FORM 27 Rev 6/99

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

OGCC Employee:
☐ Spill ☐ Complaint
☐ Inspection ☐ NOAV
Tracking No: 2222753

SITE INVESTIGATION AND REMEDIATION WORKPLAN

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. Form 27 is intended to be used whenever possible. Additional documentation will be required when large volumes of soil and groundwater have been impacted or involve large facilities with multiple source areas. See Rule 910. Attach as many pages as needed to fully describe the proposed work.

CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

☑ Spill or Release ☐ Plug & Abandon ☐ Central Facility Closure ☐ Site/Facility Closure ☐ Other (describe): _____

OGCC Operator Number: 10232
Name of Operator: Laramie Energy II, LLC
Address: 1512 Larimer Street, Suite 1000
City: Denver State: CO Zip: 80202

Contact Name and Telephone:
Wayne Bankert
No: 970.812.5310
Fax: 970.683.5594

API Number: 05-057-06483
County: Jackson
Facility Name: Fuqua 18-15 Well Pad
Facility Number: ~~N/A~~ location = 324766
Well Name: Fuqua #19-02-10-1H
Well Number: Fuqua #19-02-10-1H
Location: (QtrQtr, Sec, Twp, Rng, Meridian): SW SE Sec 18 T6N R78W 6 P.M. Latitude: 40.48465 Longitude: -106.1847

TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc): condensate/crude oil

Site Conditions: Is location within a sensitive area (according to Rule 901e)? ☐ Y ☑ N If yes, attach evaluation.

Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): Rangeland - sage brush pasture

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: _____

Potential receptors (water wells within 1/4 mi, surface waters, etc.): _____

Description of Impact (if previously provided, refer to that form or document):

Impacted Media (check):	Extent of Impact:	How Determined:
☑ Soils	Approximately 200 ft by 450 ft	Visually, Samples, Tape Measure/GPS
☑ Vegetation	Approximately 200 ft by 450 ft	Visually, Samples, Tape Measure/GPS
☐ Groundwater		
☐ Surface Water		

REMEDIATION WORKPLAN

Describe initial action taken (if previously provided, refer to that form or document):

Laramie Energy II scraped up approximately 20 cubic yards of impacted sage brush and soils in containment near the vertical separator where the release occurred. The original plan was to burn the impacted areas, scarify the soil, and re-seed with native grasses and sage brush. A fire break was cut around the perimeter of the impact area in preparation for a controlled burn. However, a county wide burn ban was implemented two days before the controlled burn was to take place.

Describe how source is to be removed:

The release area will be fenced with 3-strand barbwire to prevent cattle and wildlife from entering the impact area. Laramie Energy II will hire a contractor to spray surfactant and nutrients over the impact area using a tractor and a boom. Additional soil samples will be collected 3 months after the application. If the impacted soils have not met the COGCC Table 910-1 standards and the burn ban is lifted, burning the impacted vegetation and/or a second application will be evaluated following receipt of soil analytical results.

Describe how remediation of existing impacts is to be accomplished, including removal and disposal at an injection well or licensed facility, land treatment on site, removal of impacted groundwater, insitu bioremediation, burning of oily vegetation, etc.:

The impacted soils and vegetation, primarily sage brush, will be spread out and shredded for use as a mulch in the fire break areas. The materials will be driven over with heavy equipment to break the sage brush into smaller pieces to increase surface area and mixed with the impacted soils so that the hydrocarbons will break down more readily. The impacted materials will be treated with a surfactant, water, and nutrient mixture to enhance bioremediation of the impacted materials by native soil microbes. The impact area will be re-sampled within 3 months to assess progress.

Submit Page 2 with Page 1

FORM 27 Rev 6/99

Page 2

State of Colorado
Oil and Gas Conservation Commission
1120 Lincoln Street, Suite 801, Denver, Colorado 80203
(303)894-2100 Fax:(303)894-2109

Tracking Number: 2222753
Name of Operator:
OGCC Operator No:
Received Date:
Well Name & No:
Facility Name & No: 324766

REMEDIATION WORKPLAN (Cont.)

OGCC Employee:

If groundwater has been impacted, describe proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.):

Based on a review of DWR records for permitted water wells in the area there are no water wells located within Section 18. One permitted well was identified in Section 20, with a total depth listed at 100 feet. There are no permitted water wells in the immediate downgradient direction (NW) of the Fuqua 18-15 well pad, and the release was directed to the east, or away from the closest surface water (Monroe-Ottawa Ditches) and the Illinois River. Groundwater is not expected to be impacted based on the reported groundwater depth (50 ft to 100 ft) and nature of the release.

Describe reclamation plan. Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing. Use additional sheet for description if required.

Surface soil samples were collected on 04/26/2012 from the spill area to assess current site conditions and to define the nature and extent of the impacted area. The condensate/crude oil impacts are surficial since the release was from the top of a vertical separator. New grasses were observed to have germinated and cacti and forbs were observed flowering within the impact area at the time of the sampling. Using a surfactant to break down the paraffins on the vegetation and addition of nutrient to enhance biodegradation in the soil has advantages over burning since the existing vegetation is maintained and the area will recover faster than if it were brush hogged, disked, and re-seeded. Clearing the area would potentially provide an opportunity for noxious weeds to become established in the impacted area. Grading and recontouring will not be necessary, and compaction is not an issue. Samples will be collected six months after treatment to assess progress.

Attach samples and analytical results taken to verify remediation of impacts. Show locations of samples on an onsite schematic or drawing.

Is further site investigation required? ☑ Y ☐ N If yes, describe:

See attached map and analytical results.

Final disposition of E&P waste (landtreated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.):

The E&P waste is to be landtreated and disposed onsite. The waste consists primarily of diesel range organics and oil range organics and will be treated with a surfactant and nutrient solution to help break down the heavier range hydrocarbons. Native soil microbes will further break down the hydrocarbons. Impacted vegetation and soils will be shredded and used as mulch to promote revegetation of the fire break. If subsequent analytical results indicate that petroleum hydrocarbon concentrations still do not meet the COGCC Table 910-1 standard of 500 mg/kg, then a second application of surfactant and nutrients or a controlled burn may be considered once the Jackson County fire ban is lifted.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began: 01/30/2012 Date Site Investigation Completed: 04/26/2012 Date Remediation Plan Submitted:
Remediation Start Date: Anticipated Completion Date: Actual Completion Date:

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

Print Name: Wayne P. Bankert Signed:
Title: Senior Regulatory and Environmental Coordinator Date:

OGCC Approved: Title: Env. Supervisor Date: 5/15/12

Provide schedule for nutrient application and sampling.

May 15, 2012

Mr. Wayne P. Bankert
Senior Regulatory & Environmental Coordinator
Laramie Energy II, LLC
601 28 1/4 Rd. Suite D
Grand Junction, CO 81506

RE: Fuqua 18-15 Pad Separator Release Additional Site Investigation and Remediation Work Plan - Project #012-0225

Dear Mr. Bankert:

Olsson Associates (Olsson) conducted additional site investigation and sampling of the impacted area east of the onsite vertical separator following an onsite meeting with you and Alex Fischer with the Colorado Oil and Gas Conservation Commission (COGCC) on April 26, 2012. The general site location is shown on **Figure 1**.

The purpose of the meeting was to discuss alternative options for remediating the petroleum hydrocarbon impacted vegetation and surface soils that were the result of a separator release that occurred on January 29, 2012.

The original plan for remediating the impacted vegetation, consisting primarily of sage brush, native grasses, and forbs, was to perform a controlled burn under the direction of the Jackson County Fire District. A fire break was constructed around the perimeter of the spill area; however, two days before the burn permit was to be issued, Jackson County implemented a county-wide fire ban due to dry conditions and lack of precipitation.

During our onsite meeting we discussed using a surfactant and water solution to be sprayed onto the impacted vegetation to breakdown the residual petroleum hydrocarbons and help to bioremediate the impacted soils using native soil microbe populations. The solution would also contain nutrients needed to promote the biodegradation of the petroleum hydrocarbons by soil microbes.

The Fuqua Ranch planned on grazing cattle on the rangeland surrounding the Fuqua 18-15 well pad in May 2012. The impacted area was subsequently fenced off using three strand barbed wire fence and T-posts to prevent cattle and wildlife from entering the spill area and the well pad. The remediation work plan may be modified with input from the Fuqua Ranch.

