



**COMMUNITY AND ECONOMIC DEVELOPMENT
DEPARTMENT
STAFF REPORT**

Administrative Review Memo

October 31, 2017

CASE No.: USR2017-00004 CASE NAME: Great Western B-Farm Well Pad
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Owner's Name:	Great Western Oil & Gas Company, LLC
Applicant's Name:	Great Western Oil & Gas Company, LLC
Applicant's Address:	1801 Broadway, Suite 500, Denver, CO 80202
Location of Request:	Section 7, Township 1S, Range 67W Parcel number 0157107000016
Nature of Request:	A Use by Special Review Permit to allow thirty-two (36) horizontal wells on one (1) well pad for the production of oil and gas and one (1) production facility.
Zone District:	Agriculture - 3
Site Size:	Approximately 11.77 acres (101.24-acre parcel)
Proposed Uses:	Multi-well pad for the production of oil and gas
Existing Use:	Agricultural with one (1) producing conventional oil and gas well
Report Date:	October 31, 2017
Case Manager:	Chris LaMere
Director Options:	Approval with 4 Findings of Fact, 5 Conditions Precedent, and 17 Conditions; Denial; or Referral to the Board of County Commissioners
Staff Recommendation:	Approval with 4 Findings of Fact, 5 Conditions Precedent, and 17 Conditions

SUMMARY OF PREVIOUS APPLICATIONS

This parcel is used agriculturally for irrigated cropland and contains one (1) producing conventional oil and gas well operated by Great Western Oil and Gas Company (hereafter referred to as “the applicant”).

SUMMARY OF APPLICATION

Background

Great Western Oil & Gas Company, LLC (Great Western) is based in Denver, Colorado and engages in the exploration and development of oil and natural gas, with active operations in the Denver-Julesburg Basin. Great Western has proposed an oil and gas well pad location in unincorporated Adams County to continue developing those minerals. The proposed project, B-Farm Well Pad, consists of constructing of one well pad with up to 36 wells, one production facility, and one access road. Oil and gas products from this well pad are planned to be trucked off-site using a haul route depicted in their application and described below.

The proposed pad location is on a 101.24-acre parcel, southeast of the intersection of Highway 7 and Colorado Boulevard. Access to the site will be from Highway 7, which is located on the northern boundary of the property. Surrounding land uses are agricultural, residential estate, and undeveloped parcels within the municipal limits of the City of Thornton to the northwest.

Summary of Application

The project proposed by Great Western consists of 36 wells on a single well pad and a production facility with thirty-six (36) low profile (16' tall) oil tanks, six (6) low profile (16' tall) water tanks, thirty-six (36) separators, six (6) heaters, , three (3) vapor recovery towers, twelve (12) emission control devices, three (3) vertical gas line scrubbers, two (2) vapor recovery units, two (2) gas sales wellhead compressors, two (2) custody transfer gas meters. There is one access road planned to accommodate all traffic during construction, production, and long-term maintenance. The drilling period is expected to last six days per well, with an additional 12 days per well for the completion process. Overall, the drilling and completion phase will take approximately 648 days total. Drilling of the wells will not be completed simultaneously, but rather will be spread out over time based on operational needs by the applicant.

The well pad size during the drilling and completion phases is proposed to be approximately 11.77 acres; this will ultimately be reduced in size to 5.92 acres after the well completion phase has concluded.

The mitigation measures that have been proposed by Great Western include the following:

- Interim reclamation will be implemented following the drilling of the planned wells.
- Within 30 days after completion of operations, Great Western will provide as built drawings of all flowlines, gathering lines and other infrastructure that lies outside the well pad.
- Pursuant to COGCC Rule 804, the tank battery shall be painted in uniform, non-reflective, earth tones.
- Great Western has included in their application a visual mitigation plan consisting of landscaping for visual mitigation and fencing to provide security. The visual mitigation plan also disguises the associated facilities from view along State Highway 7. The neighbor located to the west requested an earthen berm to aid in sound and visual impacts, the applicant has included the requested berm in the landscape plan.

- During the drilling and completions phase, Great Western will construct temporary sound walls that will be placed along the edges of the pad. This will also assist to block out any lighting that may impact nearby residences.

Development Standards and Regulations Requirements

In order to obtain an Administrative Use by Special Review approval, an oil and gas facility must satisfy certain criteria.

1. Memorandum of Understanding (MOU)

The Oil and Gas MOU was signed by Great Western and executed by the Adams County Board of County Commissioners on January 27, 2015. The MOU includes all the best management practices determined necessary to minimize potential impacts.

2. Satisfy Submittal Requirements

The applicant has satisfied the required submittal items, as outlined in the Development Standards and Regulations. These include the following:

- Conceptual Review Meeting – The applicant attended a Conceptual Review Meeting on April 10, 2017 with the Adams County Development Review Team where their proposed site was discussed.
- Neighborhood Meeting – The applicant noticed property owners within one half mile of the parcel boundary of the proposed oil and gas facility and invited them to an open house. The Neighborhood Meeting was held on May 4, 2017 at the Todd Creek Golf Club and approximately twelve (12) people attended. The applicant introduced their management team and provided an overview of the project, operation timeline, and mitigation measures that they are planning.
- Application Form and Fees – The applicant submitted the required Oil and Gas Facility application form and paid the applicable permit fees. Prior to construction and operation, the operator will obtain the required Public Works permits, including Oversize Load Permits for the drill rigs and other oversize equipment. The applicant has obtained the required access permit from CDOT for the site access.
- Oil and Gas Operations Plan – The applicant submitted an Oil and Gas Operations Plan that included an Impact Area Map that shows all oil and gas wells and water wells within one half mile, a Drilling Operation Plan Map that shows a site plan with drilling equipment, a Production Plan Map that shows a site plan during the production phase, and a Sign Plan that shows the signs to be posted and describes their location.
- Emergency Preparedness Plan – The applicant submitted a site-specific Emergency Preparedness Plan that has been reviewed and approved by the Adams County Office of Emergency Management.
- Engineering Documents – The applicant provided a Grading, Erosion, and Sediment Control Report & Plan, as well as a Traffic Impact Plan, in accordance with the Development Standards and Regulations.

- Surface Owner Documentation – The applicant provided a Memorandum of Surface Use Agreement to show that the proposed oil and gas facility is authorized by the surface owner.

3. Compatibility / Land Use Impacts

The subject parcel is 101.24 acres and currently zoned Agricultural-3 (A-3); the land is being farmed and has one (1) producing conventional oil and gas well. The purpose of the A-3 District is to provide land primarily in holdings of at least thirty-five acres for dryland or irrigated farming, pasturage, or other related food production uses; the current uses meet the purpose of the A-3 zone district. To the north is Northern Hills Christian Church, which is a place of worship, neighbored to the west by undeveloped parcels within the City of Thornton. To the west of the subject site, the parcels are zoned Agricultural-1 (A-1). The purpose of the A-1 District is to provide for a rural living experience and limited farming uses. The properties to the south and east are zoned A-3 and are mainly used for farming or other agricultural uses.

The future land use designation of the site, according to the Adams County Comprehensive Plan, is Mixed Use Neighborhood. The surrounding area is comprised of Mixed Use Neighborhood, Public, Urban Residential, and the City of Thornton Municipal Area. Mixed Use Neighborhood areas contemplate a range of urban-level residential uses, including single and multi-family housing, as well as compatible and supporting uses that serve the neighborhood. According to the Comprehensive Plan, future development in these areas should compliment or be designed to minimize impacts to existing residential development. Urban Residential is designated to develop at higher densities, with one dwelling unit per acre or greater, and contemplates adequate urban services and transportation facilities. Ultimately, this area is expected to be adjacent to a light rail line and potentially develop as a commercial and residential metro district. By drilling the proposed wells before development occurs in this area and implementing the landscape plan submitted by the applicant, the proposed well pad has sufficiently addressed long-term compatibility with the designated future land uses in the area.

The development of the oil and gas facility, including well pad construction and the drilling and completion of the wells, will have impacts to the surrounding area akin to those of an industrial facility. Specific impacts include noise, lights, traffic, and dust. To make this facility compatible with the residential uses to the west, noise mitigation, visual mitigation, and dust suppression will be utilized during site development, drilling and well completion.

An oil and gas pipeline, which is routed approximately 600 feet from the proposed oil and gas production site, was approved by the Adams Board of County Commissioners on October 17, 2017 in case RCU2017-00019, the Boardwalk Pipeline. In order to maintain compatibility with the current and future land uses in this area, connection to the Boardwalk Pipeline is strongly encouraged. Connection to the pipeline would have a significant reduction in onsite product storage and significantly reduce truck traffic associated to hauling product off-site. The applicant does not provide traffic estimates for production but other similar facilities have shown estimates as high as 208 truck trips per well for the first year of production and 104 trips per well for each year following the initial year. These trip counts do not include personal vehicles for the personnel required to perform daily inspections of the facility.

To provide sound and visual mitigation during the drilling and completions phase, the applicant will construct temporary walls that will be placed along the edges of the pad; this will also block out lighting that may impact nearby residences. As a supplement to the sound walls, a permanent dirt berm will be constructed to the west of the pad to buffer the nearby homes from both the short-term and long-term impacts. To address the traffic concerns, the applicant has proposed that all traffic into and out of the subject site will be directed onto Highway 7, rather than through the local roads. This will allow the truck traffic to be separated from the residential and other local traffic that uses the roads in the area.

Great Western has worked closely with the property owner to determine the best placement of the proposed B-Farm wellpad that minimizes surface disturbance to the existing use, avoids wetlands and the 100-year floodplain to the northwest, and allows enough area for the future extension of Colorado Boulevard to traverse northeast. Great Western has included in their application a visual mitigation plan consisting of both landscaping and fencing to provide security, as well as a visually appealing line of sight, with the understanding that the parcel and surrounding land is intended to be developed. The applicant has had conversations with the residents to the west, located less than 1,000 feet from the proposed well pad, and will be constructing an earth berm to aid in mitigating any impacts they may experience. Short-term impacts from the oil and gas facility will occur during the construction, drilling, and completion phases, and will be mitigated using sound walls and a large berm to the west. The long-term impacts from the well pad will largely be visual in nature and will be mitigated through landscaping and fencing.

The applicant has thoughtfully considered the surface owner's request to maintain the majority of the parcel as active farmland and to avoid sensitive areas while providing mitigation measures for the future development. The impacts have been mitigated through a combination of site planning decisions, traffic and access management, as well as sound and visual mitigation measures, with long-term compatibility being addressed through the requirement for landscaping and screening upon completion of construction. It is staff's recommendation that this criterion has been satisfied by the applicant's proposal, and through the recommended conditions of approval within this staff report.

4. Emergency Service Providers

The applicant provided the required 'will serve' letter from the North Metro Fire Rescue District, the emergency service provider for that area.

Referral Comments:

Adams County Development Services determined the landscaping plan to be sufficient and the proposed berm to adequately mitigate the potential impacts from the oil and gas facility.

The City of Thornton has expressed concerns about the traffic route which was initially passing a school located at 144th Avenue and Washington Street. In order to avoid schools, the applicant modified the traffic plan to provide a direct route to I-25 by way of Highway 7. Thornton also expressed concerns about lighting impacts during pad development and the drilling process.

These concerns are being addressed by the applicant through the use of perimeter sound walls which will dual function to also block the light from impacting neighboring residents. Thornton was provided a copy of the landscaping plan and has expressed their satisfaction with the requirements for landscape maintenance and plant viability. Finally, Thornton has requested emergency response table top exercises with the operator, first responders, and the Office of Emergency Management. This has been added as a Condition of Approval.

