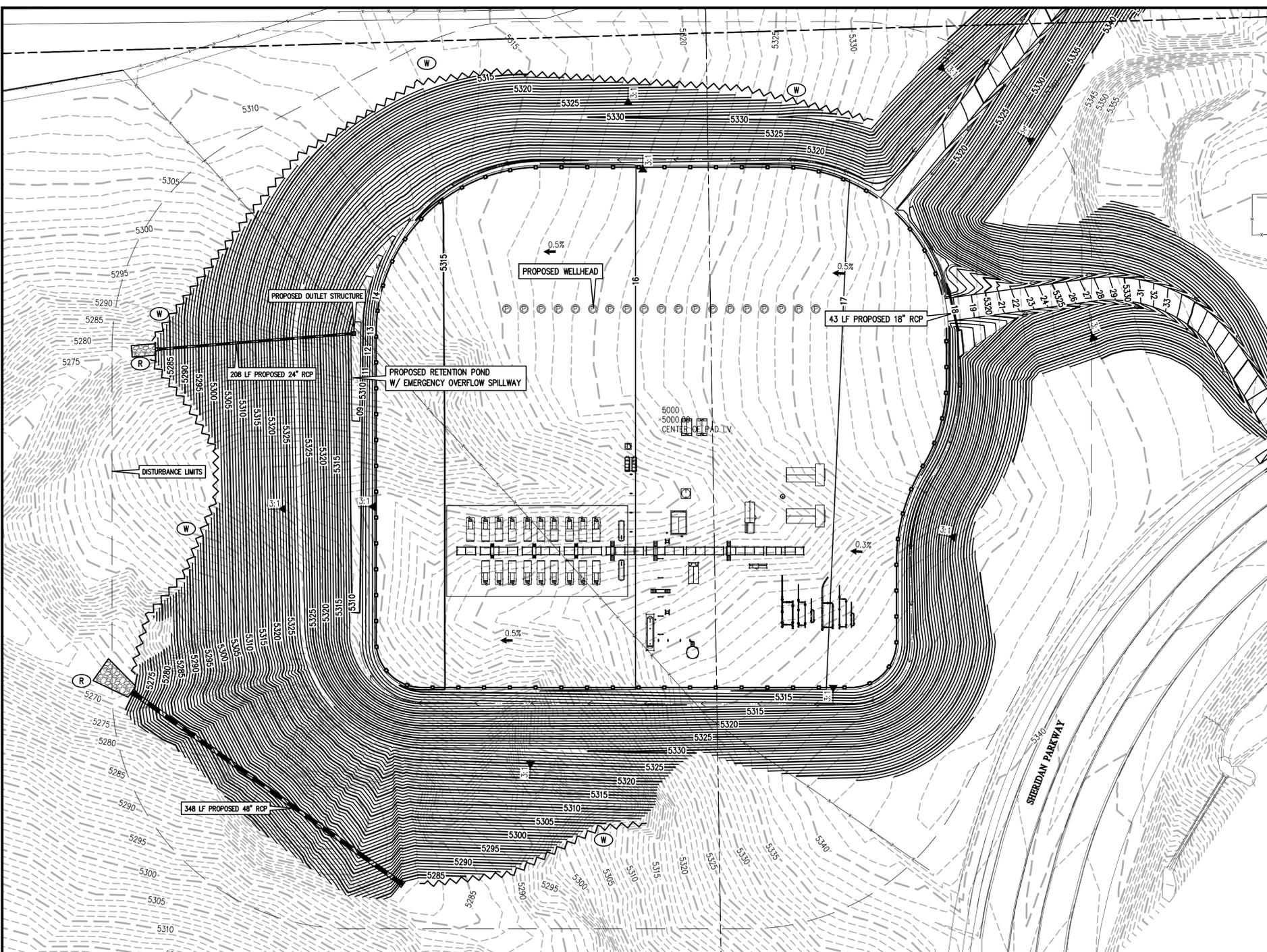


M:\co-15272 Extraction Broomfield-Thornton Gathering Line Feed\Drawings\Livingston\Livingston Drilling.dwg, 12/8/2017 11:50:15 AM, Luke Seaber