This report presents the results of sampling collected on April 26, 2012 and proposed alternative remediation option from the onsite meeting. Sample locations are shown on **Figure 2** and the primary impact area and firebreak are shown on **Figure 3**. A revised Form 27 – Site Investigation and Remediation Work plan is included in **Attachment A**.

4690 Table Mountain Drive, Suite 200 TEL 303.237.2072
Golden, CO 80403 FAX 303.237.2659 www.oaconsulting.com

Additional Site Investigation

On April 26, 2012 Olsson personnel collected additional soil and vegetation samples and submitted them to Summit Scientific, Inc. for laboratory analysis of the petroleum hydrocarbon constituents benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8260, gasoline range organics (GRO) by EPA Method 8260, diesel range organics (DRO) by EPA modified Method 8015, and oil range organics (ORO) by EPA modified Method 8015. The laboratory analytical results are included in **Attachment B**.

Surface soil samples were collected in the vicinity of where the January 2012 soil samples had been collected to assess the current hydrocarbon concentrations. There were few volatile organic compounds (BTEX and GRO) in the initial sampling due to the way that the release occurred, and only the heaviest impacted areas closest to the separator contained BTEX and GRO concentrations. The results show that the highest impacts were in the DRO range.

Fiberglass tape measures and a Trimble GPS unit were used to document the soil sample locations. Soil samples SS-5 and SS-6 were collected approximately 300 feet east of the vertical separator and 25 feet south and 25 feet north of the centerline of the release, respectively. Soil samples SS-7 and SS-8 were collected approximately 400 feet east of the vertical separator, and 25 feet south and 15 feet north of the release centerline, respectively. Soil sample SS-9 was collected approximately 250 feet from the vertical separator, on the east side of the access road, and close to the centerline of the release.

A composite sample of the impacted sage brush and soils from the stockpile was collected to provide an estimate of the highest concentrations that may be expected. Stained soils and paraffin were observed and were represented in the sample, SS-10. Site photographs are presented in **Attachment C**.

It appeared that the wind had carried the release more to the southeast at approximately 450 feet from the separator; however, the majority of the impacted vegetation was within this impact area as shown on **Figure 3**. The width of the impact area "fanned out" from the vertical separator and ranged from 160 feet to 200 feet at its widest aperture. "Fingers" and localized spots of impacted vegetation were noted where the wind had carried the petroleum hydrocarbons further out, but were more isolated. Petroleum hydrocarbon impacts were not noted out along the eastern extent of the fire break.

The April 26, 2012 soil samples also show elevated DRO concentrations, and the BTEX and GRO concentrations were limited to the stockpiled vegetation that had been cleared from the area closest to the vertical separator. Concentrations of BTEX and GRO were either not detected or did not exceed COGCC Table 910-1 cleanup levels in samples collected outside the stockpile. The analytical results for the April 26, 2012 sampling as compared to the January 2012 sample results are plotted on **Figure 4,** and are shown in **Table 1** as compared to the COGCC Table 910-1 cleanup levels.

Remediation Work Plan

A revised COGCC Form 27 Site Investigation and Remediation Work Plan is included as **Attachment A**. This section provides additional details for the proposed remedy. Olsson proposes the use of an environmentally safe, non-hazardous, biodegradable hydrocarbon cleaner and degreaser that can be dissolved in water be spray applied to the impacted vegetation. This will help to break up the residual hydrocarbons on the impacted vegetation and surface soil. Prior to applying the surfactant solution, the vegetation and ground should be sprayed with water. The hydrocarbon cleaner/degreaser solution will be applied with a tractor

and a sprayer boom. It may be necessary to perform additional applications of the hydrocarbon cleaner surfactant solution to fully remediate the impacted area. A copy of the Earth Smart ESCH Hydrocarbon Cleaner brochure and material safety data sheet (MSDS) are included in **Attachment D**.

The mixture also contains nutrients that will help the native soil microbes to further break down the petroleum hydrocarbons. Since the release was caused by a seal blowing out at the top of the vertical separator and the wind carrying the petroleum hydrocarbons out over the impact area, the impacts are limited to vegetation and surface soils. Wetting the soils and keeping them moist will be necessary to bioremediate the impacted soil; however, tilling is not expected to be necessary because of the thin layer of impact. No hazardous byproducts, residues, or hydrocarbon mobilization are expected from the application of the hydrocarbon surfactant solution.

Three months after applying the surfactant solution and allowing time for the solution and soil microbes to remediate the hydrocarbons, Olsson will re-sample the impacted area for DRO and ORO. Since BTEX and GRO were not detected, it is not necessary to sample for these compounds. Since DRO and ORO ranges are less mobile than BTEX or GRO, it is not likely that the impacted soils will significantly leach, and should attenuate to meet the Table 910-1 total petroleum hydrocarbon cleanup level of 500 milligrams per kilogram.

Additional applications of the hydrocarbon cleaner or other remediation options will be considered if the sample analytical results show that DRO and ORO ranges still are above 500 mg/kg. If the fire ban in Jackson County is lifted, it may again be considered as a remedy option. Once the soils within the impacted area meet Table 910-1 standards the fire break will be reclaimed and re-seeded, and the barbed wire fence will be removed from around the impact area.

Impacted Stockpile Remediation and Fire Break Reclamation

The impacted vegetation in the stockpile will be broken up into smaller pieces by mechanical means, either using heavy equipment with track to spread out and drive over the pile or through use of chains. The impacted stock pile will be treated with the surfactant solution to break up the hydrocarbons. Once other areas have met the Table 910-1 standard of 500 mg/kg for both DRO and ORO the fire break will be reclaimed using the shredded stockpiled vegetation as mulch. The resulting mulch will need to meet Table 910-1 standards before being used to restore the fire break. The fire break area will be covered with soil and will be re-seeded with a suitable dry land pasture grass seed mix as recommended by the local USDA Natural Resources Conservation Service office and approval of the Fuqua Ranch.

Sincerely,

Olsson Associates

James W. Hix

Senior Geologist

Attachments

TABLE

Table 1. Summary of Soil Sample Results Laramie Energy - Fuqua 18-15 Pad

Well No.	Date Sampled	Laboratory Analytical Results						
		Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Total Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	ORO (mg/L)
COGCC Table 910-1 Cleanup Level		**0.17**	**85**	**100**	**175**	**500**	**500**	**500**
SS1	01/30/12	< 0.097	< 0.190	< 0.190	< 0.390	< 19.0	822	NA
SS2	01/30/12	< 110	< 210	< 210	0.410 J	12.8 J	8250	NA
SS3	01/30/12	**0.175**	3.16	2.75	29.3	456	NA	NA
SS4	01/30/12	**35.9**	**174**	44.4	**353**	**4430**	**36100**	NA
SS5	04/26/12	< 0.005	< 0.005	< 0.005	< 0.005	< 0.5	**12000**	**2100**
SS6	04/26/12	< 0.005	< 0.005	< 0.005	< 0.005	1.4	**7300**	**1500**
SS7	04/26/12	< 0.005	< 0.005	< 0.005	< 0.005	0.81	**15000**	**2500**
SS8	04/26/12	< 0.005	< 0.005	< 0.005	< 0.005	< 0.5	**7100**	**1200**
SS9	04/26/12	< 0.005	< 0.005	< 0.005	< 0.005	0.96	**5200**	**900**
SS10	04/26/12	0.065	0.56	0.18	2.5	430	**59000**	**4200**

Notes:

NA = Not Analyzed

BTEX = benzene, toluene, ethylbenzene, and xylenes (EPA Method 8260B)

GRO = gasoline range organics (EPA Method 8260B)

DRO = diesel range organics (EPA modified Method 8015)

ORO = oil range organics (EPA modified Method 8015)

All concentrations reported in milligrams per liter (mg/kg).