The Tri-County Health Department provided guidelines for domestic wastewater management, water well testing, water supply for onsite workers, temporary water storage, emergency response plan/spill reporting, air quality, dust control, and traffic impacts. The applicant will notify neighbors to contact Tri-County Health for follow-up water well testing, with the operator being responsible for the baseline water well test. The applicant has agreed to follow all state rules regarding emission sources, vapor recovery, flaring, and green completions will be followed. Dust control will be managed consistent with all state rules regarding dust control and erosion control practices.

Colorado Department of Public Health and Environment (CDPHE) provided comments with concerns regarding the access road location, emission controls for tank service and unloading product, sound impacts, and earthen berms at the facility. The applicant intends to use the existing access road, which is currently utilized to access the existing oil and gas infrastructure on the parcel. The applicant will make improvements to the existing access road, such as putting down a gravel surface to decrease the potential for dust and erosion. The road will be re-aligned to allow space for the requested earth berm to mitigate sound and visual concerns from residents located to the west. Emission control technology for tank servicing and unloading will be utilized per state requirements. All drilling and completions equipment will be located within the proposed sound walls which will mitigate sound impacts.

Notices were sent to all property owners within a half mile radius of the parcel boundary. Five people commented on the request expressing concerns about potential impacts of the large oil and gas well pad to the surrounding neighborhood. Specific concerns include environmental and public health, home values, traffic, and noise. The visual and noise impacts are to be mitigated using temporary sound walls, as well as a large earthen berm located to the west of the proposed well pad, which will act as a buffer for the adjacent homes. Direct access to Highway 7 and the anticipated truck traffic associated with large scale oil and gas development is another point of concern to many residents. In order to avoid having the truck traffic go by residences, the applicant has worked with the Colorado Department of Transportation to obtain an Access Permit for direct access to the state road. The applicant also intends to connect to a pipeline to transport oil and gas products off-site, which will significantly reduce the long-term truck traffic.

Staff Recommendation:

Based upon the application, the criteria for an Administrative Use by Special Review permit, and a recent site visit, staff recommends approval of this request with 4 findings-of-fact, 5 conditions precedent, and 17 conditions.

Findings of Fact:

1. The applicant and the County have executed a Memorandum of Understanding (MOU) that is currently in full force and effect, and the oil and gas facility application is in compliance with the provisions of the MOU.
2. The applicant has satisfied the submittal requirements for an Administrative Use by Special Review application, as outlined in the Development Standards and Regulations.
3. Based upon compliance with the recommended conditions of approval, the oil and gas facility is compatible with the surrounding area and does not create any site specific or material impacts to nearby land uses.
4. The applicant has provided a commitment to serve the facility from the authority having jurisdiction for providing emergency services.

Recommended Conditions of Approval:

Conditions Precedent:

1. Pad construction and/or drilling shall not commence until combined State approval of Colorado Oil and Gas Conservation Commission (COGCC) Form 2 and 2A and County approval of AUSR permit. Drilling shall only occur during the COGCC Form 2 permit validity timeframe.
 - a. Per section 4-10-02-05-10 of the Adams County Development Standards and Regulations, proposed changes to the plans, including but not limited to, any changes in the source or location of water to be used by the Oil and Gas Facility, need to be submitted as amendments to the Administrative Use by Special Review application, reviewed by staff, and approved by the Director or BOCC (if the BOCC approved the original application).
2. Prior to initiation of construction, the applicant shall provide the applicable title commitment documents to Adams County for review of the easement rights necessary to construct the oil, water, and gas pipelines for the facility.
3. The applicant or the applicant's subcontractors may be required to obtain Oversize Load Permits and/or Rig-Move permits. These permits may be obtained through the Adams County One-Stop Customer Center.
4. Adams County has determined that noise mitigation measures will be required to provide compatibility with the surrounding area. A Sound Impact Assessment must be conducted and the operator will be required to implement the best management practices identified from the study to meet COGCC rule 802 Noise Abatement and the MOU section 9. During the drilling and completions phases, Great Western will construct sound/visual walls, in accordance with the sound study performed, that will be placed along the edges of the pad; this will block out any lighting that may impact nearby residences. The pad

will be constructed in such a manner that noise mitigation may be installed and removed without disturbing the site or landscaping.

5. The applicant shall receive a "Notice to Proceed" from the Department of Community and Economic Development. Written proof that all of the conditions precedent have been satisfied shall be required prior to receiving this notice.

Conditions:

1. The approved traffic route for this permit is Interstate 25 to Highway 7, Highway 7 to the site access. The site access is located approximately 2,100 feet east from the intersection of Highway 7 and Colorado Boulevard. This route is depicted in the site plan submitted with this application. All traffic activities associated with this site shall utilize the approved traffic route and any modification shall require an amendment to the AUSR permit.
2. Great Western intends to transport oil and/or condensate from the B-Farms pad via pipeline, as long as the following is true: a gathering pipeline by a third party company is approved and constructed; a contract between Great Western and such third-party pipeline company is negotiated and executed; a technologically and economically feasible route to install a pipeline from the B-Farms pad to such gathering pipeline is identified, and the rights-of-way or other property rights necessary or advisable to construct a connecting pipeline system are acquired. Circumstances resulting in alternative methods of product transportation will be communicated to the County.
3. The applicant has submitted a landscaping and screening plan for the site, which has been reviewed and approved by the Community & Economic Development Department staff. Screening of the site shall be provided through a combination of fencing and landscape materials. This plan shall serve as the interim restoration plan and it shall be implemented by the applicant within 90 days of completion of the construction of the final well, if all thirty-six (36) approved wells are drilled and completed at the same time. If applicant staggers well completion (i.e., completes a lesser number of wells initially with plans to complete the remaining wells at a future date), then the interim restoration plan shall be implemented within 90 days of completion of the initial set of wells.
4. Maintenance of required landscaping and fencing shall be in compliance with the Adams County Development Standards and Regulations at all times.
5. As referenced in 8.(c.) of the Great Western Oil and Gas/Adams County MOU the applicant agrees to conduct a baseline test of any registered water well requested by the owner, on a one-time basis, if such well is within a ½ mile radius of the new oil and gas facility.
6. The access road to this site shall be outfitted with a vehicle tracking pad.

7. Per Section 14 of the executed MOU, fresh water as referenced in the COGCC's rules and Regulations, or another source as approved by the County on a case by case basis, may be applied to roads and land surfaces for purpose of dust mitigation. Absolutely no other liquid or substance generated by the production of the operator's facility, including, but not limited to, exploration and production waste (as defined by the COGCC) or any other application of liquids that would have negative impact to natural resources, shall be permitted to be applied to roads and land surfaces. Noise levels during the construction, drilling, completions, and production life-cycles shall not exceed levels established under COGCC 802.
8. Financial assurance shall meet or exceed the requirements of COGCC 700 Series Rules Financial Assurance and Oil and Gas Conservation and Environmental Response Fund.
9. A closed loop system will be used, as depicted in the permit application.
10. Per COGCC Rule 604.c. Overflow containment facilities shall be constructed around crude oil, condensate, and produced water storage tanks and shall enclose an area sufficient to contain and provide secondary containment for one-hundred fifty percent (150%) of the largest single tank. Berms or other secondary containment devices shall be sufficiently impervious to contain any spilled or release material.
11. Per Section 5 of the executed MOU, in an effort to reduce truck traffic, where feasible, the Operator will identify a water source lawfully available for industrial use, including oil and gas development, close to the facility location, to be utilized by operator and its suppliers. Operator will comply with the Colorado Department of Public Health and Environment requirements and Tri-County Health Department (TCHD) regulations concerning water quality. With respect to wastewater treatment, Operator agrees to comply with TCHD's Regulations NO O-14, On-site Wastewater Treatment Systems, as adopted or modified. The Operator agrees to contact TCHD in a timely manner to arrange for the processing of appropriate application matters and required inspections.
12. Per COGCC Section 604.c (4) B. IV. Zero Flaring or venting of gas upon completion of flowback, excepting upset or emergency, or with prior written approval from the COGCC Director for necessary maintenance operations.
 - a. The applicant shall provide a copy of written COGCC Director approval to the CEDD Director within 24 hours of flaring operations and/or approval, whichever occurs first.
13. If requested by the surface owner, or practicable for site security, the fence shall contain a gate and the gate shall remain closed and locked when the well pad and associated facilities are not in use.
 - a. The local fire district shall have access to ALL gate key(s)/combination(s) at all times for use in case of emergency.
 - b. Adams County oil & gas inspector shall have access to ALL gate key(s)/combination(s) at all times for use in case of emergency.

14. Applicant is required to receive an approved waiver of responsibility/completion of reclamation from Adams County upon abandonment and reclamation of well pad and associated facilities.
15. Well pad, associated facilities, and access road shall be free of any county and state identified noxious weeds throughout the drilling, completion and production portions of operations.
16. A tabletop exercise pertaining to the Emergency Response Plan will be required. This may be requested by the County's Local Government Designee, Emergency Manager, Local Emergency Planning Commission, Sherriff's Office, site-specific Fire District, or Transportation Department.
17. All representations and commitments of the applicant made during the AUSR process are incorporated herein as conditions of approval.

CITIZEN COMMENTS

Of the 90 referral notices sent to property owners within one half mile of the proposed facility, five citizen comments were received and they were all in opposition of the proposal. The concerns included environmental, health, safety, home prices, traffic, and noise. The application and Request for Comments were also posted on the Adams County website for the review of the general public.

Referral Notifications Sent	Referral Comments Received
90	5

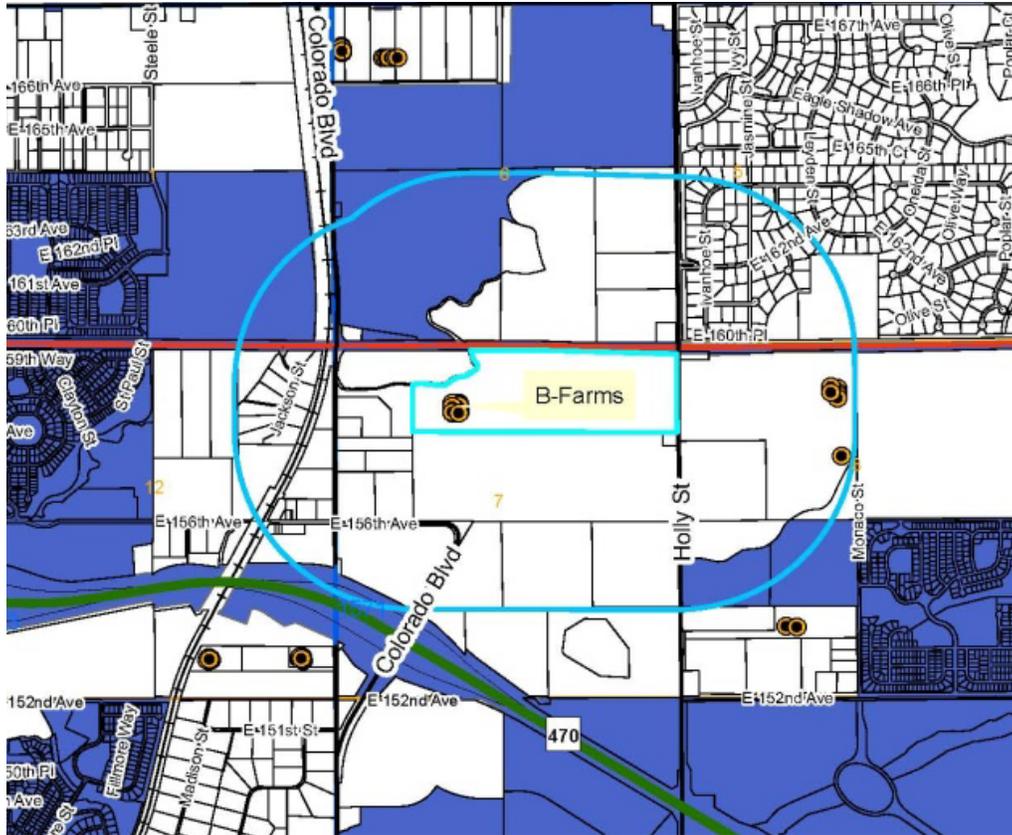


Figure 1. Map showing the 1/2 mile mailed referral radius from the parcel boundary.