SITE DESCRIPTION	
CONSTRUCTION ACTIVITY	DRILLING OF 19 OIL & GAS WELLS, CONSTRUCTION OF ASSOCIATED PRODUCTION EQUIPMENT, AND CONSTRUCTION OF ACCESS ROAD.
CONSTRUCTION DATES	TBD
AREA OF SITE	±19.8 ACRES
LOCATION OF SITE	LATITUDE: 39°58'40" N LONGITUDE: 105°02'30" W
EXISTING VEGETATION	NATIVE GRASSES
SOIL CONDITION	ACCORDING TO THE NATURAL RESOURCES CONSERVATION SERVICES, THIS SITE IS 71% RENOHILL LOAM AND 29% ULM LOAM. THE PROPERTY GENERALLY SLOPES TO THE WEST AT SLOPES OF 7%.
POTENTIAL POLLUTION SOURCES	DUST FROM DRILLING & ACCESS ROAD CONSTRUCTION, NON-VEGETATED SOILS, FUEL, OIL, AND FLUIDS UTILIZED DURING DRILLING, CONCRETE WASHOUTS, OUTDOOR STORAGE ACTIVITIES, PORTABLE RESTROOMS, GENERAL REFUSE.
LOCATION OF NON-STORMWATER DISCHARGE	NONE
SITE FEATURES & SENSITIVE AREAS TO BE PROTECTED	THE SITE INCLUDES A WELL PAD, ENTRANCE ROAD, AND 3:1 SLOPES THAT MATCH INTO EXISTING TOPOGRAPHY. SURROUNDING AREAS TO BE PROTECTED INCLUDE FIELDS AND PUBLIC ROADS.
NAME AND LOCATION OF RECEIVING WATERS	STORMWATER RUNOFF TRAVELS EASTERLY TO BIG DRY CREEK WHICH FLOWS TO THE SOUTH AND DISCHARGES INTO STANDLEY LAKE.
OVERALL SCOPE / PROJECT CHARACTERISTICS	
INDUSTRIAL ACTIVITIES	OIL AND GAS PRODUCTION
FINAL SITE DISPOSITION	ONCE THE PRODUCTION PHASE FOR THE SITE IS COMPLETE, THE PRODUCTION SITE WILL BE RECLAIMED, THE WELLS WILL BE PLUGGED, CAPPED, & ABANDONED. THE TANK BATTERY WILL BE REMOVED. ANY UNNECESSARY PORTIONS OF THE UPGRADED ACCESS ROAD WILL BE REMOVED. SOILS WILL BE CONTOURED TO THE EXISTING SURROUNDING TERRAIN. (STOCKPILED TOPSOIL WILL BE REDISTRIBUTED ALONG WITH THE SEEDING ACROSS THE DISTURBED SOIL AREA IN ORDER TO REESTABLISH VEGETATION COVERAGE)

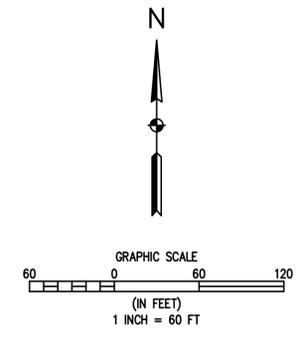
BEST MANAGEMENT PRACTICES (BMP's)
 STORM WATER QUALITY BEST MANAGEMENT PRACTICE SHALL BE IMPLEMENTED TO MINIMIZE SOIL EROSION, SEDIMENTATION, INCREASED POLLUTION LOADS AND CHANGED WATER FLOW CHARACTERISTICS RESULTING FROM LAND DISTURBING ACTIVITY TO THE MAXIMUM EXTENT PRACTICAL, AS TO MINIMIZE POLLUTION OF RECEIVING WATERS.

IMPLEMENTED BMP'S	
CONSTRUCTION STRUCTURAL BMP'S	PERMANENT STRUCTURAL BMP'S
<input checked="" type="checkbox"/> VTC PAD	<input type="checkbox"/> VTC PAD
<input checked="" type="checkbox"/> DITCH & BERM SYSTEM	<input type="checkbox"/> DITCH & BERM SYSTEM
<input type="checkbox"/> INLET PROTECTION	<input type="checkbox"/> CULVERT OUTLET PROTECTION
<input type="checkbox"/> CULVERT OUTLET PROTECTION	<input type="checkbox"/> WASH WATER SEDIMENTATION POND
<input type="checkbox"/> WASH WATER SEDIMENTATION POND	<input type="checkbox"/> COGCC APPROVED CONTAINMENT BERM
<input type="checkbox"/> SILT FENCING	<input type="checkbox"/> RIP RAP
<input type="checkbox"/> RIP RAP	<input checked="" type="checkbox"/> REVEGETATION
<input type="checkbox"/> EROSION CONTROL MAT	
<input checked="" type="checkbox"/> SEDIMENT CONTROL LOG	
<input checked="" type="checkbox"/> SURFACE ROUGHENING	
ADDITIONAL BMP'S: _____	ADDITIONAL BMP'S: _____