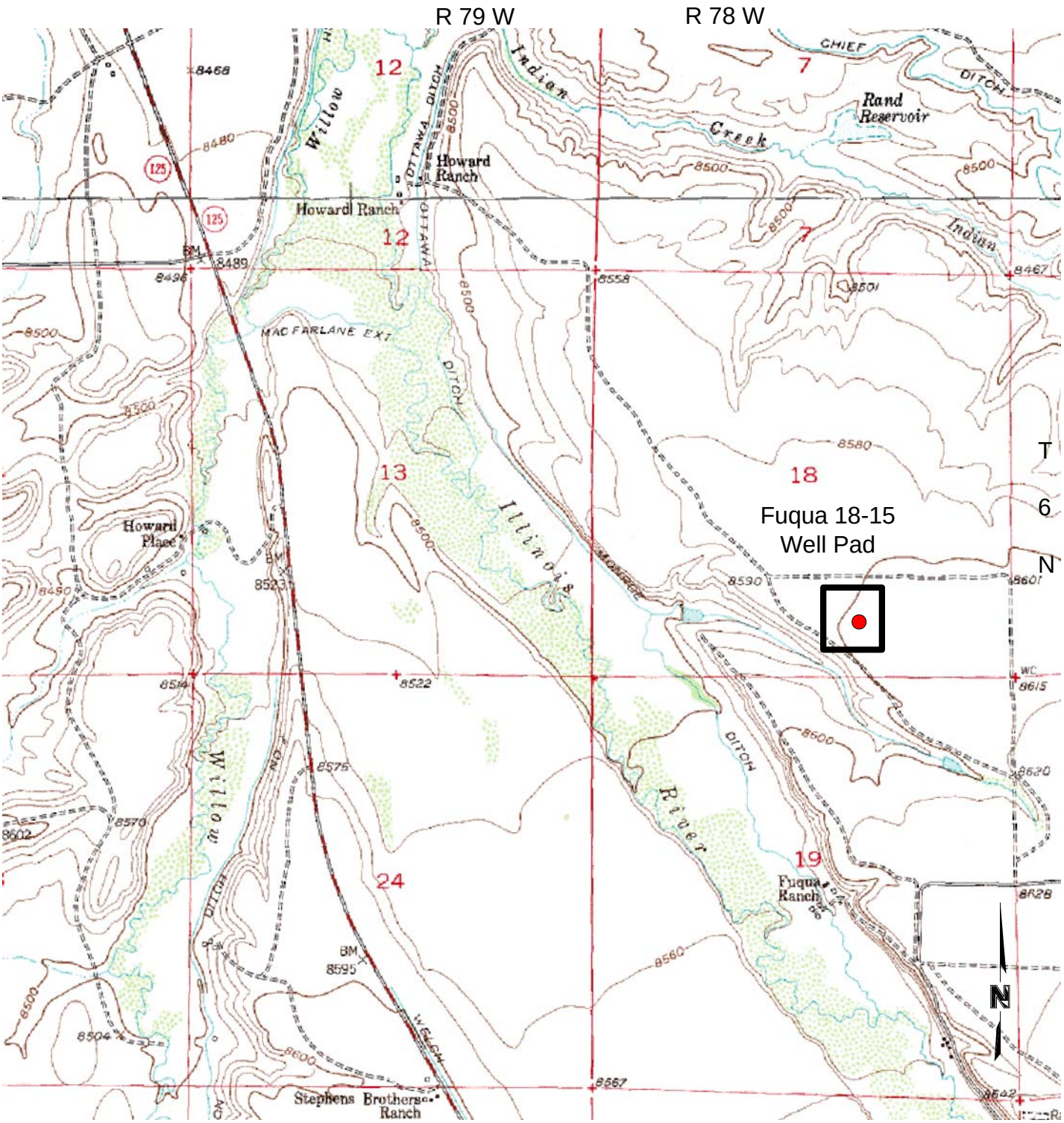
J = Value is estimated at a concentration above the Method Detection Limit but lower than the Reporting Limit

Values in Bold = Exceeds the Colorado Oil and Gas Conservation Commission (COGCC) Table 910-1 Soil Cleanup Level

< =compound not detected above Laboratory Method Detection Limit

See Figure 2 and Figure 4 for Soil Sample Locations

FIGURES



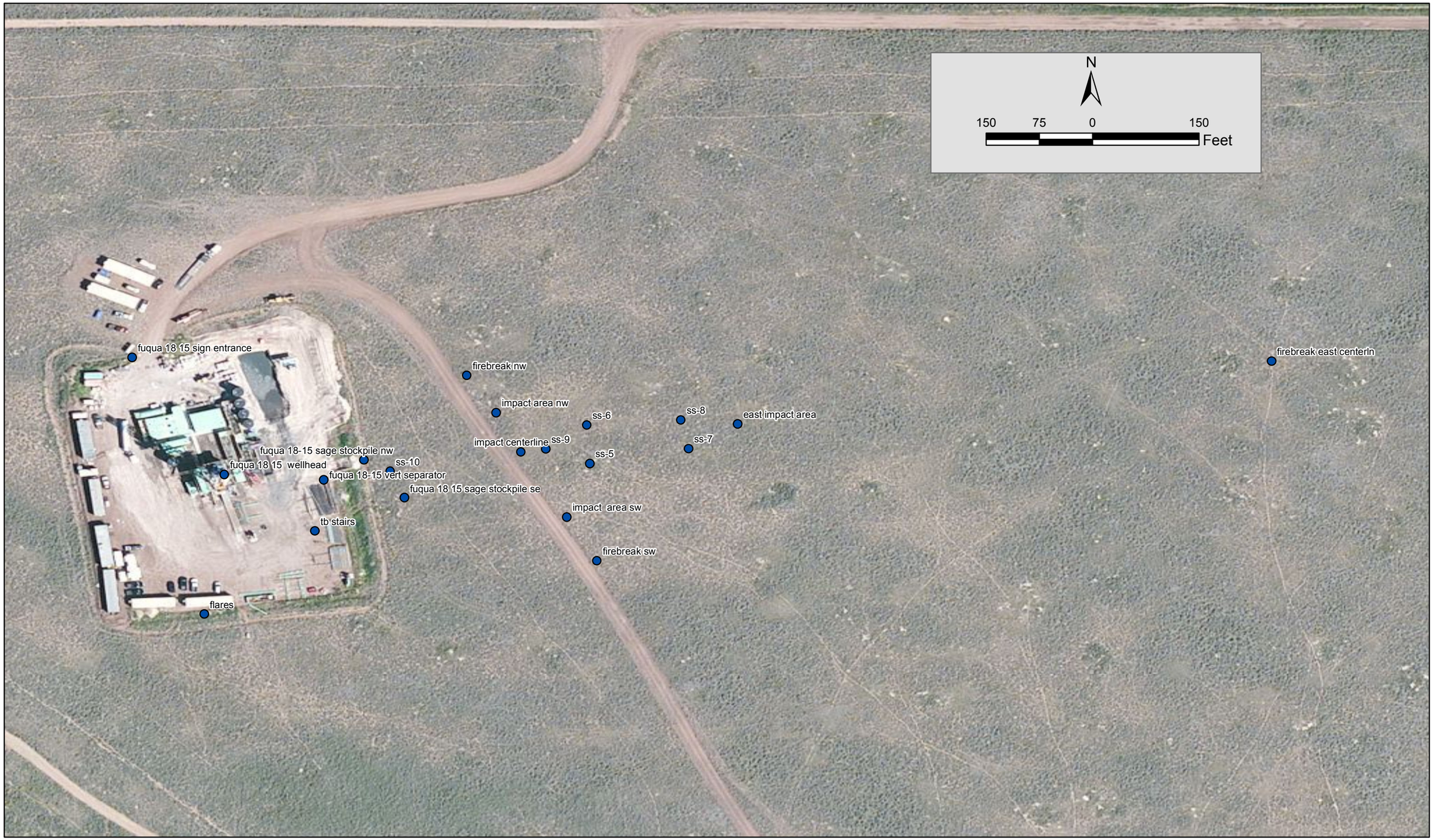
Base Map is Adapted from the Rand USGS
7.5-Minute Topographic Map

FIGURE 1
Fuqua 18-15 Well Pad
General Site Location Map

SW ¼ SE ¼ Section 18, T6N, R78W
Jackson County, Colorado

Revision Date:	05/15/12
Revision Number	
Revised by:	JWH
Approved by:	
Project Number:	012-0225
Scale:	1" = 2000'