REFERRAL AGENCY COMMENTS

Responding with Concerns:

City of Thornton
 Tri-County Health Department
 Colorado Department of Public Health and Environment

Notified but not Responding / Considered a Favorable Response:

North Metro Fire Rescue District
 Adams County Sheriff's Office

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- 3.2 Referral Comments (CDPHE)
- 3.3 Referral Comments (City of Thornton)
- 3.4 Referral Comments (Tri-County Health Department)

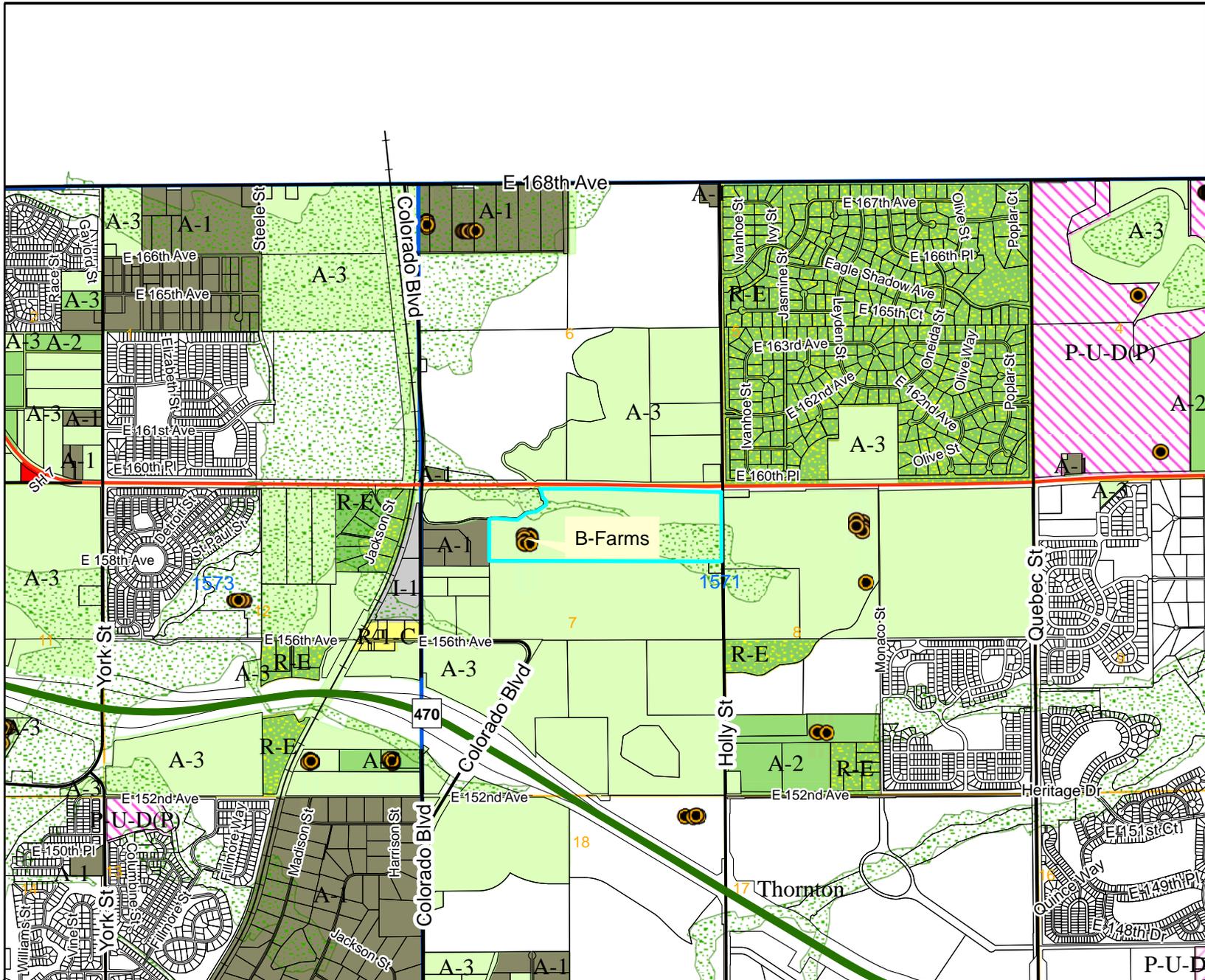
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EXHIBIT 1.1
ZONING MAP



LEGEND

-  Special Zoning Conditions
-  Section Numbers
-  Railroad
-  Major Water
-  Zoning Line
-  Sections
- Zoning Districts**
-  A-1
-  A-2
-  A-3
-  R-E
-  R-1-A
-  R-1-C
-  R-2
-  R-3
-  R-4
-  M-H
-  C-0
-  C-1
-  C-2
-  C-3
-  C-4
-  C-5
-  I-1
-  I-2
-  I-3
-  CO
-  PL
-  AV
-  DIA
-  P-U-D
-  P-U-D(P)
-  Airport Noise Overlay

Zoning Map

B- Farms

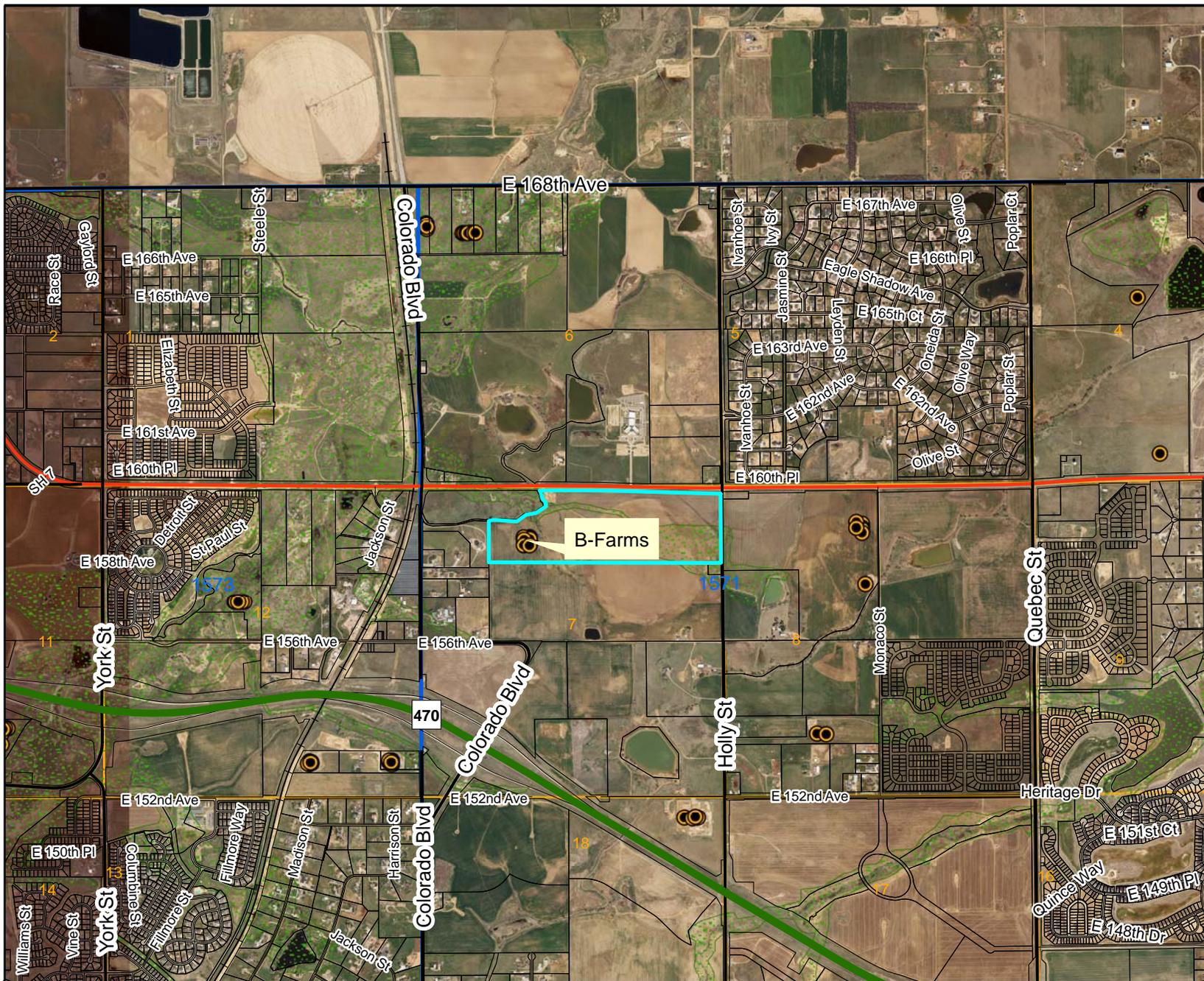


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EXHIBIT 1.2
AERIAL MAP



LEGEND

- ★ Special Zoning Conditions
- 3 Section Numbers
- Railroad
- Major Water
- Zoning Line
- Sections
- Zoning Districts**
- A-1
- A-2
- A-3
- R-E
- R-1-A
- R-1-C
- R-2
- R-3
- R-4
- M-H
- C-0
- C-1
- C-2
- C-3
- C-4
- C-5
- I-1
- I-2
- I-3
- CO
- PL
- AV
- DIA
- P-U-D
- P-U-D(P)
- Airport Noise Overlay