- EROSION AND SEDIMENT CONTROL**
- TO THE EXTENT PRACTICABLE, EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO GRADING ACTIVITIES. AT ALL TIMES DURING PROJECT CONSTRUCTION, ALL TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED AND REPAIRED AS NEEDED TO PREVENT ACCELERATED EROSION ON THE SITE AND ON ANY ADJACENT PROPERTIES.
 - ALL TOPSOIL, WHERE PHYSICALLY PRACTICABLE, SHALL BE SALVAGED AND NO TOPSOIL SHALL BE REMOVED FROM SITE EXCEPT AS SET FORTH IN THE APPROVED PLANS. TOPSOIL AND OVERBURDEN SHALL BE SEGREGATED AND STOCKPILED SEPARATELY. TOPSOIL AND OVERBURDEN SHALL BE REDISTRIBUTED WITHIN THE GRADED AREA AFTER ROUGH GRADING TO PROVIDE A SUITABLE BASE FOR AREAS WHICH WILL BE SEED AND PLANTED. RUNOFF FROM STOCKPILED AREA SHALL BE CONTROLLED TO PREVENT EROSION AND RESULTANT SEDIMENTATION OF RECEIVING WATER.
 - PERMANENT OR TEMPORARY SOIL STABILIZATION MEASURES SHALL BE APPLIED TO DISTURBED AREAS WITHIN 14 DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. SOIL STABILIZATION MEASURES SHALL BE APPLIED WITHIN 14 DAYS TO DISTURBED AREAS WHICH MAY NOT BE AT FINAL GRADE, BUT WILL BE LEFT DORMANT FOR LONGER THAN 30 DAYS. IT IS RECOMMENDED THAT THE PERMANENT SEED MIX BE PLANTED AFTER OCTOBER TO KEEP SEEDLINGS FROM DEVELOPING BEFORE WINTER. TEMPORARY VEGETATIVE COVER CONSISTING OF ANNUAL RYE GRASS SHALL BE HYDRO SEED AT 20 POUNDS PURE LIVE SEED PER ACRE.
 - FUGITIVE DUST EMISSIONS RESULTING FROM DRILLING & ACCESS ROAD CONSTRUCTION ACTIVITIES AND/OR WIND SHALL BE CONTROLLED USING WATER.
 - ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED DURING CONSTRUCTION AND SHALL BE INSTALLED AS SOON AS PRACTICAL IF REQUIRED BY THE STORMWATER ADMINISTRATOR OR THEIR REPRESENTATIVE.
 - AREAS WHERE SEDIMENT CONTROL LOGS ARE NOT INDICATED MAY REQUIRE SOME FORM OF SEDIMENT CONTROL. STRAW MULCH AND/OR TEMPORARY SEEDING MAY BE UTILIZED AS NECESSARY.

INSPECTION AND MAINTENANCE	INSPECTIONS:
	1. PERFORM EVERY 14 DAYS, AND FOLLOWING A WEATHER EVENT CAUSING RUNOFF DURING THE CONSTRUCTION PHASE. PERFORM EVERY 30 DAYS DURING THE COMPLETED AND INTERIM PHASES.
	2. AN INSPECTION REPORT WILL BE FILLED OUT, & FILED FOR EACH INSPECTION PERFORMED.
	3. MAKE A COPY OF EACH INSPECTION REPORT AVAILABLE TO THE COUNTY UPON REQUEST.
	MAINTENANCE:
	1. PERFORM MAINTENANCE AND REPAIRS AS SOON AS POSSIBLE ON ITEMS OR AREAS IDENTIFIED IN THE INSPECTION REPORT
	2. PERFORM MAINTENANCE AS INDICATED IN THE URBAN DRAINAGE & FLOOD CONTROL DISTRICT, URBAN STORM DRAINAGE CRITERIA MANUAL, VOL. 3, PER MANUFACTURER'S SPECIFICATIONS OR OTHER SOURCES DETERMINED TO BE ACCEPTABLE.
	AN EFFICIENT RECORD-KEEPING SYSTEM IS A HELPFUL TOOL IN MANAGING INSPECTION AND MAINTENANCE REPORTS. INSPECTION REPORTS, MAINTENANCE RECORDS, TRAINING LOGS, AND OTHER SITE RELATED CORRESPONDENCE WILL BE MAINTAINED IN THE MASTER EROSION CONTROL PLAN.