OLSSON ASSOCIATES



PROJECT: 012-0225

DRAWN BY: hd

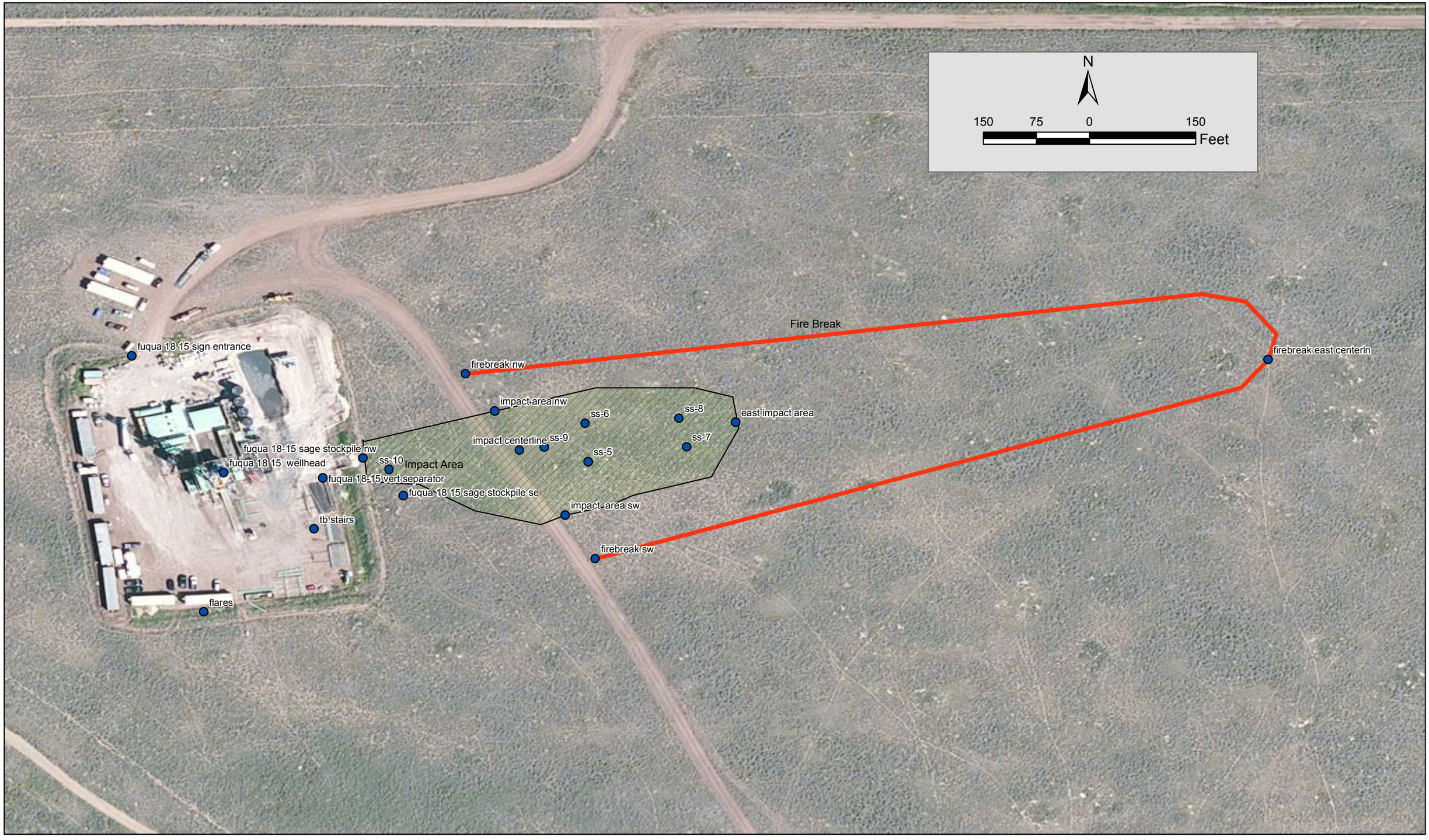
DATE: 5/14/2012

Additional Site Characterization
Fuqua 18-50
Jackson County, Colorado

OLSSON ASSOCIATES
1111 Lincoln Mall, Suite 111
P.O. Box 84608
Lincoln, NE 68501-4608
TEL 402.474.6311
FAX 402.474.5160
www.oaconsulting.com

FIGURE 2

F:/Projects/20050154/gis/maps.mxd



PROJECT: 012-0225	Impact Area Fuqua 18-50 Jackson County, Colorado	FIGURE 3
DRAWN BY: hd		
DATE: 5/14/2012		

OLSSON ASSOCIATES
1111 Lincoln Mall, Suite 111
P.O. Box 84608
Lincoln, NE 68501-4608
TEL 402.474.6311
FAX 402.474.5160
www.oaconsulting.com

F:/Projects/20050154/gis/maps.mxd

N

150 75 0 150

Feet

ss-10
04/26/2012
B 0.065
T 0.56
E 0.018
X 2.5
GRO 430
DRO 59,000
ORO 4,200

ss-9
04/26/2012
B< 0.005
T< 0.005
E< 0.005
X< 0.005
GRO 0.96
DRO 5,200
ORO 900

ss-6
04/26/2012
B< 0.005
T< 0.005
E< 0.005
X< 0.005
GRO 1.4
DRO 7,300
ORO 1,500

ss-2
01/30/2012
B<0.047
T<0.110
E<0.053
X 410J
GRO 12.80J
DRO 8,250

ss-8
04/26/2012
B< 0.005
T< 0.005
E< 0.005
X< 0.005
GRO <0.5
DRO 7,100
ORO 1,200

ss-7
04/26/2012
B< 0.005
T< 0.005
E< 0.005
X< 0.005
GRO 0.81
DRO 15,000
ORO 2,500

ss-1
01/30/2012
B< 0.043
T< 0.097
E< 0.049
X< 0.190
GRO <9.7
DRO 822

ss-5
04/26/2012
B< 0.005
T< 0.005
E< 0.005
X< 0.005
GRO <0.5
DRO 12,000
ORO 2,100

ss-3
01/30/2012
B 0.175
T 3.160
E 2.750
X 29.30
GRO 456
DRO 48,200

ss-4
01/30/2012
B 35.90
T 174
E 44.4
X 353
GRO 4,430
DRO 36,100

ss-10 ss-9 ss-6 ss-8 ss-7 ss-3 ss-2 ss-5 ss-1 ss-4

★ Initial Samples Taken 01/30/2012

● Samples Taken 04/26/2012

F:/Projects/20050154/gis/maps.mxd

PROJECT: 012-0225	
DRAWN BY: hd	
DATE: 5/14/2012	

Soil Analytical Results
Fuqua 18-50
Jackson County, Colorado

OLSSON ASSOCIATES
1111 Lincoln Mall, Suite 111
P.O. Box 84608
Lincoln, NE 68501-4608
TEL 402.474.6311
FAX 402.474.5160
www.oaconsulting.com

FIGURE
4

ATTACHMENT A
COGCC FORM 27
SITE INVESTIGATION AND REMEDIATION WORK PLAN

FORM
27
Rev 6/99

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

OGCC Employee:
☐ Spill ☐ Complaint
☐ Inspection ☐ NOAV
Tracking No:

SITE INVESTIGATION AND REMEDIATION WORKPLAN

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. Form 27 is intended to be used whenever possible. Additional documentation will be required when large volumes of soil and groundwater have been impacted or involve large facilities with multiple source areas. See Rule 910. Attach as many pages as needed to fully describe the proposed work.

CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

☑ Spill or Release ☐ Plug & Abandon ☐ Central Facility Closure ☐ Site/Facility Closure ☐ Other (describe):

OGCC Operator Number: 10232
Name of Operator: Laramie Energy II, LLC
Address: 1512 Larimer Street, Suite 1000
City: Denver State: CO Zip: 80202

Contact Name and Telephone:
Wayne Bankert
No: 970.812.5310
Fax: 970.683.5594

API Number: 05-057-06483
County: Jackson
Facility Name: Fuqua 18-15 Well Pad
Facility Number: N/A
Well Name: Fuqua #19-02-10-1H
Well Number: Fuqua #19-02-10-1H
Location: (QtrQtr, Sec, Twp, Rng, Meridian): SW SE Sec 18 T6N R78W 6 P.M. Latitude: 40.48465 Longitude: -106.1847

TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc): condensate/crude oil

Site Conditions: Is location within a sensitive area (according to Rule 901e)? ☐ Y ☑ N If yes, attach evaluation.

Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): Rangeland - sage brush pasture

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan:

Potential receptors (water wells within 1/4 mi, surface waters, etc.):

Description of Impact (if previously provided, refer to that form or document):

Impacted Media (check):	Extent of Impact:	How Determined:
☑ Soils	Approximately 200 ft by 450 ft	Visually, Samples, Tape Measure/GPS
☑ Vegetation	Approximately 200 ft by 450 ft	Visually, Samples, Tape Measure/GPS
☐ Groundwater		
☐ Surface Water		

REMEDIATION WORKPLAN

Describe initial action taken (if previously provided, refer to that form or document):

Laramie Energy II scraped up approximately 20 cubic yards of impacted sage brush and soils in containment near the vertical separator where the release occurred. The original plan was to burn the impacted areas, scarify the soil, and re-seed with native grasses and sage brush. A fire break was cut around the perimeter of the impact area in preparation for a controlled burn. However, a county wide burn ban was implemented two days before the controlled burn was to take place.

Describe how source is to be removed:

The release area will be fenced with 3-strand barbwire to prevent cattle and wildlife from entering the impact area. Laramie Energy II will hire a contractor to spray surfactant and nutrients over the impact area using a tractor and a boom. Additional soil samples will be collected 3 months after the application. If the impacted soils have not met the COGCC Table 910-1 standards and the burn ban is lifted, burning the impacted vegetation and/or a second application will be evaluated following receipt of soil analytical results.

Describe how remediation of existing impacts is to be accomplished, including removal and disposal at an injection well or licensed facility, land treatment on site, removal of impacted groundwater, insitu bioremediation, burning of oily vegetation, etc.:

The impacted soils and vegetation, primarily sage brush, will be spread out and shredded for use as a mulch in the fire break areas. The materials will be driven over with heavy equipment to break the sage brush into smaller pieces to increase surface area and mixed with the impacted soils so that the hydrocarbons will break down more readily. The impacted materials will be treated with a surfactant, water, and nutrient mixture to enhance bioremediation of the impacted materials by native soil microbes. The impact area will be re-sampled within 3 months to assess progress.

Submit Page 2 with Page 1

FORM
27
Rev 6/99

Page 2

State of Colorado
Oil and Gas Conservation Commission
1120 Lincoln Street, Suite 801, Denver, Colorado 80203
(303)894-2100 Fax:(303)894-2109

Tracking Number: _____
Name of Operator: _____
OGCC Operator No: _____
Received Date: _____
Well Name & No: _____
Facility Name & No: _____

REMEDIATION WORKPLAN (Cont.)

OGCC Employee:

If groundwater has been impacted, describe proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.):

Based on a review of DWR records for permitted water wells in the area there are no water wells located within Section 18. One permitted well was identified in Section 20, with a total depth listed at 100 feet. There are no permitted water wells in the immediate downgradient direction (NW) of the Fuqua 18-15 well pad, and the release was directed to the east, or away from the closest surface water (Monroe-Ottawa Ditches) and the Illinois River. Groundwater is not expected to be impacted based on the reported groundwater depth (50 ft to 100 ft) and nature of the release.

Describe reclamation plan. Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing. Use additional sheet for description if required.

Surface soil samples were collected on 04/26/2012 from the spill area to assess current site conditions and to define the nature and extent of the impacted area. The condensate/crude oil impacts are surficial since the release was from the top of a vertical separator. New grasses were observed to have germinated and cacti and forbs were observed flowering within the impact area at the time of the sampling. Using a surfactant to break down the paraffins on the vegetation and addition of nutrient to enhance biodegradation in the soil has advantages over burning since the existing vegetation is maintained and the area will recover faster than if it were brush hogged, disked, and re-seeded. Clearing the area would potentially provide an opportunity for noxious weeds to become established in the impacted area. Grading and recontouring will not be necessary, and compaction is not an issue. Samples will be collected six months after treatment to assess progress.

Attach samples and analytical results taken to verify remediation of impacts. Show locations of samples on an onsite schematic or drawing.

Is further site investigation required? ☑ Y ☐ N If yes, describe:

See attached map and analytical results.

Final disposition of E&P waste (landtreated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.):

The E&P waste is to be landtreated and disposed onsite. The waste consists primarily of diesel range organics and oil range organics and will be treated with a surfactant and nutrient solution to help break down the heavier range hydrocarbons. Native soil microbes will further break down the hydrocarbons. Impacted vegetation and soils will be shredded and used as mulch to promote revegetation of the fire break. If subsequent analytical results indicate that petroleum hydrocarbon concentrations still do not meet the COGCC Table 910-1 standard of 500 mg/kg, then a second application of surfactant and nutrients or a controlled burn may be considered once the Jackson County fire ban is lifted.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began: 01/30/2012 Date Site Investigation Completed: 04/26/2012 Date Remediation Plan Submitted: _____
Remediation Start Date: _____ Anticipated Completion Date: _____ Actual Completion Date: _____

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

Print Name: Wayne P. Bankert Signed: _____

Title: Senior Regulatory and Environmental Coordinator Date: _____

OGCC Approved: _____ Title: _____ Date: _____

ATTACHMENT B
LABORATORY ANALYTICAL RESULTS

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

May 01, 2012

James Hix
Olsson Associates
5550 Marshall St.
Arvada, CO 80002

RE: Laramie Energy II Fuqua 18-15

Enclosed are the results of analyses for samples received by Summit Scientific on 04/27/12 08:11. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Paul Shrewsbury For Ben Shrewsbury
President / Laboratory Director

Olsson Associates 5550 Marshall St. Arvada CO, 80002	Project: Laramie Energy II Fuqua 18-15 Project Number: 012-0225 100 100001 Project Manager: James Hix	**Reported:** 05/01/12 08:44

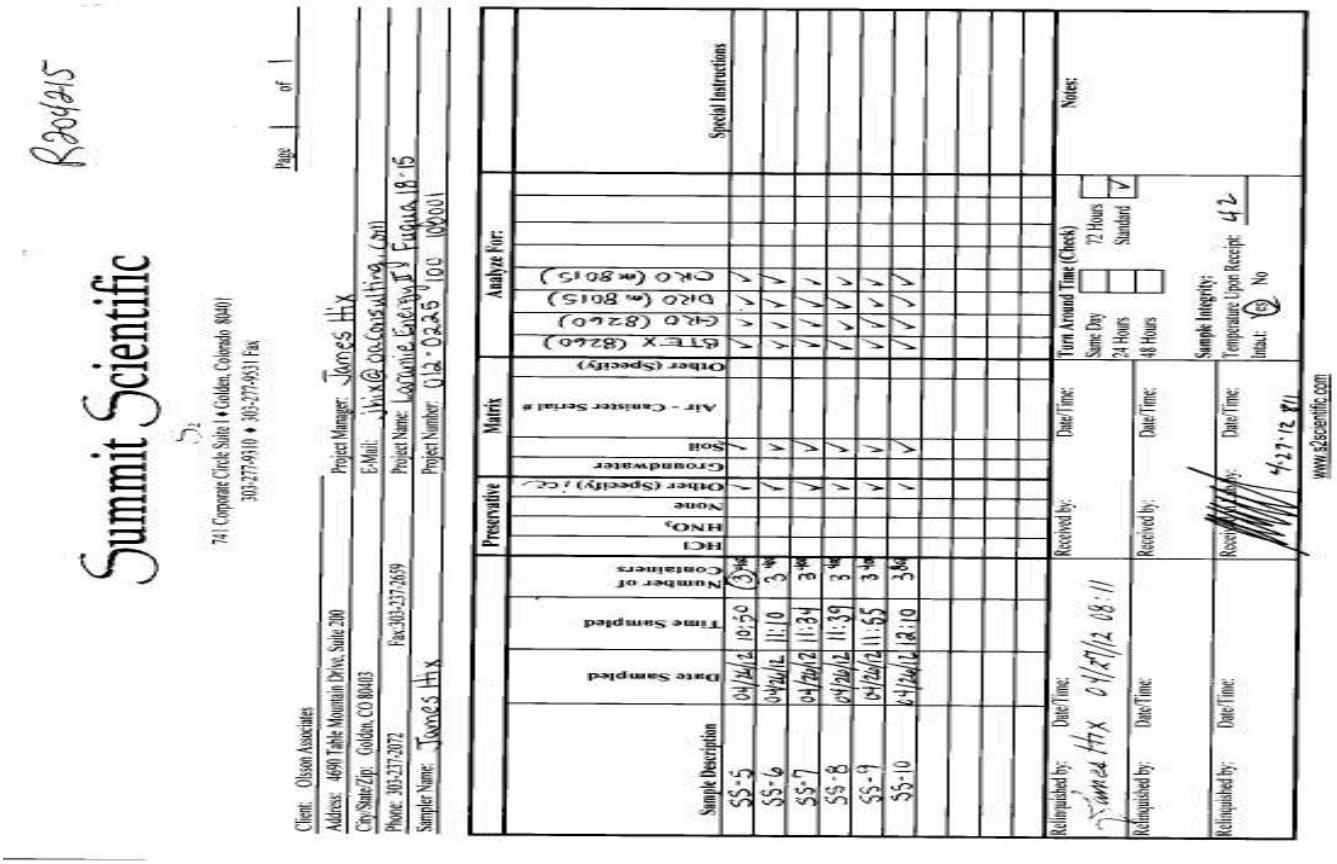
ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS-5	R204215-01	Soil	04/26/12 10:50	04/27/12 08:11
SS-6	R204215-02	Soil	04/26/12 11:10	04/27/12 08:11
SS-7	R204215-03	Soil	04/26/12 11:34	04/27/12 08:11
SS-8	R204215-04	Soil	04/26/12 11:39	04/27/12 08:11
SS-9	R204215-05	Soil	04/26/12 11:55	04/27/12 08:11
SS-10	R204215-06	Soil	04/26/12 12:10	04/27/12 08:11