Aerial Map

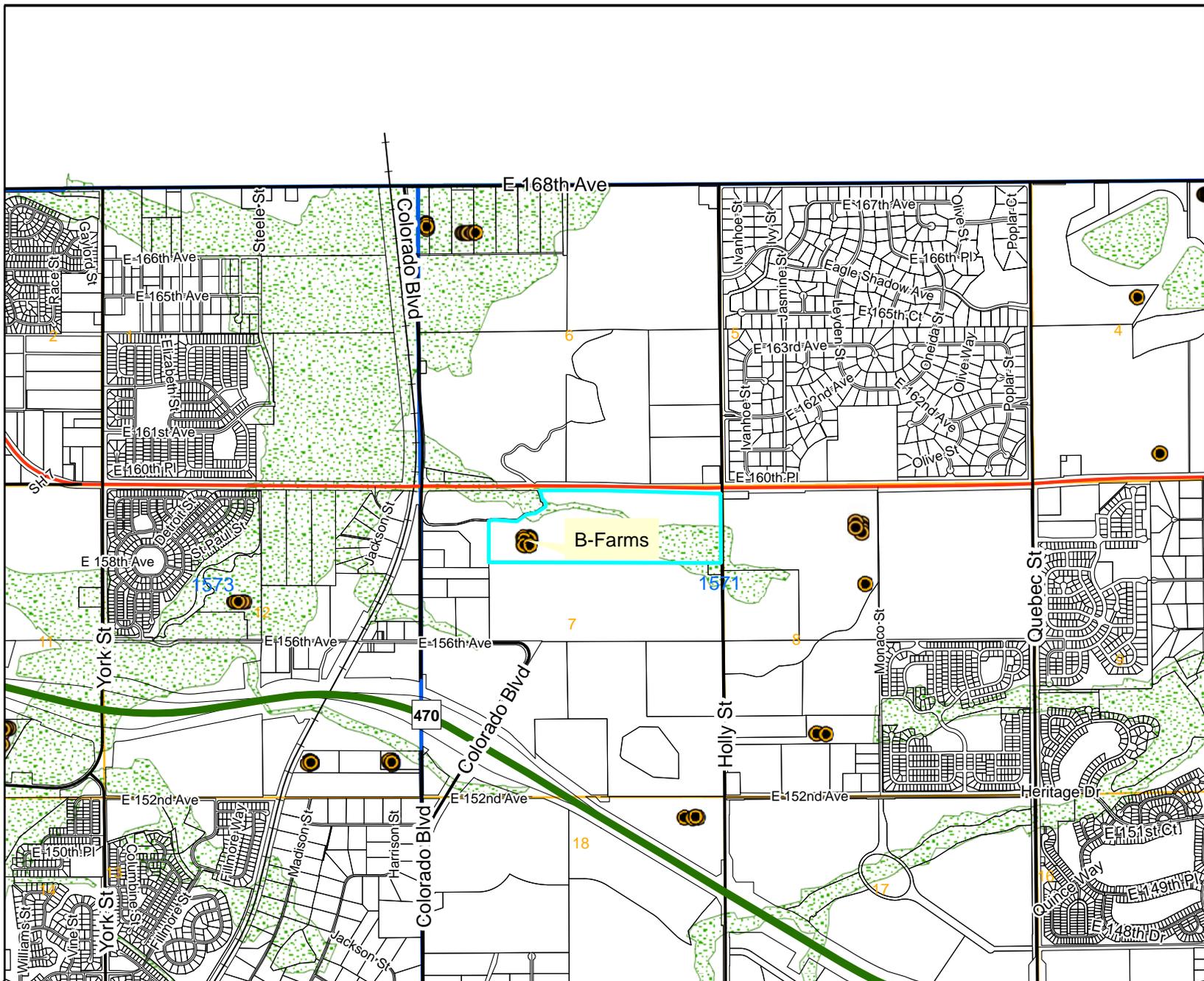
B- Farms



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EXHIBIT 1.3
SIMPLE MAP



LEGEND

-  Special Zoning Conditions
-  Section Numbers
-  Railroad
-  Major Water
-  Zoning Line
-  Sections
- Zoning Districts**
-  A-1
-  A-2
-  A-3
-  R-E
-  R-1-A
-  R-1-C
-  R-2
-  R-3
-  R-4
-  M-H
-  C-0
-  C-1
-  C-2
-  C-3
-  C-4
-  C-5
-  I-1
-  I-2
-  I-3
-  CO
-  PL
-  AV
-  DIA
-  P-U-D
-  P-U-D(P)
-  Airport Noise Overlay

Simple Map

B- Farms

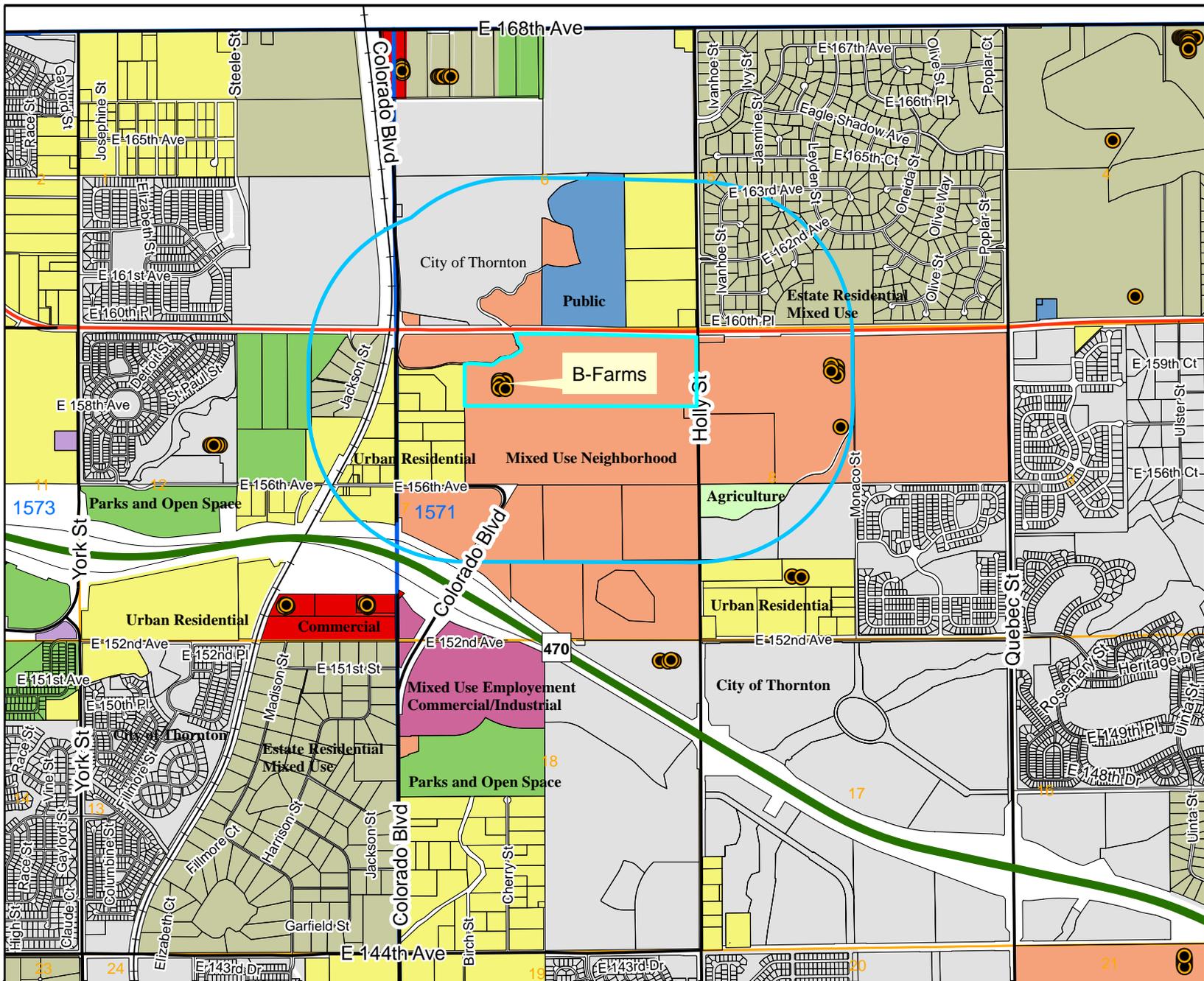


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EXHIBIT 1.4
COMPREHENSIVE PLAN MAP



LEGEND

- Special Zoning Conditions
- Section Numbers
- Railroad
- Major Water
- Zoning Line
- Sections

Zoning Districts

- A-1
- A-2
- A-3
- R-E
- R-1-A
- R-1-C
- R-2
- R-3
- R-4
- M-H
- C-0
- C-1
- C-2
- C-3
- C-4
- C-5
- I-1
- I-2
- I-3
- CO
- PL
- AV
- DIA
- P-U-D
- P-U-D(P)
- Airport Noise Overlay

**B-Farm
Comprehensive Plan Map**



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EXHIBIT 2.1
APPLICANT WRITTEN EXPLANATION

WRITTEN EXPLANATION

The proposed project consists of the construction of one (1) well pad with up to thirty-six (36) wells and one (1) access road for an oil and gas location to be operated by Great Western Oil and Gas. Great Western Oil and Gas does not intend to drill all (36) wells consecutively. The drilling schedule is subject to change due to economic conditions, business development priorities and equipment availability.

COMPATIBILITY/LAND USE IMPACTS

The location of this pad is consistent with the surface owner's preference and was agreed upon per the Surface Use Agreement. The surface owner has an irrigated crop circle in the NE quarter of this section therefore placement in the NW quarter of this section is optimal to reduce the impacts to their farming operations. There is an irrigated ditch that runs along the North and East boundaries of the proposed pad location, along with an existing wetlands and FEMA 100 year floodplain to the NE, these factors act as restrictions to shifting this location to the North. The future location of Colorado Blvd is planned to be along the west side of Lot 1, just to the west of the surface owners irrigated crop circle and east of this proposed pad location. The nearest building unit is located 567' to the NW of the production facilities and 702' to the west of the nearest well. A berm has been planned along the west side of the pad to mitigate nuisances such as light, dust, noise and odor for the building unit owners to the west.

SITE PREPARATION (30 Days)

The proposed drill site will be 11.769 acres in size which will be reclaimed to 5.926 acres once all wells are done drilling and completed. Construction of this site includes upgrading the existing access road and leveling the site. A closed loop fluids system will be used while drilling; so, no drilling pits will be used. The tank battery and wellhead access road will be constructed of a 6" layer of gravel compacted to minimum density of 95% and will be graded to provide drainage from the roadway surface. Any grading will have all topsoil horizons segregated per Colorado Oil & Gas Conservation Commission (COGCC) regulations to facilitate proper backfilling and reclamation/revegetation.

EROSION AND DRAINAGE CONTROL

Culverts for cross-drainage will be installed as necessary and in conjunction with consultations with surface owner. Proper storm-water controls will be installed around the tank battery and drilling pad during construction. The wellhead access road will be crowned, ditched and graveled, and culverts for cross drainage will be installed as noted above. The operator will take steps to insure that access to the wellheads is maintained in all seasons. Storm-water controls will also be installed around the spoil piles to prevent sediment migration.

DRILLING PHASE (Approximately 6 days per well)

After site preparation, drilling rig equipment is transported to location and rigged up. Drilling operations are conducted 24 hours a day until completed. The surface hole is drilled to at least 1700 ft using fresh water and surface casing is run and cemented back to ground level to protect all fresh water zones. Surface casing setting depth and construction is approved by the Colorado Oil & Gas Conservation Commission and complies with COGCC rules and regulations. Well control equipment is installed and tested and drilling of the main hole is then commenced. The rig

uses a closed-loop pit-less drilling system. The average total measured depth for the proposed wells is 18,200 ft, (vertical depth is approx. 7,900 ft.) depending on the directional reach and the formation being targeted. Upon reaching total depth production casing is run to total depth and cemented to isolate the oil and gas productive intervals from communication with shallower formations.

Water used in drilling and completion of the wells will be obtained from a commercial water hauling contractor from a source approved by both COGCC and the State Engineer's office.

COMPLETION PHASE

The completion phase begins after the drilling equipment is transported off the location. Completion operations are conducted intermittently over a period of several weeks. Completion Operations will be run 24 hours and last approximately 12 days per well. Prior to beginning Completion activities, the site is bladed and leveled to accommodate the completion rig, anchors are set for the completion rig, and drilling mud is removed from the pits. Additional operations including cementing, drilling and logging may occur as circumstances require. The Niobrara or Codell formations are perforated through the casing and are hydraulically fractured. During this form of stimulation water is pumped at high rates and pressures which hydraulically fractures the formation. Sand is then pumped into the formation to allow oil and gas to flow freely from the formation into the well bore. The equipment will consist of multiple tanks for water storage, pressure pumps, blending and bulk material trucks with other necessary equipment. Hydraulic fracturing will take about 7 days per well and preparing for the procedure requires up to three weeks to move in necessary equipment and schedule services. After fracturing is completed the mobile equipment is removed, excluding tanks that are used to retain the water that is produced during flowback and testing operations. All water is hauled to approved disposal sites. The flowback tanks will remain on location until the well is rerouted through standard production equipment.

RESTORATION / RECLAMATION

Interim reclamation will be conducted under company supervision per COGCC regulations after all planned wells are drilled. During drilling operations, all excess drilling mud and cuttings will be removed from the location and will be trucked offsite to an approved land farming site or to an approved commercial disposal facility, per COGCC regulations. The pad will be backfilled with soils in the reverse order removed and capped with the separated topsoil. Sub soils will be mechanically compacted while backfilling if necessary.