LEGEND					
		MINOR CONTOUR (1' INTERVAL)			CONTROL POINT
		MAJOR CONTOUR (5' INTERVAL)			SPOT ELEVATION
		PROPERTY BOUNDARY			PERCENT SLOPE
		EDGE OF ASPHALT			NOMINAL SLOPE
		EDGE OF GRAVEL			ELECTRIC PANEL
		SECTION LINE			GAS MARKER
		ALIQUOT LINE			IRRIGATION CONTROL VALVE
		CURB AND GUTTER (SPILL/CATCH)			PROPOSED WELL HEAD
		WIRE FENCE			RIPRAP
		DITCH FLOWLINE			WATTLE
		GAS			TRACKING CONTROL



1
 Q1/Q1 DRILLING STORMWATER MANAGEMENT PLAN

BASELINE
 Engineering - Planning - Surveying
 4007 S. LINCOLN AVENUE, SUITE 405 • LOVELAND, COLORADO 80537
 P. 970.333.7800 • F. 970.333.7800 • www.baselinecorp.com

DESIGNED BY: LDS
 DRAWN BY: LDS
 CHECKED BY: AAD

DATE: _____

PREPARED BY: _____

REVISION DESCRIPTION

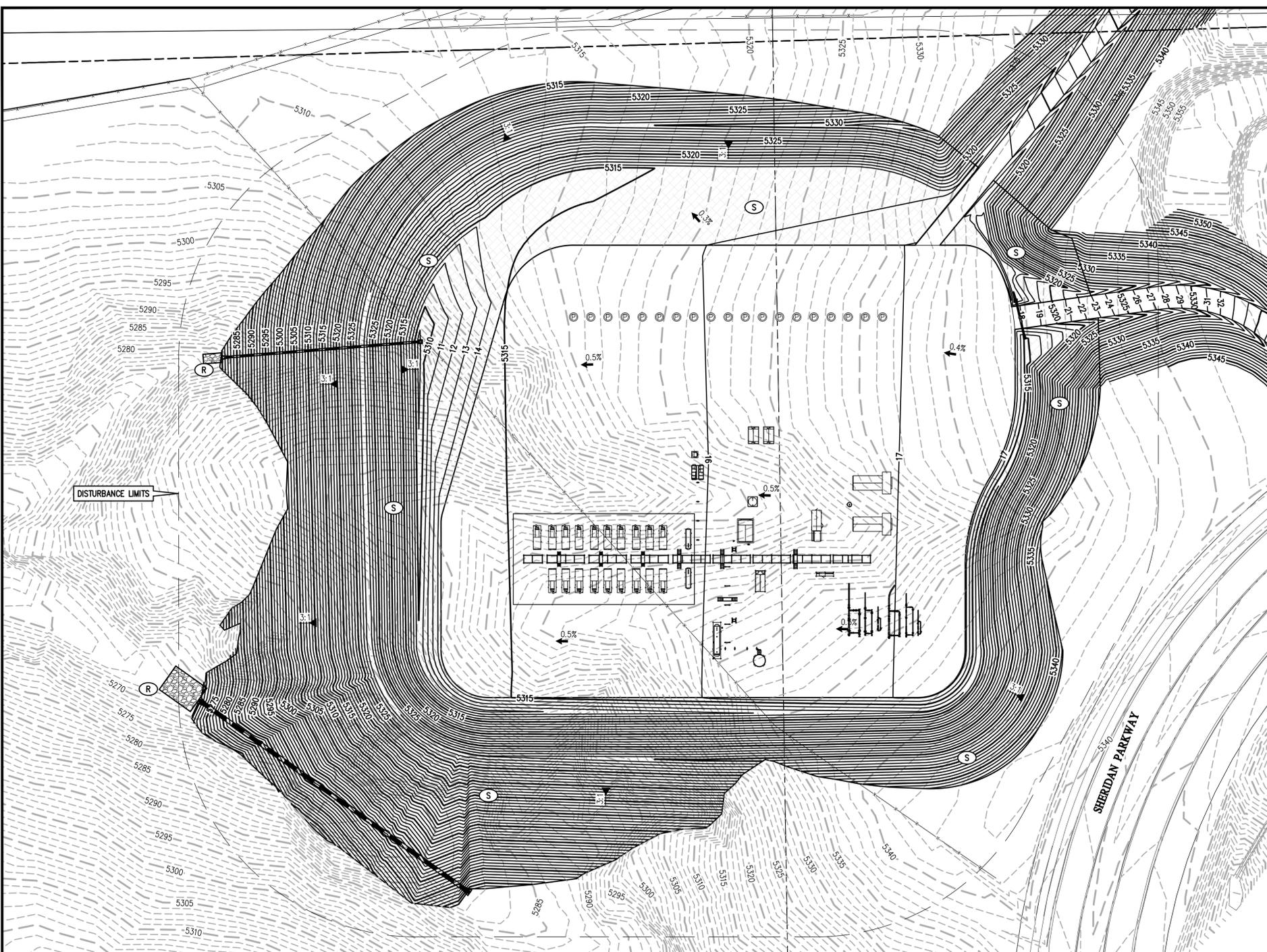
EXTRACTION OIL & GAS
 COUNTY OF BROOMFIELD
 EXHIBIT Q - LIVINGSTON PAD
 CITY OF BROOMFIELD
 SOUTHEAST 1/4 OF SECTION 7, TOWNSHIP 1 SOUTH, RANGE 68 WEST
 DRILLING STORMWATER MANAGEMENT PLAN

