

ConocoPhillips Groundwater Quality Monitoring Plan Addendum

**GRANDE 4-65 20-19 3BH, 3CH, 3DH, 4AH,
4BH, 4CH, 4DH – Grande South**

Arapahoe County, Colorado

APTIM ● Project 148083

October 24, 2019

Prepared for:



ConocoPhillips Company

Prepared by:



6380 S. Fiddler's Green Circle, Suite 310
Greenwood Village, CO 80111
United States
www.aptim.com

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1.0 PURPOSE

The purpose of this plan is to provide the necessary information for meeting Water Quality requirements as required by the Oil and Gas Operator Agreement between ConocoPhillips Company (COPC), a Delaware corporation, and its subsidiaries, and Burlington Resources Oil & Gas Company LP, a Delaware limited partnership, and the City of Aurora, Colorado, a municipal corporation. This plan addendum is intended to address site specific items. Each location presents unique challenges related to topography, condition of surrounding domestic water wells, orientation of sampling location, aquifer availability and conditions driven by the Operator Agreement.

2.0 SCOPE

Field-wide Groundwater Monitoring Plan addresses requirements in broad terms. Many aspects of the Groundwater Monitoring strategy are common to all locations. This site-specific plan addendum is intended to address only the aspects that are unique to a certain location and will not repeat general terms outlined in the field-wide plan.

3.0 OBJECTIVES

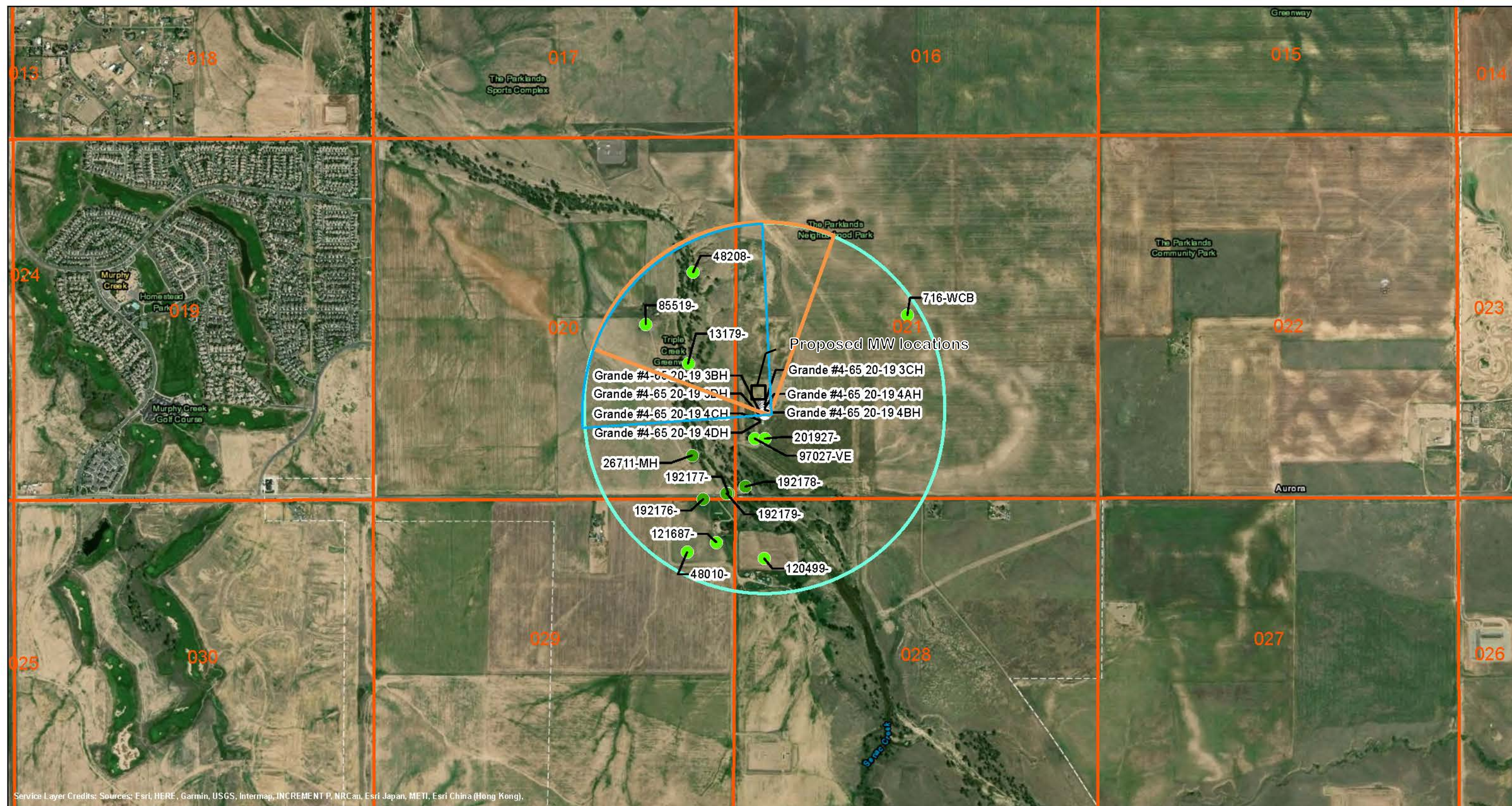
The following objectives are applied to the site-specific addendum.