PRODUCTION PHASE

Production facilities will comply with Adams County and COGCC regulations. The standard production equipment to be installed on the wellhead pad is a Plunger Lift Lubricator on each well and an Automation box. The separators and tanks must be located 75' from each other and the wellhead, per COGCC regulations.

The production facility pad will be located to the South of the proposed well pad. Thirty Six (36) low profile 533 bbls (16' tall) steel oil tanks, six (6) low profile 533 bbls (16' tall) fiberglass water tanks, thirty-six (36) 3-phase separators, six (6) horizontal heater treaters (12' tall), two (2) Horizontal Free Water Knockout (12' tall), three (3) Vapor Recovery Towers (32' tall), twelve

(12) ECDs (25' tall), three (3) vertical gas line scrubbers (12' tall), two (2) vapor recovery units, two (2) gas sales wellhead compressors, two (2) custody transfer gas meter per the attached facility detail site plan. A berm will be constructed around the oil and water tanks to hold a minimum 110% of the capacity of the largest tank located within the berm.

Within thirty days after completion of operations, Great Western shall provide to the Town "as built" drawings showing all facilities, pipelines, flow lines and gathering lines installed to service the proposed wells. Building permits will be obtained for permanent above-ground structures. A "pumper/lease operator" (Great Western employee or contractor), will monitor the well every day. The pumper/lease operator reports the tank measurements of the oil, gas sales and pressure readings and performs normal maintenance duties. This production information is compiled and submitted to the Colorado Oil & Gas Commission on a monthly basis. Pumper traffic will be light after the initial 120 days of production after each drilling rig visit. During the initial 120 days there will be a continuous operator on site. Water trucks will be on site to haul produced water. The frequency will be based on production rates. Trucks haul 130 bbls at a time. Initially there will be trucks through the site continuously. Oil trucks will be on site to haul oil off the site. The frequency will be based on production rates. The trucks haul between 180-250 bbls at a time. Initially they will be on site continuously.

If an oil line is installed oil will be pipelined out and only trucked if the pipeline is down.

VISUAL & NOISE MITIGATION

Pursuant to COGCC Rule 804, the tank battery shall be painted in uniform, non-reflective, earth tones selected after consultation with the surface owner. This site was chosen in cooperation with the surface owner in accordance with future plans, an earthen berm is being placed on the west side of the pad to reduce the visual and noise impacts to the adjacent homeowners located to the west of the pad. In addition to the berm installation sound walls will be utilized on the north, west and east sides of the pad on an as needed basis based on a baseline noise survey.

An Ambient Sound Study will be conducted no sooner than (3) weeks prior to the construction of the location to account for any new sounds not associated with this oil and gas location in order to get the most accurate baseline noise survey and recommendations for noise mitigation.

LIGHT MITIGATION

Light sources will be directed downwards, and away from occupied structures where possible. Once the drilling and completion rigs leave the site, there will be no permanently installed lighting on site.

LANDSCAPING

The berm to the west of the berm will be farmed by the Surface Owner initially. Upon additional planned improvement of the surrounding lands landscaping will be installed. A plan has been provided with plants and landscaping materials.

FENCING

Great Western will comply with Colorado Oil and Gas Conservation Commission (COGCC) rule 604.c(2)M At a minimum GWOC will install appropriate fencing to restrict access by any unauthorized persons. This fencing may vary depending on site-specific situations. Chain-link

fencing with slat covering will be installed on the North side of the pad to break the light of sight from HWY 7.

WEED CONTROL

The site will be maintained to prevent accumulation of trash and noxious weeds. Great Western will comply with the Colorado Oil and Gas Conservation Commission (COGCC) rules 603g, 1003e1, 1003f, 1004c2 regarding weed control. All weeds, noxious or otherwise, will be prevented from growing or will be removed from the tank battery site, access road and wellhead pad. Weed spraying by a licensed applicator will be conducted annually, and any fugitive weeds will be removed manually.

ROAD MAINTENANCE

Access roads will be bladed or “dragged” to minimize ruts following wet weather. Fugitive dust is not expected to be a problem as disturbed areas will be either reseeded or graveled. GWOC will work with the county/Town road department to ensure any damage caused by GWOC activities is properly repaired.

SIGNS

Signs required by COGCC will be maintained in good, readable condition.

AIR POLLUTION MITIGATION

All drilling, well completion and production activities will be in compliance with the permit and control provisions of the Colorado Air Quality Control Program, Title 25, Article 7, C.R.S.

ENDANGERED SPECIES

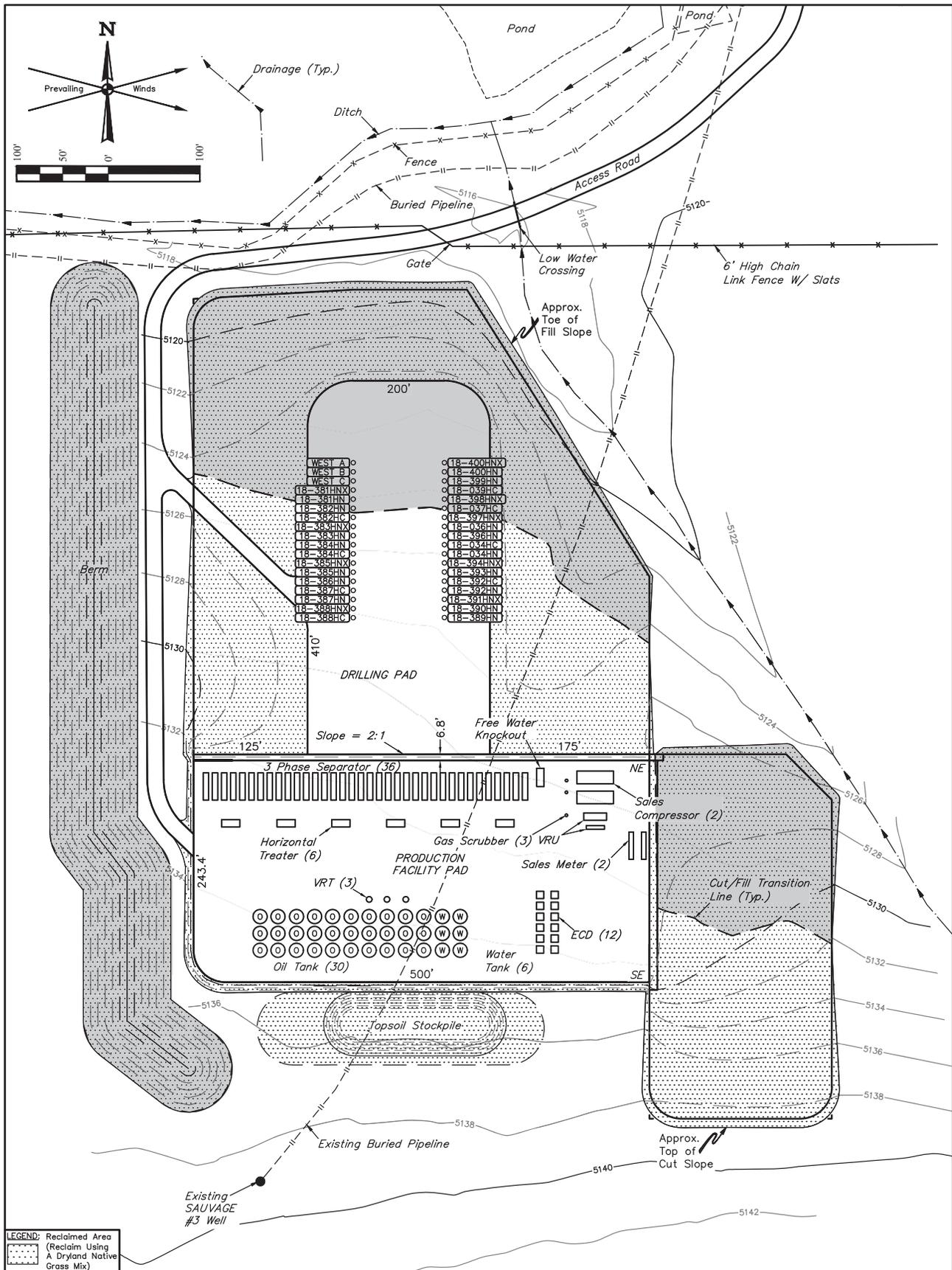
The site has been continuously maintained as cropland and as such is not a habitat for Preble’s meadow jumping mouse or other endangered species, and the operator will take all reasonable precautions to protect same if encountered.

ABANDONMENT

At the time that the well becomes permanently sub-economic to operate Great Western will engage the services of a plugging rig to remove production equipment from the wellbore and plug the productive zones with a combination of bridge plugs and cement plugs in accordance with Section 319 of the rules and regulations promulgated by the Colorado Oil & Gas Conservation Commission. After the well has been plugged, the surface separator and tanks will be removed. Flow lines will be filled with water and capped in accordance with Section 1103 of the COGCC regulations. Surface restoration will involve removal of any above-ground casing and installation of required markers that will not interfere with subsequent surface use.

After all production equipment is removed, the surface will be restored to the original grade in a matter compatible with the then-existing surface usage.

EXHIBIT 2.2
APPLICANT SITE PLAN



LEGEND: Reclaimed Area (Reclaim Using A Dryland Native Grass Mix)

APPROXIMATE UN-RECLAIMED ACREAGE = ±5.850 ACRES
 APPROXIMATE RECLAIMED ACREAGE = ±8.142 ACRES
 TOTAL ACREAGE = ±13.992 ACRES

Drilling Schedule:

- Proposed drilling schedule from August 2017 through September 2017.
- Proposed completion schedule October 2017.

BASIS OF BEARINGS
 BASIS OF BEARINGS IS A G.P.S. OBSERVATION
BASIS OF ELEVATION
 BENCHMARK JR 53 5026 LOCATED IN THE SW 1/4 SE 1/4 OF SECTION 18, T1N, R68W, 6th P.M. TAKEN FROM 1988 PUBLISHED DATUM BY THE UNITED STATES DEPARTMENT OF THE INTERIOR, GEOLOGICAL SURVEY AS BEING 5028 FEET.

REV: 1 06-15-17 K.B. (LOWER PRODUCTION PAD & ADD BERM)

ADMINISTRATIVE USE by SPECIAL REVIEW
 for
GREAT WESTERN OPERATING COMPANY
 B-FARM LD PAD
 NE 1/4 NW 1/4, SECTION 7, T1S, R67W, 6th P.M.
 ADAMS COUNTY, COLORADO

Sheet 4 of 5



UELS, LLC
 Corporate Office * 85 South 200 East
 Vernal, UT 84078 * (435) 789-1017

SURVEYED BY	D.N., G.W.	03-24-16	SCALE
DRAWN BY	K.B.	12-02-16	1" = 100'

PRODUCTION PLAN

EXHIBIT 3.1
REFERRAL COMMENTS (Planning)

From: Chris LaRue
Sent: Wednesday, August 09, 2017 4:38 PM
To: Christopher LaMere
Subject: USR2017-00004

Chris:

See below. The landscaping standards look like they would support a 4:1 slope of a berm. The landscaping looks pretty good. I wondered if they discussed this with the residents to the west?