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Olsson Associates 5550 Marshall St. Arvada CO, 80002	Project: Laramie Energy II Fuqua 18-15 Project Number: 012-0225 100 100001 Project Manager: James Hix	**Reported:** 05/01/12 08:44



Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Olsson Associates 5550 Marshall St. Arvada CO, 80002	Project: Laramie Energy II Fuqua 18-15 Project Number: 012-0225 100 100001 Project Manager: James Hix	**Reported:** 05/01/12 08:44

SS-5
R204215-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/26/12 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	**12000**	50	mg/kg	1	2042704	04/27/12	04/28/12	8015 Full Carbon Chain	
C28-C36 (TEPH-ORO)	**2100**	50	"	"	"	"	"	"	

Date Sampled: **04/26/12 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		*90.5 %*	*80-124*		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/26/12 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0050	mg/kg	1	2042706	04/27/12	04/28/12	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/26/12 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		*113 %*	*67.4-143*		"	"	"	"	
Surrogate: Toluene-d8		*94.6 %*	*77.3-114*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*89.8 %*	*78.4-125*		"	"	"	"	

Olsson Associates 5550 Marshall St. Arvada CO, 80002	Project: Laramie Energy II Fuqua 18-15 Project Number: 012-0225 100 100001 Project Manager: James Hix	**Reported:** 05/01/12 08:44

SS-6
R204215-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/26/12 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	**7300**	50	mg/kg	1	2042704	04/27/12	04/28/12	8015 Full Carbon Chain	
C28-C36 (TEPH-ORO)	**1500**	50	"	"	"	"	"	"	

Date Sampled: **04/26/12 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		*108 %*	*80-124*		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/26/12 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0050	mg/kg	1	2042706	04/27/12	04/28/12	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	**1.4**	0.50	"	"	"	"	"	"	

Date Sampled: **04/26/12 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		*107 %*	*67.4-143*		"	"	"	"	
Surrogate: Toluene-d8		*95.0 %*	*77.3-114*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*89.1 %*	*78.4-125*		"	"	"	"	

Olsson Associates 5550 Marshall St. Arvada CO, 80002	Project: Laramie Energy II Fuqua 18-15 Project Number: 012-0225 100 100001 Project Manager: James Hix	**Reported:** 05/01/12 08:44

SS-7
R204215-03 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/26/12 11:34**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	**15000**	50	mg/kg	1	2042704	04/27/12	04/28/12	8015 Full Carbon Chain	
C28-C36 (TEPH-ORO)	**2500**	50	"	"	"	"	"	"	

Date Sampled: **04/26/12 11:34**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		*114 %*	*80-124*		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/26/12 11:34**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0050	mg/kg	1	2042706	04/27/12	04/28/12	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	**0.81**	0.50	"	"	"	"	"	"	

Date Sampled: **04/26/12 11:34**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		*102 %*	*67.4-143*		"	"	"	"	
Surrogate: Toluene-d8		*91.4 %*	*77.3-114*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*86.6 %*	*78.4-125*		"	"	"	"	

Olsson Associates 5550 Marshall St. Arvada CO, 80002	Project: Laramie Energy II Fuqua 18-15 Project Number: 012-0225 100 100001 Project Manager: James Hix	**Reported:** 05/01/12 08:44

SS-8
R204215-04 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/26/12 11:39**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	**7100**	50	mg/kg	1	2042704	04/27/12	04/28/12	8015 Full Carbon Chain	
C28-C36 (TEPH-ORO)	**1200**	50	"	"	"	"	"	"	

Date Sampled: **04/26/12 11:39**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		*101 %*	*80-124*		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/26/12 11:39**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0050	mg/kg	1	2042706	04/27/12	04/28/12	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/26/12 11:39**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		*97.9 %*	*67.4-143*		"	"	"	"	
Surrogate: Toluene-d8		*97.1 %*	*77.3-114*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*91.7 %*	*78.4-125*		"	"	"	"	

SS-9
R204215-05 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/26/12 11:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	**5200**	50	mg/kg	1	2042704	04/27/12	04/28/12	8015 Full Carbon Chain	
C28-C36 (TEPH-ORO)	**900**	50	"	"	"	"	"	"	

Date Sampled: **04/26/12 11:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		*87.9 %*	*80-124*		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/26/12 11:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0050	mg/kg	1	2042706	04/27/12	04/28/12	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	**0.96**	0.50	"	"	"	"	"	"	

Date Sampled: **04/26/12 11:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		*115 %*	*67.4-143*		"	"	"	"	
Surrogate: Toluene-d8		*99.3 %*	*77.3-114*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*92.5 %*	*78.4-125*		"	"	"	"	

Olsson Associates 5550 Marshall St. Arvada CO, 80002	Project: Laramie Energy II Fuqua 18-15 Project Number: 012-0225 100 100001 Project Manager: James Hix	**Reported:** 05/01/12 08:44

SS-10
R204215-06 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/26/12 12:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	**59000**	500	mg/kg	10	2042704	04/27/12	04/28/12	8015 Full Carbon Chain	
C28-C36 (TEPH-ORO)	**4200**	50	"	1	"	"	"	"	

Date Sampled: **04/26/12 12:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		*111 %*	*80-124*		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/26/12 12:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	**0.065**	0.050	mg/kg	10	2042706	04/27/12	04/28/12	EPA 8260B	
Toluene	**0.56**	0.050	"	"	"	"	"	"	
Ethylbenzene	**0.18**	0.050	"	"	"	"	"	"	
Xylenes (total)	**2.5**	0.050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	**430**	5.0	"	"	"	"	"	"	

Date Sampled: **04/26/12 12:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		*99.9 %*	*67.4-143*		"	"	"	"	
Surrogate: Toluene-d8		*97.6 %*	*77.3-114*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*88.7 %*	*78.4-125*		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015 - Quality Control

Summit Scientific

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2042704 - EPA 3550A										
Blank (2042704-BLK1)				Prepared & Analyzed: 04/27/12						
C10-C28 (TEPH-DRO)	ND	50	mg/kg							
C28-C36 (TEPH-ORO)	ND	50	"							
LCS (2042704-BS1)				Prepared: 04/27/12 Analyzed: 04/28/12						
C10-C28 (TEPH-DRO)	567	50	mg/kg	501		113	85-129			
LCS Dup (2042704-BSD1)				Prepared: 04/27/12 Analyzed: 04/28/12						
C10-C28 (TEPH-DRO)	574	50	mg/kg	501		115	85-129	1.29	11.8	
Matrix Spike (2042704-MS1)	**Source: R204216-01**			Prepared: 04/27/12 Analyzed: 04/28/12						
C10-C28 (TEPH-DRO)	593	50	mg/kg	501	22.5	114	77.3-134			
Matrix Spike Dup (2042704-MSD1)	**Source: R204216-01**			Prepared: 04/27/12 Analyzed: 04/28/12						
C10-C28 (TEPH-DRO)	618	50	mg/kg	501	22.5	119	77.3-134	4.13	8.39	

Olsson Associates 5550 Marshall St. Arvada CO, 80002	Project: Laramie Energy II Fuqua 18-15 Project Number: 012-0225 100 100001 Project Manager: James Hix	**Reported:** 05/01/12 08:44