- Identification of all water wells within ½ mile of the proposed O&G location, as shown in **Figure 1**
- Determination criteria of each water well's sample rank, as show in **Table 1**
- Well construction diagram (to be finalized at a later date), as show in **Figure 2**

4.0 APPENDICES

Appendix A PG Certification Page
Appendix B Variance Request (as needed)
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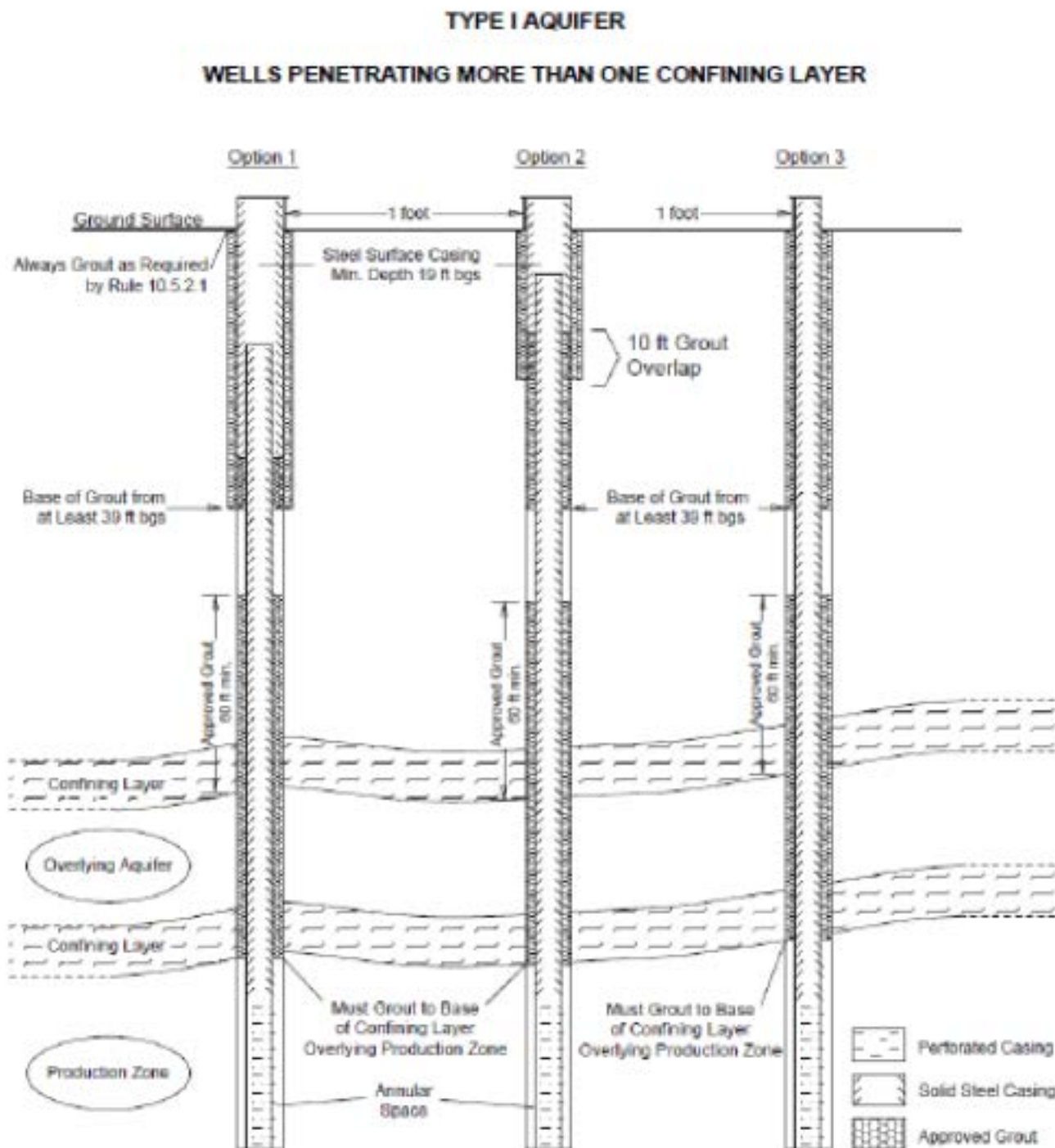
Figures



Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong).

<p>○ ConocoPhillips Proposed Wells</p> <p>— 1/2 Mile Buffer</p> <p>— Sections</p> <p>● Permit Issued</p> <p>● Well Constructed</p> <p>Expected Denver Basin down gradient zone</p> <p>Expected Alluvial down gradient zone</p>		<p>N</p> <p>W E</p> <p>S</p> <p>0 1,200 2,400 Feet</p> <p>Denver</p> <p>Castle Rock</p>	<p>CONOCOPHILLIPS</p> <p>GRANDE 4-65 20-19 3BH, 3CH, 3DH, 4AH, 4BH, 4CH, 4DH</p> <p>FIGURE 1</p> <p>PERMITTED WELLS WITHIN A 1/2 MILE RADIUS</p> <p>APTIM</p> <p>6380 S. Fiddlers Green Circle Greenwood Village, CO 80111 www.APTIM.com</p>
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Figure 2: Typical Well Construction



Note: reproduced from Figure 4b (R2 CCR 402-2)

Table 1

Table 1 - Associated Water Wells

COP Well	Water Well Permit No.	Receipt #	Approximate Distance from COP (Ft)	Well Status (DWR)	Well Completion date	TD'	Aquifer	Sampling Priority	Permitted Use	Well Info Available	Determination of Sample Priority	Parcel ID No.	Property Owner (tax records)	Property Owner Mailing Address (tax records)	Well Owner (well permit)	Well Owner Mailing Address (DWR)	Well Location (well permit, tax records)	UTM_X	UTM_Y	Latitude	Longitude
Grande South	85519-	9007563	2088	Well Constructed	10/11/1976	705	DENVER		1 Domestic	statement of beneficial use, well completion and pump installation report, permit application	nearest downgradient Denver basin domestic well, first sampling priority dependent upon field confirmation of status of well which is assumed to be located at an abandoned farmhouse	1977-20-2-00-003	ALPERT VILLAGE I LLC & CHERRY CREEK VISTA PARTNERS	3033 E 1ST AVE SUITE 725, DENVER CO 80206	SMITH, PAUL H	R3 BOX 354 AURORA, CO 80011	NW SE 20 4.0S 65.0W Sixth 2565 S 1370 E	527158	4393288	39.689002	-104.683269
Grande South	48208-	9007031	2185	Well Constructed	8/11/1971	32	ALL UNNAMED AQUIFERS		2 Domestic	permit to construct a well, well log, map and statement of water well filling	downgradient alluvial well - based on previous field investigations, well may be incorrectly spotted and in a state of disrepair, may not be suitable for sampling	1977-20-1-00-004	EASTERN HILLS LLC & CHERRY CREEK VISTA PARTNER	3033 E 1ST AVE SUITE 725, DENVER CO 80206	SMITH, PAUL H	R3 BOX 354 AURORA, CO 80011	SE NE 20 4.0S 65.0W Sixth	527374	4393510	39.690995	-104.680741
Grande South	201927-	0411843	524	Well Constructed	2/3/1997	605	DENVER	NA	Domestic, Stock	pump installation and test report, well construction and test report, permit to use an existing well, water well permit application, verbal emergency 97027VE, see 97027VE,	closest upgradient location - not suitable for sampling	1977-00-0-00-371	ACI PARTNERSHIP 52% INT & EASTERN HILLS LLC 48% IN	3033 E 1ST AVE SUITE 725, DENVER CO 80206	ACI PARTNERSHIP	4643 S ULSTER ST DENVER, CO 80237	1706 S POWHATON RD AURORA, CO 80018-3113 SW SW 21 4.0S 65.0W Sixth 900 S 400 W	527695	4392781	39.684416	-104.677036