The following grading standard shall apply to all new landscaping and buffering areas:

<i>Landscaping</i>	<i>Maximum Slope</i>	<i>Minimum Slope</i>
Lawn and grassed areas	4:1	100:1
Berms and Mounds		
Grassed	4:1	20:1
Non-Maintenance	2:1	N/A



Christopher C. LaRue

Senior Planner, *Community & Economic Development Department*

ADAMS COUNTY, COLORADO

4430 South Adams County Parkway, W2000A

Brighton, CO 80601

o: 720.523.6858 | clarue@adcogov.org

www.adcogov.org

EXHIBIT 3.2
REFERRAL COMMENTS (CDPHE)



Dedicated to protecting and improving the health and environment of the people of Colorado

July 28, 2017

Christopher LeMere, Oil and Gas Liaison
Community and Economic Development Department
4430 South Adams County Parkway, Suite W2000
Brighton, CO 80601-8204

Re: Case No. USR2017-00004

Dear Mr. LeMere,

The Colorado Department of Public Health and Environment (Department) has the following comments on Case No. USR2017-00004 the Great Western B-Farm Well Pad. The Department reviewed the application documents submitted to Adams County and Colorado Oil Gas Conservation Commission as well as visiting the location to consider methods to reduce the impacts to the surrounding residents. Listed below are four recommendations for the Great Western B-Farm project. They include

- Relocating the access road;
- Emission control technology for tank servicing and unloading;
- Locating all equipment within the sound walls; and
- Supporting the construction a berm.

[Relocating the access road](#)

Great Western has proposed construction of an access road on the west side of the well pad in close proximity to residential structures. This situation creates a long-term nuisance to those residents and does not appear to be necessary. The drawings submitted with the application indicate a drainage ditch on the east side of the well pad; however, upon closer inspection of the site conditions the drainage ditch is difficult to see and appears not to be used. The Department recommends that the access road be located to the east side of the well pad to reduce the nuisance conditions from ongoing truck traffic and if the drainage ditch is necessary, construct it alongside of the road. Controlling emissions from the well site will also reduce the impacts from this oil and gas site.

[Emission control technology for tank servicing and unloading](#)

In Colorado, oil and gas companies are beginning to use emission control technology to minimize emissions during tank servicing and unloading activities. These practices are simply good neighbor policies and can have a positive impact when locating an oil and gas facility within the ozone non-attainment area. The Great Western B-Farm well pad includes more than thirty storage tanks. The use of emission control

technology will reduce emissions during tank servicing and unloading over the life of the wells. The Department recommends that Great Western use this technology at the B-Farm wellsite. Noise from oil and gas operations is another issue for nearby residents.

Locating all equipment within the sound walls

Sound walls are proposed for this project and the Department recommends that all equipment capable of generating noise be located within the sound walls to reduce noise and minimize impacts to surrounding residents. Visual mitigations are also important for oil and gas facilities that may be operated for thirty years or more.

Supporting construction of a berm

Great Western is proposing construction of a berm on the west side of the well pad for visual mitigation. The Department supports this practice and recommends the construction of this berm prior to any drilling and completion activities.

Please contact Kent Kuster at 303-692-3662 with any questions.

Sincerely,

Kent Kuster

Kent Kuster
Environmental Specialist
Colorado Department of Public Health and Environment



EXHIBIT 3.3
REFERRAL COMMENTS (City of Thornton)

From: Grant Penland [Grant.Penland@cityofthornton.net]
Sent: Thursday, August 10, 2017 12:51 PM
To: Christopher LaMere
Subject: RE: Request for Comment - Great Western B-Farm

Chris-

Thank you for the opportunity to review the referenced application. Please accept the following comments regarding the B-Farm LD Pad Use by Special Review Permit (USR2017 00004). Based on the response to the comments below, the City of Thornton may have additional comments or request further information.

Site Mitigation:

The City of Thornton requests the opportunity to review a final/detailed landscape plan, including information regarding proposed planting (species, size, etc.), irrigation, fencing, screening and berms. The City also requests to review a lighting plan and believes that the plan should propose to eliminate any light trespass from the site.

Traffic Management:

The City of Thornton requests the opportunity to review a detailed traffic plan/study for the proposed well site, including information regarding the quantity and type of traffic to/from the site. Based upon the provided access road map, the City does not find the operator's desired access route acceptable, as it passes a school located at 144th Avenue and Washington Street. The operator should be required to utilize SH-7 for access to I-25 instead of Colorado to 144th Avenue to I-25. Additionally, the 144th Avenue and Colorado Boulevard intersection is too small to accommodate frequent turning movements by heavy vehicles. The City is also concerned with material tracking onto SH-7 from the unpaved, existing access road. The York Street/152nd Parkway/Washington Street route to 144th Avenue is also prohibited for the same reason. The Colorado Department of Transportation (CDOT) will need to review proposed access to SH-7, and an access permit may be needed from CDOT if the operator desires modification of the existing access. There is no eastbound left turn lane or westbound right turn lane at the existing access on SH-7. Please be advised that CDOT might take issue with this condition if the operator desires to bring heavy vehicles to the site from the east on SH-7.

Emergency Response:

The City of Thornton requests the opportunity to review an emergency response plan for the proposed well pad. The City also requests that the operator engage with the Thornton Fire Department and North Metro Fire Rescue District regarding emergency response planning. Additionally, the City requests initial and ongoing response training with the operator on the site. Furthermore, the City requests that no flaring occur at this site, but if flaring does occur that the City of Thornton Emergency Communications Center be notified.

Sincerely,

-Grant

Grant Penland, AICP | Current Planning Manager | City of Thornton
9500 Civic Center Drive, Thornton, CO 80229
V: 303.538.7218 | Email: grant.penland@cityofthornton.net

From: Christopher LaMere [<mailto:CLaMere@adcogov.org>]

Sent: Thursday, July 20, 2017 11:30 AM

To: Robb Kolstad <Robb.Kolstad@cityofthornton.net>; Grant Penland <Grant.Penland@cityofthornton.net>; brandon.marette@state.co.us; Adam Kraich <AKraich@adcogov.org>; Chris LaRue <CLaRue@adcogov.org>; Aaron Clark

<AClark@adcogov.org>; Kuster - CDPHE, Kent <kent.kuster@state.co.us>; dgh920@mesanetworks.net; kmonti@sd27j.org; Pat Hamilton <pat.hamilton@adams12.org>; sbarwick@unitedpower.com; donna.l.george@xcelenergy.com; lbrotten@tchd.org

Subject: Request for Comment - Great Western B-Farm

Request for Comments

Case Name: Great Western Operating Company B-Farm LD Pad

Project Number: USR2017 00004

July 20, 2017

Adams County Community and Economic Development Department is requesting comments on the following request:

Request for a Use by Special Review Permit to allow thirty-six (36) horizontal well on one (1) well pad for the production of oil and gas.

This request is located at approximately southeast of Colorado Blvd. and Highway 7.

The Assessor's Parcel Number is 0157107000016.

Please forward any written comments on this application to the Department of Community and Economic Development at 4430 South Adams County Parkway, Suite W2000A Brighton, CO 80601 8216 by **August 10, 2017** so that your comments may be taken into consideration in the review of this case. Please send your response by way of e-mail to clamere@adcogov.org.

The complete Use by Special Review Permit application can be found at www.adcogov.org/planning/currentcases.

Additional Oil and Gas information can be found at www.adcogov.org/oil-and-gas-information.

Thank you for your review of this case.



Christopher LaMere

Oil & Gas Liaison, *Community & Economic Development Department*

ADAMS COUNTY, COLORADO

4430 South Adams County Parkway, 1st Floor, Suite W2000A

Brighton, CO 80601

o: 720.523.6891 | clamere@adcogov.org

www.adcogov.org

EXHIBIT 3.4
REFERRAL COMMENTS (TCH)



August 9, 2017

Christopher LaMere
Adams County Community and Economic Development Department
4430 S Adams County Parkway
1st Floor, Suite W2000
Brighton, CO 80601

RE: Great Western Operating Company B-Farm LD Pad, Southeast of Colorado
Boulevard and Highway 7, USR2017-00004
TCHD Case No. 4512

Dear Mr. LaMere:

Thank you for the opportunity to review and comment on the Use by Special Review for the 36 horizontal wells on 1 pad located at Colorado Boulevard and Highway 7. Tri-County Health Department (TCHD) staff has reviewed the application for compliance with applicable environmental and public health regulations and principles of healthy community design. After reviewing the application, TCHD has the following comments.

Domestic Wastewater Management

Proper wastewater management promotes effective and responsible water use, protects potable water from contaminants, and provides appropriate collection, treatment, and disposal of waste that protects public health and the environment. TCHD, as the local public health agency, plays a role in reviewing whether a new proposed land use has addressed the domestic water and wastewater needs and is the regulating agency for On-Site Wastewater Treatment Systems (OWTS). Because of the nature of oil and gas operations and the typical location of this land use, not in close proximity to existing wastewater facilities, many of the oil and gas sites utilize OWTS.

TCHD permits the use of OWTS including septic tanks and vault systems. If the site utilizes an OWTS or vault system for domestic wastewater, the applicant will need to obtain a Use Permit from TCHD. Please contact Mike Weakley at 720-200-1593 or mweakley@tchd.org.

Baseline Water Quality Testing

Water quality is unregulated in domestic and irrigation wells in Colorado and monitored in a limited manner for commercial wells. This means water quality testing is typically not required, and the water quality is often unknown. In general, TCHD supports baseline water quality testing to establish the existing water quality relative to the water well's permitted use and to identify water quality issues that should be known and addressed by the well's owner. Baseline water quality testing can also provide an understanding of pre-existing conditions should the water quality change in the future.

Baseline and subsequent water quality testing data can support a determination of whether water treatment may be needed to protect the health of well water users and the health of the environment.

Specific Recommendations for Water Wells within ½ mile:

TCHD believes that any owner of a well within one-half mile of the proposed oil and gas operation should have the opportunity to obtain a baseline water quality test prior to the change in land use. One-half mile is the area of influence established by the Colorado Oil and Gas Conservation Commission's Final Rule 609 Statewide Groundwater Baseline Sampling and Monitoring.

TCHD recommends the following for well permits and water rights holders located within one-half mile of the proposed oil and gas well as they are likely used or will be used for drinking water for humans or animals.

- That the County or applicant notify owners of the wells or groundwater rights owners of the proposed application;
- That the County refer well owners who want to test their wells to TCHD for guidance on recommended testing parameters, procedures for selection of qualified sampling professionals and laboratories, and sharing of data; and
- That the County refers well owners desiring guidance for wellhead protection to TCHD.

Water Supply for Use by Workers

Providing clean and safe water for use by workers for ware washing, food preparation, hand washing, and showering is important. The majority of foodborne illnesses can be traced to improper food handling procedures in home, retail, or office kitchens. Improper transport, storage, cross-connections, and backflow also pose dangers to potable water quality.

TCHD will need to review information regarding the source of water for workers as well as any proposed potable water system used by workers. If the drinking water is to be hauled, a public water system identification number for the water hauler must be provided to TCHD.

Potential Temporary Water Storage

Non-potable water is often used onsite at oil and gas sites. The storage tank should be marked with a sign indicating the water is non-potable. In addition, these very large water storage tanks have the potential to collapse if not properly constructed with appropriate quality controls. A collapse can result in significant damage to the environment, property, and individuals that may be nearby. TCHD recommends the applicant employ proper quality control techniques when constructing the water storage tank.

Above Ground Storage Tanks

Fuel is often stored onsite at oil and gas sites. All storage tanks must have a secondary containment area, a routine monitoring system to check for leaks, and best management practices implemented in order to prevent the release of contaminants into the soil and water supplies.

Emergency Response Plan/Spill Reporting

One of the most common environmental releases associated with oil and gas drilling operations is the inadvertent surface spill of chemicals, produced water, or flowback water. No Emergency Response Plan was available for review with the referral materials. The Emergency Response Plan should include response and notification procedures for responding to and effective strategies for minimizing the risk of hydrocarbon spills, hazardous chemical spills, and produced water spills. If a spill or incident were to occur, the emergency response to spills should be indicated in the Spill Prevention, Control, and Countermeasures Plan that is kept onsite.

