Mesaverde	NWSE	3	7	S	94	W	Pipeline
RWF 321-3		Mesaverde	NENW	3	7	S	94	W	Pipeline
RWF 32-3		Mesaverde	SWSE	34	6	S	94	W	Pipeline
RWF 323-3		Mesaverde	SESW	3	7	S	94	W	Pipeline
RWF 324-3		Mesaverde	NWSE	3	7	S	94	W	Pipeline
RWF 33-3		Mesaverde	SWSE	3	7	S	94	W	Pipeline
RWF 333-3		Mesaverde	NWSE	3	7	S	94	W	Pipeline
RWF 334-3		Mesaverde	NWSE	3	7	S	94	W	Pipeline
RWF 34-3		Mesaverde	NWSE	3	7	S	94	W	Pipeline
RWF 343-3		Mesaverde	NWSE	3	7	S	94	W	Pipeline
RWF 344-3		Mesaverde	NWSE	3	7	S	94	W	Pipeline
RWF 411-3		Mesaverde	NWNW	3	7	S	94	W	Pipeline
RWF 412-3		Mesaverde	SWNW	3	7	S	94	W	Pipeline
RWF 413-3		Mesaverde	NWSW	3	7	S	94	W	Pipeline
RWF 414-3		Mesaverde	NWSE	3	7	S	94	W	Pipeline
RWF 421-3		Mesaverde	NENW	3	7	S	94	W	Pipeline

List of Existing and Proposed Wells

Well Name	API Number	Reservoir	Location						Transport Method
			Qtr/Qtr	Section	Town.	Range			
RWF 422-3		Mesaverde	SESW	3	7	S	94	W	Pipeline
RWF 42-3		Mesaverde	NWSE	3	7	S	94	W	Pipeline
RWF 423-3		Mesaverde	NWSE	3	7	S	94	W	Pipeline
RWF 424-3		Mesaverde	NWSE	3	7	S	94	W	Pipeline
RWF 43-3		Mesaverde	NWSE	3	7	S	94	W	Pipeline
RWF 433-3		Mesaverde	NWSE	3	7	S	94	W	Pipeline
RWF 434-3		Mesaverde	NWSE	3	7	S	94	W	Pipeline
RWF 442-3		Mesaverde	NWSE	3	7	S	94	W	Pipeline
RWF 44-3		Mesaverde	NWSE	3	7	S	94	W	Pipeline
RWF 443-3		Mesaverde	NWSE	3	7	S	94	W	Pipeline
RWF 444-3		Mesaverde	NWSE	3	7	S	94	W	Pipeline
RWF 511-3		Mesaverde	NWNW	3	7	S	94	W	Pipeline
RWF 513-3		Mesaverde	NWSW	3	7	S	94	W	Pipeline
RWF 523-3		Mesaverde	SESW	3	7	S	94	W	Pipeline
RWF 524-3		Mesaverde	NWSE	3	7	S	94	W	Pipeline
RWF 532-3		Mesaverde	SWSE	34	6	S	94	W	Pipeline
RWF 533-3		Mesaverde	NWSE	3	7	S	94	W	Pipeline
RWF 542-3		Mesaverde	NWSE	3	7	S	94	W	Pipeline
RWF 544-3		Mesaverde	NWSE	3	7	S	94	W	Pipeline
RWF 611-3		Mesaverde	SWNW	3	7	S	94	W	Pipeline
SR 31-17		Mesaverde	NWNE	17	7	S	94	W	Pipeline
SR 31-9		Mesaverde	SENE	9	7	S	94	W	Pipeline
SR 32-9		Mesaverde	SENE	9	7	S	94	W	Pipeline
SR 331-9		Mesaverde	SENE	9	7	S	94	W	Pipeline
SR 332-9		Mesaverde	SENE	9	7	S	94	W	Pipeline
SR 333-8		Mesaverde	NWSE	8	7	S	94	W	Pipeline
SR 334-8		Mesaverde	SWSE	8	7	S	94	W	Pipeline
SR 33-8		Mesaverde	NWSE	8	7	S	94	W	Pipeline
SR 341-17		Mesaverde	NENE	17	7	S	94	W	Pipeline
SR 341-9		Mesaverde	SENE	9	7	S	94	W	Pipeline
SR 342-9		Mesaverde	SENE	9	7	S	94	W	Pipeline
SR 343-8		Mesaverde	NESE	8	7	S	94	W	Pipeline
SR 344-8		Mesaverde	SESE	8	7	S	94	W	Pipeline
SR 34-8		Mesaverde	SWSE	8	7	S	94	W	Pipeline

List of Existing and Proposed Wells

Well Name	API Number	Reservoir	Location						Transport Method
			Qtr/Qtr	Section	Town.	Range			
SR 41-17		Mesaverde	NENE	17	7	S	94	W	Pipeline
SR 41-9		Mesaverde	SENE	9	7	S	94	W	Pipeline
SR 42-9		Mesaverde	SENE	9	7	S	94	W	Pipeline
SR 431-17		Mesaverde	NWNE	17	7	S	94	W	Pipeline
SR 431-9		Mesaverde	SENE	9	7	S	94	W	Pipeline
SR 432-9		Mesaverde	SENE	9	7	S	94	W	Pipeline
SR 433-8		Mesaverde	NWSE	8	7	S	94	W	Pipeline
SR 434-8		Mesaverde	SWSE	8	7	S	94	W	Pipeline
SR 43-8		Mesaverde	NESE	8	7	S	94	W	Pipeline
SR 441-9		Mesaverde	SENE	9	7	S	94	W	Pipeline
SR 442-9		Mesaverde	SENE	9	7	S	94	W	Pipeline
SR 443-8		Mesaverde	NESE	8	7	S	94	W	Pipeline
SR 444-8		Mesaverde	SESE	8	7	S	94	W	Pipeline
SR 44-8		Mesaverde	SESE	8	7	S	94	W	Pipeline
SR 531-9		Mesaverde	SENE	9	7	S	94	W	Pipeline
SR 533-8		Mesaverde	NWSE	8	7	S	94	W	Pipeline
SR 534-8		Mesaverde	SWSE	8	7	S	94	W	Pipeline
SR 543-8		Mesaverde	NESE	8	7	S	94	W	Pipeline
SR 544-8		Mesaverde	SESE	8	7	S	94	W	Pipeline