Grande South	97027-VE	0029962	543	Well Constructed	2/3/1997	605	ALL UNNAMED AQUIFERS	NA	Domestic	no documents available, verbal emergency only, see permit no. 201927	Verbal emergency notice - not suitable for sampling, location is also upgradient	1977-00-0-00-371	ACI PARTNERSHIP 52% INT & EASTERN HILLS LLC 48% IN	3033 E 1ST AVE SUITE 725, DENVER CO 80206	ALPERT, LELAND	ACI PARTNERSHIP 4643 S ULSTER ST # 130 DENVER, CO 80237	SW SW 21 4.0S 65.0W Sixth 900 S 250 W 1706 S POWHATON RDAURORA, CO 80018-3113	527649	4392781	39.684418	-104.677568
Grande South	192178-	0393820 D	1256	Permit Issued	NA	NA	ALL UNNAMED AQUIFERS	NA	Monitoring/ Sampling	permit to construct a well, permit application form, no completion information, see permit no. 26655MH	upgradient monitoring location, no completion permit not suitable for sampling	1977-00-0-00-371	ACI PARTNERSHIP 52% INT & EASTERN HILLS LLC 48% IN	3033 E 1ST AVE SUITE 725, DENVER CO 80206	AURORA CITY OF	C/O BISHOP-BROGDEN ASSOCIATE 165 S UNION BLVD # 670 LAKEWOOD, CO 80228	1706 S POWHATON RD AURORA CO, 80018-3113 SW SW 21 4.0S 65.0W Sixth 200 S 120 W	527608	4392568	39.682495	-104.678055
Grande South	13179-	9006036	1258	Well Constructed	10/12/1962	44	ALL UNNAMED AQUIFERS	NA	Stock	log and history of well, application for use of groundwater	nearest downgradient alluvial well - based on previous field investigations, windmill and well are in a state of disrepair and are not suitable for sampling	1977-20-1-00-004	EASTERN HILLS LLC & CHERRY CREEK VISTA PARTNER	3033 E 1ST AVE SUITE 725, DENVER CO 80206	SMITH, PAUL H	R3 BOX 354 AURORA, CO 80011	NE SE 20 4.0S 65.0W Sixth	527372	4393109	39.687377	-104.680784
Grande South	26711-MH	0026711	1309	Permit Issued	NA	NA	ALL UNNAMED AQUIFERS	NA	Monitoring/ Sampling	monitoring hole installation correspondence, no completion information, see permit no. 192179	upgradient monitoring location, no completion permit not suitable for sampling	1977-20-2-00-003	ALPERT VILLAGE I LLC & CHERRY CREEK VISTA PARTNERS	3033 E 1ST AVE SUITE 725, DENVER CO 80206	AURORA CITY OF	C/O BISHOP-BROGDEN ASSOCIATE 165 S UNION BLVD # 670 LAKEWOOD, CO 80228	SE SE 20 4.0S 65.0W Sixth	527370	4392707	39.683760	-104.680827
Grande South	192177-	0393820 C	1427	Permit Issued	NA	NA	ALL UNNAMED AQUIFERS	NA	Monitoring/ Sampling	permit to construct a well, permit application form, no completion information, see permit no. 26654MH	upgradient monitoring location, no completion permit not suitable for sampling	1977-20-1-00-004	EASTERN HILLS LLC & CHERRY CREEK VISTA PARTNER	3033 E 1ST AVE SUITE 725 DENVER CO 80206	AURORA CITY OF	C/O BISHOP-BROGDEN ASSOCIATE 165 S UNION BLVD # 670 LAKEWOOD, CO 80228	SE SE 20 4.0S 65.0W Sixth 100 S 130 E	527532	4392537	39.682223	-104.678947