Specific information related directly to a potential leak or spill from the domestic wastewater system should also be addressed. In the event there is a domestic wastewater spill or leak, TCHD should be contacted immediately.

Air Quality Permitting

Air pollutant emissions including flares are regulated by the Colorado Department of Public Health and Environment. Vapor recovery equipment should be used to control the release of vapors into the environment. The use of green completion technology is strongly encouraged at every site. If the site is to use multiple flares and combustors, the oil and gas industry permits should include a regulatory analysis determining the applicability of state and federal air quality permitting requirements and air pollution control regulations for the proposed emissions source(s). More information as well as all forms can be found online at <https://www.colorado.gov/pacific/cdphe/all-permits>.

Dust Control and Mitigation

TCHD encourages the applicant to follow best management practices for erosion control on the site, specifically to minimize excessive dust from land disturbance. This will help minimize the environmental impact resulting from any construction and land disturbance on the site. TCHD encourages any reclamation, including site pad minimization, and reseeding activities to occur as early as possible. This prevents erosion, helps control excessive weeds, and can provide some benefit to air quality.

Traffic Safety

Oil and gas production and monitoring wells involve significant truck traffic to and from a site during the construction and drilling process. TCHD commends the applicant for including traffic control in their best management practices and TCHD encourages the County to designate a primary traffic route for all construction traffic and deliveries. If the trucks servicing the site will be traveling on a local school bus route, we encourage the

Great Western B-Farm LD Pad
August 9, 2017
Page 4 of 4

County to work with the applicant to minimize traffic during hours when school buses are in operation.

Please feel free to contact me at 720-200-1575 or kboyer@tchd.org if you have any questions on TCHD's comments.

Sincerely,

A handwritten signature in cursive script, appearing to read 'K Boyer', followed by a horizontal line.

Kathy Boyer, REHS
Environmental Health Specialist III

cc: Sheila Lynch, Monte Deatrich, TCHD

EXHIBIT 4.1
CITIZEN COMMENTS

From: Kendra Tempest [ktempest1@gmail.com]
Sent: Tuesday, August 01, 2017 12:09 PM
To: Christopher LaMere
Subject: Comments on Project # USR2017-00004

Dear Christopher,

Thank you for giving us the opportunity to comment on your Great Western Operating Company B-Farm LD Pad project.

We are owners in the Eagle Shadow Subdivision at 5725 Eagle Shadow Avenue.

Our comments are as follows:

1. We prefer to not have another well pad constructed so close to the existing large production area already on Highway 7 at Monaco. We moved to the country to enjoy wide open spaces, uninterrupted farm land, and to escape the noise and lights that this well pad will produce.
2. Also, we feel that if the well pad goes thru, the entrance/exit needs to be off Colorado Boulevard to the south and NOT Highway 7. The highway is too busy at that location and with speeds at 60 plus mph it will be too dangerous for all traffic if big equipment vehicles are entering and exiting off/on Highway 7.

Thank you for the opportunity to comment.

Kendra and Ron Tempest
5725 Eagle Shadow Avenue

Comment 1

From: Rob Migliore [robmigliore@gmail.com]
Sent: Monday, August 07, 2017 9:21 PM
To: Christopher LaMere
Cc: house@themiglioeres.com
Subject: Comments on the B-Farm LD oil well site

DATE: August 7th, 2017

TO: Christopher LaMere clamere@adcogov.org
RE: http://www.adcogov.org/sites/default/files/DOCS-%235615439-v1-B-FARM_PAD_AUSR_APPLICATION_REVISED_20170713_PDF.PDF
and http://www.adcogov.org/sites/default/files/Request%20for%20Comments_0.pdf

As a nearby resident in Adams County and the City of Thornton, please find enclosed my concerns about the proposed B-Farm LD oil well site planned for SE of Highway 7 and Colorado Boulevard.

Pubic Health & Environmental Safety Concerns

The 36 well proposal includes for a high density of onsite storage of 36 crude oil and 6 waste water tanks holding 23,000 gallons each, or almost a **million** gallons of hazardous material, adjacent to a 100-year floodplain (or likely in a 500-year floodplain encountered more frequently with climate change), within a mile radius of 500+ homes. The berm is said to only account for 110% of the largest *tank* so it would overflow in the case of multiple tank failures. This goes against best management practices which pipelines crude material away to limit potential for spills, VOCs emissions, and odors from a large industrial complex in the midst of a growing urban area. The proposal then goes on to postulate about the possibility of a pipeline being installed, but does not confirm if it is in plan. This is especially critical as the density of wells in this area of Adams County is projected to grow to an alarming level of 200 within a 6 mile by 4 mile area, or over 100 within a 2 mile by 2 mile area, a density which the CDPHE admits further evaluation for public health & safety is needed. A CDPHE study should be conducted to assess the impact to resident's health due to high density of wells in the area. Furthermore, if the project is approved, it must be conditional on the use of a pipeline instead of so much on site storage in consideration of public health and environmental safety concerns.

Traffic & Safety Concerns

The setup of the site and drilling of 36 wells will require >5,400 truck trips across a two-lane 55 MPH county road not designed for such frequent heavy traffic (some days will average more than 100 trips). The access to the site does not have turn lanes or adequate acceleration / deceleration lanes, further contributing to genuine safety concerns and traffic congestion.

The included traffic management plan does not indicate the expected quantity of ongoing production truck trips will be generated. The application is unclear whether a pipeline will be used. If it is not used, thousands of unnecessary, dangerous trips will be incurred.

Furthermore, with all of the hundreds of other planned well sites in the area of NW Adams County, a holistic traffic study and plan must be conducted to account for the cumulative effects, such as general public safety, traffic and premature wear of public infrastructure. If the project is approved, it must be conditional on the use of a pipeline instead of so much on site storage in consideration of traffic & safety concerns.

Project Duration Concerns

The application does not bound the timing for drilling all 36 wells. That leaves the impact to the residents from drilling operations as open ended. The approval of the project should be conditional on a timeframe of no longer than 6 months to complete the wells, with new approvals subject to current regulations required for additional drilling periods.

Conclusion

In conclusion, this large of a site is unprecedented in its proximity to more than 500 homes and thousands of residents. It creates many health, safety, traffic and aesthetic concerns that should be avoided rather than band-aided. This high impact project should be brought before the Adams County Board of Commissioners for a vote with public hearing via a Special Use Permit, rather than approved by a single individual per the brief AUSR process.

Should the project be approved, the residents request that a permanent sign be posted at the entrance to the site with a phone number to raise concerns with the operator.

Thanks for reviewing and addressing our concerns that affect so many Adams County and City of Thornton residents who have built their lives here and wish for the safe upbringing of their children.

The Migliore Family
Trailside, 156th & York

From: Mark Mellen [mmellen@me.com]
Sent: Wednesday, August 09, 2017 2:38 PM
To: Christopher LaMere
Cc: Mark Mellen
Subject: Comments RE: Request for a Use by Special Review Permit to allow thirty-six (36) horizontal well on one (1) well pad for the production of oil and gas.

As a nearby resident in Adams County and the City of Thornton, please find enclosed my concerns about the proposed B-Farm LD oil well site planned for SE of Highway 7 and Colorado Boulevard.

Pubic Health & Environmental Safety Concerns

The 36 well proposal includes for a high density of onsite storage of 36 crude oil and 6 waste water tanks holding 23,000 gallons each, or almost a **million** gallons of hazardous material, adjacent to a 100-year floodplain (or likely in a 500-year floodplain encountered more frequently with climate change), within a mile radius of 500+ homes (many more under construction now). The berm is said to only account for 110% of the largest *tank* so it would overflow in the case of multiple tank failures. This goes **against** best management practices which pipelines crude material away to limit potential for spills, VOCs emissions, and odors from a large industrial complex in the midst of a growing urban area. The proposal then goes on to postulate about the possibility of a pipeline being installed, but does not confirm if it is in plan. This is especially critical as the density of wells in this area of Adams County is projected to grow to an alarming level of 200 within a 6 mile by 4 mile area, or over 100 within a 2 mile by 2 mile area, a density which the CDPHE admits further evaluation for public health & safety is needed. A CDPHE study should be conducted to assess the impact to resident's health due to high density of wells in the area. Furthermore, if the project is approved, it must be conditional on the use of a pipeline instead of so much on site storage in consideration of public health and environmental safety concerns. **IDEALLY, ADAMS COUNTY COMES TO THEIR SENSES AND DOES NOT ALLOW SUCH A PROJECT BASED ON POOR PERFORMANCE OF O&G OPERATORS.**

Traffic & Safety Concerns

The setup of the site and drilling of 36 wells will require >5,400 truck trips across a two-lane 55 MPH county road not designed for such frequent heavy traffic (some days will average more than 100 trips). The access to the site does not have turn lanes or adequate acceleration / deceleration lanes, further contributing to genuine safety concerns and traffic congestion.

The included traffic management plan does not indicate the expected quantity of ongoing production truck trips will be generated. The application is unclear whether a pipeline will be used. If it is not used, thousands of unnecessary, dangerous trips will be incurred.

Furthermore, with all of the hundreds of other planned well sites in the area of NW Adams County, a holistic traffic study and plan must be conducted to account for the cumulative effects, such as general public safety, traffic and premature wear of public infrastructure. If the project is approved, it must be conditional on the use of a pipeline instead of so much on site storage in consideration of traffic & safety concerns.

Project Duration Concerns

The application does not bound the timing for drilling all 36 wells. That leaves the impact to the residents from drilling operations as open ended. The approval of the project should be conditional on a timeframe of no longer than 6 months to complete the wells, with new approvals subject to current regulations required for additional drilling periods.

Conclusion

In conclusion, this large of a site is unprecedented in its proximity to more than 500 homes and thousands of residents. It creates many health, safety, environmental, traffic and aesthetic concerns that should be avoided rather than band-aided. This high impact project should be brought before the Adams County Board of Commissioners for a vote with public hearing via a Special Use Permit, rather than approved by a single individual per the brief AUSR process.

Should the project be approved, the residents request that a permanent easily visible sign be posted at the entrance to the site with a phone number to raise concerns with the operator and police support to enforce the operator to comply with standards.

Thanks for reviewing and addressing our concerns that affect so many Adams County and City of Thornton residents who have built their lives here and wish for the safe upbringing of their children.

The Mellen Family

Trailside, 159th & York

Comment 3

From: Michael [mhernandez527@yahoo.com]
Sent: Wednesday, August 09, 2017 10:31 AM
To: Christopher LaMere
Subject: Re: RE: RE:

Sorry I had originally had the site in the subject line but somehow it was deleted. I'm referencing site

B-Farm LD oil well site planned for SE of Highway 7 and Colorado Boulevard

Case name: Great Western Operating Company B-Farm LD Pad

Project Number: USR2017-00004

On Aug 9, 2017, at 10:22, Christopher LaMere <CLaMere@adcogov.org> wrote:

Dear Michael,

If your comments are specific to a case please provide the case name or case number. If the required information is not provided your comments will not be included as part of the case review. Please feel free to call me with any questions at 720.523.6891.

Sincerely,

<Christopher LaMere

Oil & Gas Liaison, *Community & Economic Development Department*

ADAMS COUNTY, COLORADO

4430 South Adams County Parkway, 1st Floor, Suite W2000A

Brighton, CO 80601

o: 720.523.6891 | clamere@adcogov.org www.adcogov.org

From: Michael [<mailto:mhernandez527@yahoo.com>]

Sent: Wednesday, August 09, 2017 10:16 AM

To: Christopher LaMere

Subject: Re: RE:

<http://journals.brandonu.ca/jrcd/article/view/1181>

<http://www.sciencedirect.com/science/article/pii/S0264817214000609>:

<https://www.google.com/amp/kdvr.com/2017/01/26/report-28000-gallons-of-oil-gas-drilling-waste-water-gushed-from-well-near-hudson/amp/> Silver Creek elementary and my neighborhood is well within the range of 2 million square feet

<http://www.denverpost.com/2017/04/18/firestone-home-explosion-missing-persons/>

<http://onlinelibrary.wiley.com/doi/10.1890/110053/full>

<http://www.tandfonline.com/doi/abs/10.1080/10807039.2011.605662>

Thank you

On Aug 9, 2017, at 09:30, Christopher LaMere <CLaMere@adcogov.org> wrote:

Dear Hernandez Family,

Thank you for your comments, can you please provide reference for the case these comments are in reference for?