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2042706 - EPA 5030 Soil MS										
Blank (2042706-BLK1)				Prepared & Analyzed: 04/27/12						
Benzene	ND	0.0050	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.0050	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	*0.0359*		"	*0.0397*		*90.5*	*67.4-143*			
Surrogate: Toluene-d8	*0.0388*		"	*0.0400*		*97.0*	*77.3-114*			
Surrogate: 4-Bromofluorobenzene	*0.0451*		"	*0.0400*		*113*	*78.4-125*			
LCS (2042706-BS1)				Prepared & Analyzed: 04/27/12						
Benzene	0.0965	0.0050	mg/kg	0.100		96.5	61-139			
Toluene	0.0875	0.0050	"	0.100		87.5	64-132			
Ethylbenzene	0.124	0.0050	"	0.100		124	68.7-135			
m,p-Xylene	0.215	0.010	"	0.200		107	70.4-129			
o-Xylene	0.114	0.0050	"	0.100		114	66.9-126			
Surrogate: 1,2-Dichloroethane-d4	*0.0342*		"	*0.0397*		*86.1*	*67.4-143*			
Surrogate: Toluene-d8	*0.0333*		"	*0.0400*		*83.2*	*77.3-114*			
Surrogate: 4-Bromofluorobenzene	*0.0436*		"	*0.0400*		*109*	*78.4-125*			
LCS Dup (2042706-BSD1)				Prepared & Analyzed: 04/27/12						
Benzene	0.0793	0.0050	mg/kg	0.100		79.3	61-139	19.6	11.1	
Toluene	0.101	0.0050	"	0.100		101	64-132	14.4	10.9	
Ethylbenzene	0.126	0.0050	"	0.100		126	68.7-135	1.56	20	
m,p-Xylene	0.217	0.010	"	0.200		109	70.4-129	1.25	20	
o-Xylene	0.117	0.0050	"	0.100		117	66.9-126	2.54	20	
Surrogate: 1,2-Dichloroethane-d4	*0.0295*		"	*0.0397*		*74.2*	*67.4-143*			
Surrogate: Toluene-d8	*0.0375*		"	*0.0400*		*93.8*	*77.3-114*			
Surrogate: 4-Bromofluorobenzene	*0.0429*		"	*0.0400*		*107*	*78.4-125*			

Olsson Associates 5550 Marshall St. Arvada CO, 80002	Project: Laramie Energy II Fuqua 18-15 Project Number: 012-0225 100 100001 Project Manager: James Hix	**Reported:** 05/01/12 08:44

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2042706 - EPA 5030 Soil MS										
Matrix Spike (2042706-MS1)		**Source: R204216-01**		Prepared: 04/27/12		Analyzed: 04/28/12				
Benzene	0.422	0.0050	mg/kg	0.100	0.356	66.1	42.9-137			
Toluene	0.635	0.0050	"	0.100	0.551	84.3	42.6-130			
Ethylbenzene	0.141	0.0050	"	0.100	0.0184	123	39-133			
m,p-Xylene	0.484	0.010	"	0.200	0.295	94.5	34.7-134			
o-Xylene	0.196	0.0050	"	0.100	0.0794	116	41.3-126			
Surrogate: 1,2-Dichloroethane-d4	*0.0335*		"	*0.0397*		*84.3*	*67.4-143*			
Surrogate: Toluene-d8	*0.0385*		"	*0.0400*		*96.2*	*77.3-114*			
Surrogate: 4-Bromofluorobenzene	*0.0442*		"	*0.0400*		*110*	*78.4-125*			
Matrix Spike Dup (2042706-MSD1)		**Source: R204216-01**		Prepared: 04/27/12		Analyzed: 04/28/12				
Benzene	0.433	0.0050	mg/kg	0.100	0.356	76.4	42.9-137	2.41	17.9	
Toluene	0.632	0.0050	"	0.100	0.551	81.3	42.6-130	0.483	11.9	
Ethylbenzene	0.138	0.0050	"	0.100	0.0184	120	39-133	1.91	20	
m,p-Xylene	0.476	0.010	"	0.200	0.295	90.5	34.7-134	1.66	20	
o-Xylene	0.190	0.0050	"	0.100	0.0794	111	41.3-126	3.03	20	
Surrogate: 1,2-Dichloroethane-d4	*0.0348*		"	*0.0397*		*87.7*	*67.4-143*			
Surrogate: Toluene-d8	*0.0387*		"	*0.0400*		*96.8*	*77.3-114*			
Surrogate: 4-Bromofluorobenzene	*0.0430*		"	*0.0400*		*108*	*78.4-125*			

Olsson Associates 5550 Marshall St. Arvada CO, 80002	Project: Laramie Energy II Fuqua 18-15 Project Number: 012-0225 100 100001 Project Manager: James Hix	**Reported:** 05/01/12 08:44

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

ATTACHMENT C
SITE PHOTOGRAPHS

Subject: The Fuqua 18-15 well pad sign and other points on the well pad, including the well head, were recorded using a Trimble GPS unit with submeter accuracy.

Date: 04/26/12

View: Southwest

Subject: A top valve seal on the vertical separator failed resulting in the January 29, 2012 condensate release. Impacted vegetation and soils were scraped up using a loader and placed within secondary containment to the east of the separator. Stained soils and vegetation are shown in the foreground.

Date: 04/26/12

View: West

Subject: Photograph shows the approximate centerline of the release at a distance of approximately 250 feet from the vertical separator. Stained soil and vegetation are shown in the foreground. The orange pinflag marks the location of SS9.

Date: 04/26/12

View: West

Subject: Photograph taken from the access road showing the impacted area of surface soils and vegetation. The impact area fanned out from the vertical separator to the east of the well pad and was between 160 feet and 200 feet wide. Measurements of the impact area were taken using the Trimble GPS unit based on visual extent of staining. The primary impact area extended out approximately 450 feet from the separator.

Date: 04/26/12

View: Northeast

Subject: Soil sample location SS5 was located approximately 300 feet east of the separator and 25 feet south of the centerline. The approximate sample location was marked with flagging tape. New vegetation appeared to be coming up within the impacted area**.**

Date: 04/26/12

View: Northwest

Subject: Soil sample location SS6 was located approximately 300 feet east of the separator and 25 feet north of the centerline of the release. Approximate sample locations were marked with flagging tape and recorded with the Trimble GPS.

Date: 04/26/12

View: Southwest

Subject: Barrel cacti were observed in bloom and other plants were observed coming up within the stained and impacted vegetation area.

Date: 04/26/12

View: N/A – Near SS6

Subject: Flowering plants and grasses were observed coming up within the impact area. Photograph shows soil and vegetation staining.

Date: 04/26/12

View: N/A – Near SS5

Subject: Photograph shows the approximate centerline of the release looking to the east of the Fuqua 18-15 well pad. The extent of primary impact and the soil sample locations were measured using fiberglass tape measures. The photograph was taken near the locations of SS7 (right – south ~25 feet) and SS8 (left – north ~15 feet) from the release centerline.

Date: 04/26/12

View: East

Subject: Photograph shows the Fuqua 18-15 well pad from the southeast corner of the fire break. The soils and vegetation were not observed to be impacted out this far; however, there were "fingers" and spots of staining that extended from the primary impact area that are included within the extent of the fire break.

Date: 04/26/12

View: Northwest

Subject: Photograph shows the area contained within the fire break from the northwest corner. The sagebrush, grasses, and soils in this area were not impacted.

Date: 04/26/12

View: West

Subject: Photograph shows the stockpiled vegetation and stained soils and the vertical separator (right). Soil sample SS10 was collected from the stockpiled vegetation and soils located within an earthen containment berm.

Date: 04/26/12

View: Southeast

ATTACHMENT D
EARTH SMART ESHC
HYDROCARBON CLEANER

ESHC – HYDROCARBON CLEANER / DEGREASER

ESHC is an environmentally safe, non-hazardous, biodegradable formulation for use in removing fresh and aged petroleum hydrocarbons from both hard and porous surfaces. When used as directed **ESHC** will effectively clean, liquefy and degrade a wide range of hydrocarbons including gasoline, diesel, motor oil, crude oil, glycol, hydraulic fluid, benzene, toluene, ethyl benzene, xylene, etc. **ESHC** is safe for use on gravel, sand, railroad ballast, concrete, brick, asphalt, metal, rubber, plastics, porcelain, wood, textiles, etc. Our Earth Smart Hydrocarbon Cleaner does NOT contain acids, caustics, chemicals, petroleum distillates or VOC's and is D-Limonene free. In addition, **ESHC** is environmentally friendly and leaves no residue.