FOR AND ON BEHALF OF
 BASELINE CORPORATION
 INITIAL SUBMITTAL: xx/xx/xx
 DRAWING SIZE: 24" x 36"
 SURVEY FIRM: BASELINE SURVEY DATE: xx/xx/xx
 JOB NO.: C015272
 DRAWING NAME: Livingston Drilling.dwg
 SHEET 1 OF 3

PRELIMINARY NOT FOR CONSTRUCTION

Q1

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LEGEND		
EXISTING LINETYPES	PROPOSED LINETYPES	
81	81	MINOR CONTOUR (1' INTERVAL)
5280	5280	MAJOR CONTOUR (5' INTERVAL)
---	---	PROPERTY BOUNDARY
---	---	EDGE OF ASPHALT
---	---	EDGE OF GRAVEL
---	---	SECTION LINE
---	---	CURB AND GUTTER (SPILL/CATCH)
---	---	WIRE FENCE
---	---	DITCH FLOWLINE
GAS	GAS	GASLINE
---	---	ALIQUOT LINE

EXISTING SYMBOLS	PROPOSED SYMBOLS	
△	△	CONTROL POINT
25.44	25.36	SPOT ELEVATION
0.5%	0.5%	PERCENT SLOPE
3:1	3:1	NOMINAL SLOPE
⊞	⊞	ELECTRIC PANEL
⊞	⊞	GAS MARKER
⊞	⊞	IRRIGATION CONTROL VALVE
⊞	⊞	PROPOSED WELL HEAD
⊞	⊞	TRACKING CONTROL
⊞	⊞	SEEDING