Grande South	192179-	0393820 E	1438	Permit Issued	NA	NA	ALL UNNAMED AQUIFERS	NA	Monitoring/ Sampling	permit to construct a well for water monitoring only, permit application form, no completion documents	upgradient monitoring location, no completion permit not suitable for sampling	1977-20-1-00-004	EASTERN HILLS LLC & CHERRY CREEK VISTA PARTNER	3033 E 1ST AVE SUITE 725 DENVER CO 80206	AURORA CITY OF	C/O BISHOP-BROGDEN ASSOCIATE 165 S UNION BLVD # 670 LAKEWOOD, CO 80228	SE SE 20 4.0S 65.0W Sixth 100 S 160 E	527523	4392537	39.682223	-104.679053
Grande South	192176-	0393820 B	1673	Permit Issued	NA	NA	ALL UNNAMED AQUIFERS	NA	Monitoring/ Sampling	permit to construct a well for water monitoring only, permit application form, no completion documents	upgradient monitoring location, no completion permit not suitable for sampling	NA	NA	SE SE 20 4.0S 65.0W Sixth	AURORA CITY OF	C/O BISHOP-BROGDEN ASSOCIATE 165 S UNION BLVD # 670 LAKEWOOD, CO 80228	SE SE 20 4.0S 65.0W Sixth 15 S 500 E	527419	4392511	39.681992	-104.680265
Grande South	121687-	0217909	2163	Well Constructed	12/31/1981	640	ALL UNNAMED AQUIFERS	NA	Domestic	Well completion and pump installation report, permit to construct well, other	upgradient location - not suitable for sampling	1977-00-0-00-157	RAINS THOMAS J, RAINS KIMBERLEY K	27503 E EUCLID DR, AURORA CO 80016-2509	RAINS, D E	RT 2 BOX 100 DENVER, CO 80202	26464 E JEWELL AVE, AURORA CO, 80018-3002	527478	4392318	39.680249	-104.679584
Grande South	120499-	0215107	2273	Well Constructed	11/30/1981	640	ALL UNNAMED AQUIFERS	NA	Domestic	Well completion and pump installation report, permit to construct well	upgradient location - not suitable for sampling	1977-00-0-00-364	COAL CREEK RESERVE PARTNERSHIP	3033 E 1ST AVE SUITE 725, DENVER CO 80206	SMITH, E G	RTE 3 BOX 358 AURORA, CO 80011	2090 S POWHATON RD, AURORA CO,	527691	4392248	39.679611	-104.677107
Grande South	716-WCB	0303716	2458	Well Constructed	12/10/1953	29	ALL UNNAMED AQUIFERS	NA	Domestic, Stock	notification of intent to redrill water well, log and history of well,	upgradient location - not suitable for sampling	1977-21-1-00-003	ACI PARTNERSHIP 52% INT & EASTERN HILLS LLC 48% IN	3033 E 1ST AVE SUITE 725, DENVER CO 80206	SMITH, HAROLD H	RT 4 BOX 150 DENVER, CO	21 4.0S 65.0W Sixth	528378	4393320	39.689240	-104.669040
Grande South	48010-	9007028	2464	Well Constructed	8/10/1971	36	ALL UNNAMED AQUIFERS	NA	Domestic	map and statement of water well filing, well log, permit to construct a well	upgradient location - not suitable for sampling	1977-00-0-00-157	RAINS THOMAS J, RAINS KIMBERLEY K	27503 E EUCLID DR, AURORA CO 80016-2509	RAINS, DONALD	RT 2 BOX 100 DENVER, CO 80202	26464 E JEWELL AVE, AURORA CO, 80018-3002	527367	4392306	39.680142	-104.680876