BENEFITS OF ESHC:

- Biodegradable
- Non Toxic - Non Hazardous
- Does not produce fumes
- Non Flammable
- Non Combustible
- Non Corrosive - Contains corrosion inhibitors
- Does not contain VOC's
- Environmentally safe alternative to solvent based cleaners
- Contains no petroleum distillates
- Phosphate free
- Non abrasive
- Deep cleans surfaces – Provides visible results in minutes
- Fast drying
- D-Limonene free
- Leaves no residue
- Enhances the natural degradation processes
- Eliminates unsightly areas
- Reduces potential liability
- Lowers disposal costs
- Certified for use in Southern California
- Can be used in concentrated form or diluted form

***ESHC** IS SAFE FOR USE ON ANY SURFACE THAT IS COMPATABLE WITH WATER*

TYPICAL APPLICATIONS:

- New and aged hydrocarbon spills
- Oil field equipment
- Railroad ballast
- Locomotives
- Floors, sidewalks, parking lots, storage tanks, filling stations, docks, oil platforms, etc.
- Electric transformers, sumps, machinery, aircraft, rolling stock, etc.

VARIOUS APPLICATION TECHNIQUES:

- Spraying
- Pouring
- Pressure Washing
- Ultrasonic Cleaning
- Parts Washer
- Dipping
- Soaking
- Brushing
- Sponging
- Wiping
- Flooding

****ESHC** does not vaporize. It is not odorous and does not damage human tissue. It is biodegradable and is NOT **DOT** regulated. **ESHC** constituents are NOT CERCLA hazardous (40 CFR 302.4), or SARA toxic (40 CFR 372, subpart D) and unused **ESHC** would not be considered a hazardous waste (40 CFR 261, subparts C, D, Appendix VIII).

APPLICATIONS TO HARD SURFACES (concrete, steel, cast, aluminum, wood, glass, etc.):

1. Dilute at a rate of 1:10 – 1:20 in water and apply to the affected area
2. Allow sufficient contact time (typically, 10 – 20 minutes) for the product to loosen or dissolve deposits. Do not allow to dry - Keep the area moist by misting with diluted solution or water. For aged stains, agitate, using a fibre pad or brush. Typically, the longer the contact time, the less agitation will be required
3. Rinse or flush with water. Where rinsing is not possible, wipe with wet cloth or sponge

ADDITIONAL DILUTION RATES:

Parts Washers - Dilute 1:20
Pressure Washers - Dilute 1:50 to 1:100
Ultrasonic Cleaners - Dilute 1:50

Note: WARMER TEMPERATURES WILL REDUCE CLEANING TIME

SAFETY:

ESHC is produced in accordance with NOSB (National Organic Standards Board) guidelines. The materials used in the production process are derived from naturally occurring and sustainable sources and are consistent with organic principals and the National List of Allowed Substances. **ESHC** does NOT contain synthetic chemicals, animal components, and animal by products, manure or manure by-products. **ESHC** is environmentally safe and is not harmful to animals, plants and humans.

COMPLIANCE:

Fully complies with EPA Toxic Substance Control Act (TSCA) and the rules, orders and regulations promulgated there under including:

a) Sections 4, 5, 6 & 7; Title 40 Chapter 1, 707.20 thru 707.75;
b) 40 CFR Sections 704.3. 710.2(e) and 720.3(c); and
c) Sections 5 and 13, reference 42FR64583
d) Does not contain marine pollutants as defined in 49 CFR 171.8.

STORAGE & HANDLING:

Store in a cool location away from direct sunlight - No special handling required

PACKAGING:

2 Litre Jug
20 Litre (5 gallon) HDPE Pail
205 Litre (45 gallon) Barrel
1000 Litre Tote

MATERIAL SAFETY DATA SHEET

ESHC – Hydrocarbon Cleaner

I. GENERAL SUPPLIER INFORMATION

Product Identifier:	ESHC – Hydrocarbon Cleaner
Product Code:	6618
Application:	Hydrocarbon Degrader / Hard Surface Cleaner
IHC:	3402.20.51.00
Manufacturer:	Earth Smart Solutions
Address:	120 – 60 Industry Way S.E., Calgary, AB., CA. T3S 0A2
Toll Free:	1-866-444-7174
Fax:	403-264-9606
Email:	info@earth-smart-solutions.com

II. HAZARDOUS INGREDIENTS

Hazardous Components:	None – GRAS (Generally recognized as safe)

III. PHYSICAL / CHEMICAL DATA

Form:	Liquid
Color:	Blue
Odor:	Neutral
Bulk Density:	0.6 - 0.8 gr/cc
Solubility:	99.9%
pH:	6.5 – 7.5
Nutrients:	Bio-Stimulants, Micronutrients
Specific Gravity:	1.0

IV. FIRE & EXPLOSION DATA

Flash Point::	N/A Non Flammable (Method ASTM D93)
Special Fire Fighting Procedures:	None
Extinguishing Media:	N/A
Sensitive to mechanical impact:	No
Sensitive to static discharge:	No

MATERIAL SAFETY DATA SHEET

ESHC – Hydrocarbon Cleaner

V. REACTIVITY DATA

Stability:	Stable
Conditions to Avoid:	Accumulation of product in confined area.
Hazardous Byproducts:	None
Hazardous Polymerization:	Will not occur.
Incompatibility:	Normally un-reactive; however, avoid strong bases at high temperatures, strong acids, strong oxidizing agents and materials reactive with hydroxyl compounds.

VI. HEALTH HAZARDS

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: None known

CARCINOGEN: No – IARC, NTP, OSHA

Eye Contact:

General Symptoms:	May cause moderate irritation excess blinking and tear production
First Aid:	Flush with water - Seek medical attention as required
Recommended Precautions:	Safety goggles - Avoid creating mist in confined areas

Skin Contact:

General Symptoms:	May cause irritation if a person has a history of dermal allergic reaction
First Aid:	Wash with soap and water
Recommended Precautions:	Limit exposure

Ingestion:

General Symptoms:	Considered non toxic but may lead to nausea or diarrhea
First Aid:	Drink water or milk - do not induce vomiting - Seek medical attention as required
Recommended Precautions:	Store in safe place - **KEEP OUT OF REACH OF CHILDREN**

Inhalation:

General Symptoms:	May causes irritation
First Aid:	Calm the individual - provide fresh air - Seek medical attention as required

MATERIAL SAFETY DATA SHEET

ESHC – Hydrocarbon Cleaner

Recommended Precautions: Use approved respiratory mask in confined areas. Avoid creating mist in confined areas. Provide ventilation when creating mist in confined areas.

General Precautions: Use common sense procedures - Wash hands after use

.

VII. STORAGE AND HANDLING

Storage: Store at temperatures between 41 degrees F and 104 degrees F (5 C and 4C). Close containers after use.

Handling: No special handling required.

VIII. CONTROL MEASURES

Respiratory Protection: When creating mist in confined areas

Ventilation: Mechanical (General)

Gloves: As required

Eye Protection: As required

Hygienic Practices: Wash hands after handling product

Waste Disposal: Small spills can be washed away with large amounts of water. Large spills, if contained, can be returned to container. Check with regulatory agencies before disposing of large quantities.

IX. COMPLIANCE

Fully complies with EPA Toxic Substance Control Act (TSCA) and the rules, orders and regulations promulgated there under including:

a) Sections 4, 5, 6 & 7; Title 40 Chapter 1, 707.20 thru 707.75;
b) 40 CFR Sections 704.3. 710.2(e) and 720.3(c); and
c) Sections 5 and 13, reference 42FR64583
d) Does not contain marine pollutants as defined in 49 CFR 171.8.

MATERIAL SAFETY DATA SHEET

ESHC – Hydrocarbon Cleaner

X. BIOLOGICAL HAZARD DATA

Product has been shown to be free of Salmonella and Shigella using standard procedures outlined by AOAC and the USDA.

XI. PREPARATION DATA

Information Sources:	Suppliers MSDSs, DSL, TSCA, EPA, IARC, NTP, OSHA.
Preparation Date:	March 12, 2007
Last Revised:	2008.01.21