SITE DESCRIPTION	
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CONSTRUCTION DATES	TBD
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LOCATION OF SITE	LATITUDE: 39°58'40" N LONGITUDE: 105°02'30" W
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SOIL CONDITION	ACCORDING TO THE NATURAL RESOURCES CONSERVATION SERVICES, THIS SITE IS 71% RENOHILL LOAM AND 29% ULM LOAM. THE PROPERTY GENERALLY SLOPES TO THE WEST AT SLOPES OF 7%.
POTENTIAL POLLUTION SOURCES	DUST FROM DRILLING & ACCESS ROAD CONSTRUCTION, NON-VEGETATED SOILS, FUEL, OIL, AND FLUIDS UTILIZED DURING DRILLING, CONCRETE WASHOUTS, OUTDOOR STORAGE ACTIVITIES, PORTABLE RESTROOMS, GENERAL REFUSE.
LOCATION OF NON-STORMWATER DISCHARGE	NONE
SITE FEATURES & SENSITIVE AREAS TO BE PROTECTED	THE SITE INCLUDES A WELL PAD, ENTRANCE ROAD, AND 3:1 SLOPES THAT MATCH INTO EXISTING TOPOGRAPHY. SURROUNDING AREAS TO BE PROTECTED INCLUDE FIELDS AND PUBLIC ROADS.
NAME AND LOCATION OF RECEIVING WATERS	STORMWATER RUNOFF TRAVELS EASTERLY TO BIG DRY CREEK WHICH FLOWS TO THE SOUTH AND DISCHARGES INTO STANDLEY LAKE.
OVERALL SCOPE / PROJECT CHARACTERISTICS	
INDUSTRIAL ACTIVITIES	OIL AND GAS PRODUCTION
FINAL SITE DISPOSITION	ONCE THE PRODUCTION PHASE FOR THE SITE IS COMPLETE, THE PRODUCTION SITE WILL BE RECLAIMED, THE WELLS WILL BE PLUGGED, CAPPED, & ABANDONED. THE TANK BATTERY WILL BE REMOVED. ANY UNNECESSARY PORTIONS OF THE UPGRADED ACCESS ROAD WILL BE REMOVED. SOILS WILL BE CONTOURED TO THE EXISTING SURROUNDING TERRAIN. (STOCKPILED TOPSOIL WILL BE REDISTRIBUTED ALONG WITH THE SEEDING ACROSS THE DISTURBED SOIL AREA IN ORDER TO REESTABLISH VEGETATION COVERAGE)
BEST MANAGEMENT PRACTICES (BMP'S)	
STORM WATER QUALITY BEST MANAGEMENT PRACTICE SHALL BE IMPLEMENTED TO MINIMIZE SOIL EROSION, SEDIMENTATION, INCREASED POLLUTION LOADS AND CHANGED WATER FLOW CHARACTERISTICS RESULTING FROM LAND DISTURBING ACTIVITY TO THE MAXIMUM EXTENT PRACTICAL, AS TO MINIMIZE POLLUTION OF RECEIVING WATERS.	
IMPLEMENTED BMP'S	
CONSTRUCTION STRUCTURAL BMP'S	PERMANENT STRUCTURAL BMP'S
<input checked="" type="checkbox"/> VTC PAD <input checked="" type="checkbox"/> DITCH & BERM SYSTEM <input type="checkbox"/> INLET PROTECTION <input type="checkbox"/> CULVERT OUTLET PROTECTION <input type="checkbox"/> WASH WATER SEDIMENTATION POND <input type="checkbox"/> SILT FENCING <input type="checkbox"/> RIP RAP <input type="checkbox"/> EROSION CONTROL MAT <input checked="" type="checkbox"/> SEDIMENT CONTROL LOG <input checked="" type="checkbox"/> SURFACE ROUGHENING ADDITIONAL BMP'S: _____	<input type="checkbox"/> VTC PAD <input type="checkbox"/> DITCH & BERM SYSTEM <input type="checkbox"/> CULVERT OUTLET PROTECTION <input type="checkbox"/> WASH WATER SEDIMENTATION POND <input type="checkbox"/> COGCC APPROVED CONTAINMENT BERM <input type="checkbox"/> RIP RAP <input checked="" type="checkbox"/> REVEGETATION ADDITIONAL BMP'S: _____
EROSION AND SEDIMENT CONTROL	