**Appendix A –
PG Certification
Page**

Appendix A

Professional Geologist Certification

- In accord with the City of Aurora's request, I hereby certify that:
- I am familiar with the provisions of the Operators Agreement between ConocoPhillips Company, Burlington Resources Oil & Gas Company LP, and the City of Aurora, Colorado.
- I, or my agent, have completed a Due Diligence Phase I review of all available water sources in the vicinity of the subject oil and gas well location to identify potential sample sites.
- The procedures contained herein for water monitoring and testing for baseline and subsequent monitoring events have been established in accord with industry standards or recommended practices; and
- This Groundwater Monitoring Plan is adequate for the subject location.
- Colorado Professional Geologist as defined per C.R.S. 23-41-208.

Well Name: GRANDE 4-65 20-19 3BH, 3CH, 3DH, 4AH,
4BH, 4CH, 4DH – Grande South

Company: APTIM

Name of Professional Geologist (typed): Daisie Young

Signature and Seal: _____



Certification Date: October 24, 2019

**Appendix B –
Variance Request
(as needed)**



September 12, 2019

Liang Yu
Senior Environmental Coordinator
ConocoPhillips Corporation
34501 East Quincy Ave, Building 1
Watkins, Co 80137

Subject: Variance Request and Form 4 Sundry Notice - GRANDE 4-65 20-19 3BH, 3CH, 3DH, 4AH, 4BH, 4CH, 4DH – Grande South

Dear Mrs. Yu:

Below is a brief summary of APTIMs efforts to identify and document potential sampleable domestic water wells located within ½ mile of the Grande South location.

Initial Phase I Due Diligence efforts were completed, at the direction of ConocoPhillips, in order to identify domestic water wells which could be utilized as sample locations as required by the City of Aurora Operators Agreement (OA). Phase I efforts included a review of all available documentation associated with permitted water wells located within ½ mile of the Grande South location. Of the three (3) downgradient wells identified one is a alluvial stock well and two are domestic water wells. Of the two domestic water wells, field confirmation is recommended prior to committing to sample the two wells as they are likely in a state of disrepair and may be unsuitable for sampling. The remaining water wells identified within ½ mile of the Location are upgradient and are therefore unsuitable for sampling as per the OA.

Due to the lack of confirmed sampleable wells available within ½ mile of the Location, it is recommended that a Form 4 Sundry Notice be prepared for the Grande South location and submitted to meet the requirements of COGCC Rule 609. Following that it is also recommended that a Variance Request be submitted to the City of Aurora to meet the requirements of the Operators Agreement.

The water wells which APTIM identified as being located within 1/2 mile of the Grande South location and their associated sample designations are listed below.

Well Permit No.	Approximate Distance from COP (Ft)	Sampling Priority	Determination of Sampling Priority	Property Owner (tax records)
85519-	2088	1	nearest downgradient Denver basin domestic well, first sampling priority dependent upon field confirmation of status of well which is assumed to be located at an abandoned farmhouse	ALPERT VILLAGE I LLC & CHERRY CREEK VISTA PARTNERS
48208-	2185	2	downgradient alluvial well - based on previous field investigations, well may be incorrectly spotted and in a state of disrepair, may not be suitable for sampling	EASTERN HILLS LLC & CHERRY CREEK VISTA PARTNER
13179-	1258	NA	nearest downgradient alluvial well - based on previous field investigations, windmill and well are in a state of disrepair and are not suitable for sampling	EASTERN HILLS LLC & CHERRY CREEK VISTA PARTNER



201927-	524	NA	closest upgradient location - not suitable for sampling	ACJ PARTNERSHIP 52% INT & EASTERN HILLS LLC 48% IN
97027-VE	543	NA	Verbal emergency notice - not suitable for sampling, location is also upgradient	ACJ PARTNERSHIP 52% INT & EASTERN HILLS LLC 48% IN
192178-	1256	NA	upgradient monitoring location, no completion permit - not suitable for sampling	ACJ PARTNERSHIP 52% INT & EASTERN HILLS LLC 48% IN
26711-MH	1309	NA	upgradient monitoring location, no completion permit - not suitable for sampling	ALPERT VILLAGE I LLC & CHERRY CREEK VISTA PARTNERS
192177-	1427	NA	upgradient monitoring location, no completion permit - not suitable for sampling	EASTERN HILLS LLC & CHERRY CREEK VISTA PARTNER
192179-	1438	NA	upgradient monitoring location, no completion permit - not suitable for sampling	EASTERN HILLS LLC & CHERRY CREEK VISTA PARTNER
192176-	1673	NA	upgradient monitoring location, no completion permit - not suitable for sampling	NA
121687-	2163	NA	upgradient location - not suitable for sampling	RAINS THOMAS J, RAINS KIMBERLEY K
120499-	2273	NA	upgradient location - not suitable for sampling	COAL CREEK RESERVE PARTNERSHIP
716-WCB	2458	NA	upgradient location - not suitable for sampling	ACJ PARTNERSHIP 52% INT & EASTERN HILLS LLC 48% IN
48010-	2464	NA	upgradient location - not suitable for sampling	RAINS THOMAS J, RAINS KIMBERLEY K

If you have any questions regarding this letter, please don't hesitate to contact me at 303-741-7052.

Sincerely,

Daisy Young, G.I.T.
Geologist, APTIM

Please Reply To: Daisy Young

Phone: 303-741-7052

E-Mail Address: daisy.young@APTIM.com

Appendix C – Site Specific Schedule

Appendix C

Site Specific Schedule

Timelines are dependent upon receipt of COGCC permit approvals. ConocoPhillips (COPC) will make all good faith efforts to ensure monitoring well installation will be completed prior to conducting hydraulic fracturing of the oil and gas well. In the event that circumstances outside of COPC's control affecting the monitoring well installation schedule should occur, e.g. supply chain shortages, contractor availability issues, or permit approval delays (SEO), COPC will notify the City. In this event, COPC and the City of Aurora will agree to negotiate in good faith a resolution acceptable to both parties to insure adequate groundwater monitoring and protection measures are put in place.

GRANDE 4-65 20-19 3BH, 3CH, 3DH, 4AH, 4BH, 4CH, 4DH – Grande South

Scheduled Commencement of Drilling Activities – September 30, 2021

Conduct Phase I – Due Diligence:	Prior to permit submittal
Contact landowners to obtain sample permission:	As soon as possible - N/A No suitable wells identified for sampling within ½
Contact surface landowners to obtain surface rights to install Requested Well(s):	Beginning week of September 3, 2019 or as soon as possible
Coordinate Requested Well location, construction, and installation schedule with City:	Beginning November 2019 or as soon as practicable
If needed, coordinate Easement Well location, construction and installation schedule with City:	TBD
Submit monitoring well permit application(s) to SEO:	Beginning week of April 2021 or as soon as practicable
Monitoring well(s) installation:	Beginning June 2021 or as soon as possible
Sample monitoring well(s):	Prior to well completion activities
Commence O&G Drilling activities:	TBD pending permit approval