<ol style="list-style-type: none"> TO THE EXTENT PRACTICABLE, EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO GRADING ACTIVITIES. AT ALL TIMES DURING PROJECT CONSTRUCTION, ALL TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED AND REPAIRED AS NEEDED TO PREVENT ACCELERATED EROSION ON THE SITE AND ON ANY ADJACENT PROPERTIES. ALL TOPSOIL, WHERE PHYSICALLY PRACTICABLE, SHALL BE SALVAGED AND NO TOPSOIL SHALL BE REMOVED FROM SITE EXCEPT AS SET FORTH IN THE APPROVED PLANS. TOPSOIL AND OVERBURDEN SHALL BE SEGREGATED AND STOCKPILED SEPARATELY. TOPSOIL AND OVERBURDEN SHALL BE REDISTRIBUTED WITHIN THE GRADED AREA AFTER ROUGH GRADING TO PROVIDE A SUITABLE BASE FOR AREAS WHICH WILL BE SEEDING AND PLANTED. RUNOFF FROM STOCKPILED AREA SHALL BE CONTROLLED TO PREVENT EROSION AND RESULTANT SEDIMENTATION OF RECEIVING WATER. PERMANENT OR TEMPORARY SOIL STABILIZATION MEASURES SHALL BE APPLIED TO DISTURBED AREAS WITHIN 14 DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. SOIL STABILIZATION MEASURES SHALL BE APPLIED WITHIN 14 DAYS TO DISTURBED AREAS WHICH MAY NOT BE AT FINAL GRADE, BUT WILL BE LEFT DORMANT FOR LONGER THAN 30 DAYS. IT IS RECOMMENDED THAT THE PERMANENT SEED MIX BE PLANTED AFTER OCTOBER TO KEEP SEEDLINGS FROM DEVELOPING BEFORE WINTER. TEMPORARY VEGETATIVE COVER CONSISTING OF ANNUAL RYE GRASS SHALL BE HYDRO SEEDING AT 20 POUNDS PURE LIVE SEED PER ACRE. FUGITIVE DUST EMISSIONS RESULTING FROM DRILLING & ACCESS ROAD CONSTRUCTION ACTIVITIES AND/OR WIND SHALL BE CONTROLLED USING WATER. ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED DURING CONSTRUCTION AND SHALL BE INSTALLED AS SOON AS PRACTICAL IF REQUIRED BY THE STORMWATER ADMINISTRATOR OR THEIR REPRESENTATIVE. AREAS WHERE SEDIMENT CONTROL LOGS ARE NOT INDICATED MAY REQUIRE SOME FORM OF SEDIMENT CONTROL. STRAW MULCH AND/OR TEMPORARY SEEDING MAY BE UTILIZED AS NECESSARY. 	
INSPECTION AND MAINTENANCE	INSPECTIONS: <ol style="list-style-type: none"> PERFORM EVERY 14 DAYS, AND FOLLOWING A WEATHER EVENT CAUSING RUNOFF DURING THE CONSTRUCTION PHASE, PERFORM EVERY 30 DAYS DURING THE COMPLETED AND INTERIM PHASES. AN INSPECTION REPORT WILL BE FILLED OUT, & FILED FOR EACH INSPECTION PERFORMED. MAKE A COPY OF EACH INSPECTION REPORT AVAILABLE TO THE COUNTY UPON REQUEST. MAINTENANCE: <ol style="list-style-type: none"> PERFORM MAINTENANCE AND REPAIRS AS SOON AS POSSIBLE ON ITEMS OR AREAS IDENTIFIED IN THE INSPECTION REPORT PERFORM MAINTENANCE AS INDICATED IN THE URBAN DRAINAGE & FLOOD CONTROL DISTRICT, URBAN STORM DRAINAGE CRITERIA MANUAL, VOL. 3, PER MANUFACTURER'S SPECIFICATIONS OR OTHER SOURCES DETERMINED TO BE ACCEPTABLE. AN EFFICIENT RECORD-KEEPING SYSTEM IS A HELPFUL TOOL IN MANAGING INSPECTION AND MAINTENANCE REPORTS. INSPECTION REPORTS, MAINTENANCE RECORDS, TRAINING LOGS, AND OTHER SITE RELATED CORRESPONDENCE WILL BE MAINTAINED IN THE MASTER EROSION CONTROL PLAN.

Engineering - Planning - Surveying

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P. 970.333.7800 • F. 866.679.6864 • www.baselinecorp.com

DESIGNED BY
LDS

DRAWN BY
LDS

CHECKED BY
AAD

DATE

PREPARED BY

REVISION DESCRIPTION

EXTRACTION OIL & GAS

COUNTY OF BROOMFIELD

EXHIBIT Q - LIVINGSTON PAD

SOUTH EAST 1/4 OF SECTION 7, TOWNSHIP 1 SOUTH, RANGE 68 WEST

CITY OF BROOMFIELD

INTERIM RECLAMATION STORMWATER MANAGEMENT PLAN

PREPARED UNDER THE DIRECT SUPERVISION OF

FOR AND ON BEHALF OF
BASELINE CORPORATION

INITIAL SUBMITTAL

xx/xx/xx

DRAWING SIZE

24" X 36"

SURVEY FIRM

SURVEY DATE

BASELINE

xx/xx/xx

JOB NO.

C015272

DRAWING NAME

Livingston Interim Drilling.dwg

SHEET

2 OF 3

PRELIMINARY
NOT FOR
CONSTRUCTION