Thank you,

Christopher LaMere
Oil & Gas Liaison, Community & Economic Development Department
ADAMS COUNTY, COLORADO
4430 South Adams County Parkway, 1st Floor, Suite W2000A
Brighton, CO 80601
O: 720.523.6891 | clamere@adcogov.org
www.adcogov.org

-----Original Message-----

From: Michael [<mailto:mhernandez527@yahoo.com>]
Sent: Tuesday, August 08, 2017 10:20 PM
To: Christopher LaMere
Subject:

Concerns for this proposed site is very alarming. There are hundreds of homes around this site, thousands of people living around this site and an elementary school less than a mile from this site. Possibly for public exposure to chemicals, oil, heavy tanker trucks and contaminated water put everyone, especially the children living around this area, at huge health risks. The risks that this site puts on the the school is unfathomable. Why would you want to put innocent children at risk? With recent research showing more and more concrete casings failing over the years and water contamination increasing, the health of the residents of Adams county shouldn't be put on the line. As a native and Thornton resident I want to help preserve the natural beauty that is our city, county and state. Oil and gas sites take away from that beauty.

Thank you for listening to our concerns,

The Hernandez Family
Trailside community

Comment 4

From: Sharon [sharonandbob1@comcast.net]
Sent: Wednesday, August 09, 2017 4:40 PM
To: Christopher LaMere
Subject: well sites at Colorado Blvd ad Highway 7

We are writing this to ask Adams County not to issue a permit for the Assessor Parcel # 0157107000016. This property is close to residential areas and the access roads to this parcel of land, Highway 7 and Colorado Blvd. are heavily traveled and in need of repair right now, let alone with heavy machinery traveling them constantly. Highway 7, especially, cannot keep up with the traffic. The noise and light pollution coming from these wells will do nothing but harm the quality of life of those residents for a number of miles surrounding these wells. That is to say nothing of the pollution to our air and soil.

**Please do not issue a permit for
Assessor Parcel #015710700006
for any oil drilling!**

Bob and Sharon Huckins

5755 E 165th Pl.

Brighton, CO 80602

Eagle Shadow North

Comment 5

EXHIBIT 4.2
APPLICANT RESPONSES

**Adams County
Community and Economic Development Department
Development Review Comments**

Case Number: USR2017-00004

Case Name: Great Western B-Farm

Applicant: Great Western

Date Initiated: 08/15/17

Referral Comment No.	Mapped?	Reviewer Initials	County Comment	Applicant Response (date)
1	Yes	CL	Staff has reviewed comments and is evaluating how Conditions of Approval (COAs) may be used to mitigate impacts from sound and lights. Traffic and access has been approved by CDOT which is responsible for access to Highway 7.	<p>Thornton:</p> <ul style="list-style-type: none"> a. Included in application. b. Included in application. Route concern listed in Thornton's comments does not state the correct route. Please see application. c. Included in application. d. GW can meet with applicable Fire Dept. and go over equipment, liquids storage, and emergency response issues.
2	Yes	CL	Staff has reviewed comments and is evaluating how Conditionals of Approval (COAs) may be used to mitigate impacts.	<p>Tri-County Health:</p> <ul style="list-style-type: none"> a. NA b. GW can notify neighbors to contact Tri-County for baseline water testing. c. Commercial water suppliers will provide water for domestic uses onsite. d. Non-potable water storage can be marked as such. e. Secondary containment of all fuel storage is required by EPA and COGCC regulations. Daily monitoring of all fuel storage areas can be completed. f. Included in application. g. All State (COGCC, CDPHE) rules regarding emission sources, vapor recovery, flaring, and green completions will be followed. h. All State (COGCC, CDPHE) rules regarding dust control and erosion protections will be followed. Disturbed areas that will not be used again will be reclaimed per state regulations.

3	Yes	CL	Staff has reviewed comments and is evaluating how Conditions of Approval (COAs) may be used to mitigate impacts. Traffic and access has been evaluated and approved by CDOT which is responsible for access to Highway 7.	<p>CDPHE:</p> <ul style="list-style-type: none"> a. Access road is an existing access to an existing well production facility that is being upgraded. A CDOT access permit outlining the upgrade has been received. Road from this facility to proposed pad has been realigned to allow room for an earthen berm to mitigate sound and visual issues from neighbors to the west. b. Emission control technology for tank servicing and unloading will be utilized as per state regulations. c. All drilling and completions equipment will be within the proposed sound walls as per the application. d. Earthen berm on west side of location and access road has been agreed to.
4	Yes	CL	Staff has reviewed comments and is evaluating how Conditionals of Approval (COAs) may be used to mitigate impacts.	<p>General:</p> <ul style="list-style-type: none"> a. GW will abide by Adams County visual mitigation requirements and also consult with surface land owner regarding same.
5	Yes	CL	Staff has reviewed comments- noise and light impacts are of significant concern. Staff is evaluating how Conditions of Approval (COAs) may be use to mitigate impacts.	<p>GW will meet or exceed state requirements for noise and light issues to the neighbors of the B-Farms location. We have met with and had multiple conversations with the nearest neighbors, the Lombardis. The Lombardis requested GW to place an earthen berm between the location and their houses to the and west of the pad. GW has agreed to install the earthen berm, with the approval of the surface owner, as a Best Management Practice. This berm will be a significant cost to build and maintain. The berm will be in addition to the sound-absorbent walls we utilize on all locations that are near building units. The sound-absorbent walls are temporary to be utilized for drilling and completion activities only.</p>

Agency Referral Comments:

- 1) City of Thornton referral comments:

- a. Request a review of visual mitigation.
- b. Requests review of traffic plan, study and proposed route.
- c. Requests review of Emergency Response plan.
- d. Request that operator provides initial and ongoing emergency response training with city first responders.

2) Tri-County Health Comments:

- a. If the operator intends to use On-site Wastewater Treatment Systems, then permits will need to be obtained through Tri-County Health.
- b. Recommend notifying well or ground water rights owners be notified of the application for a oil & gas well pad. Those owners are referred to Tri-County Health for baseline testing of their water. Refer well owners to tri-county health for guidance on well head protection.
- c. Provide clean and safe water for use by workers for ware washing, food preparation, hand washing, and showering. Review of water source for workers will be required by Tri-County Health.
- d. Clearly mark with signage non-potable water stored/used on site.
- e. Secondary containment, routine monitoring systems and best management practices are required for onsite storage of fuel.
- f. Provide Tri-County Health the opportunity to review the emergency response plan.
- g. Vapor recovery equipment should be used to control the release of vapors into the environment. The use of green completion technology is strongly encouraged at every site. If the site is to use multiple flares and combustors, the oil and gas industry permits should include a regulatory analysis determining the applicability of state and federal air quality permitting requirements and air pollution.
- h. Tri County Health recommends the implementation of dust control and mitigation including implementation of erosion controls and reclamation of disturbed surfaces.

3) CDPHE

- a. Request relocation of the access road.
- b. Request emission control technology for tank servicing and unloading.
- c. Request locating all equipment to be located within the sound walls.
- d. Supports the construction of a berm.

4) General Comments

- a. Communicate with neighbors about landscape screening plan

EXHIBIT 5.1
REQUEST FOR COMMENTS



Request for Comments

Case Name: Great Western Operating Company B-Farm LD Pad
Project Number: USR2017-00004

July 20, 2017

Adams County Community and Economic Development Department is requesting comments on the following request:

Request for a Use by Special Review Permit to allow thirty-six (36) horizontal well on one (1) well pad for the production of oil and gas.

This request is located at approximately southeast of Colorado Blvd. and Highway 7.

The Assessor's Parcel Number is 0157107000016.

Please forward any written comments on this application to the Department of Community and Economic Development at 4430 South Adams County Parkway, Suite W2000A Brighton, CO 80601-8216 by August 10, 2017 so that your comments may be taken into consideration in the review of this case. Please send your response by way of e-mail to clamere@adcogov.org.

The complete Use by Special Review Permit application can be found at www.adcogov.org/planning/currentcases.

Additional Oil and Gas information can be found at www.adcogov.org/oil-and-gas-information.

Thank you for your review of this case.

Christopher LaMere
Case Manager

BOARD OF COUNTY COMMISSIONERS

Eva J. Henry
DISTRICT 1

Charles "Chaz" Tedesco
DISTRICT 2

Erik Hansen
DISTRICT 3

Steve O'Dorisio
DISTRICT 4

Mary Hodge
DISTRICT 5

WRITTEN EXPLANATION

The proposed project consists of the construction of one (1) well pad with up to thirty-six (36) wells and one (1) access road for an oil and gas location to be operated by Great Western Oil and Gas. Great Western Oil and Gas does not intend to drill all (36) wells consecutively. The drilling schedule is subject to change due to economic conditions, business development priorities and equipment availability.

COMPATIBILITY/LAND USE IMPACTS

The location of this pad is consistent with the surface owner's preference and was agreed upon per the Surface Use Agreement. The surface owner has an irrigated crop circle in the NE quarter of this section therefore placement in the NW quarter of this section is optimal to reduce the impacts to their farming operations. There is an irrigated ditch that runs along the North and East boundaries of the proposed pad location, along with an existing wetlands and FEMA 100 year floodplain to the NE, these factors act as restrictions to shifting this location to the North. The future location of Colorado Blvd is planned to be along the west side of Lot 1, just to the west of the surface owners irrigated crop circle and east of this proposed pad location. The nearest building unit is located 567' to the NW of the production facilities and 702' to the west of the nearest well. A berm has been planned along the west side of the pad to mitigate nuisances such as light, dust, noise and odor for the building unit owners to the west.

SITE PREPARATION (30 Days)

The proposed drill site will be 11.769 acres in size which will be reclaimed to 5.926 acres once all wells are done drilling and completed. Construction of this site includes upgrading the existing access road and leveling the site. A closed loop fluids system will be used while drilling; so, no drilling pits will be used. The tank battery and wellhead access road will be constructed of a 6" layer of gravel compacted to minimum density of 95% and will be graded to provide drainage from the roadway surface. Any grading will have all topsoil horizons segregated per Colorado Oil & Gas Conservation Commission (COGCC) regulations to facilitate proper backfilling and reclamation/revegetation.

EROSION AND DRAINAGE CONTROL

Culverts for cross-drainage will be installed as necessary and in conjunction with consultations with surface owner. Proper storm-water controls will be installed around the tank battery and drilling pad during construction. The wellhead access road will be crowned, ditched and graveled, and culverts for cross drainage will be installed as noted above. The operator will take steps to insure that access to the wellheads is maintained in all seasons. Storm-water controls will also be installed around the spoil piles to prevent sediment migration.

DRILLING PHASE (Approximately 6 days per well)

After site preparation, drilling rig equipment is transported to location and rigged up. Drilling operations are conducted 24 hours a day until completed. The surface hole is drilled to at least 1700 ft using fresh water and surface casing is run and cemented back to ground level to protect all fresh water zones. Surface casing setting depth and construction is approved by the Colorado Oil & Gas Conservation Commission and complies with COGCC rules and regulations. Well control equipment is installed and tested and drilling of the main hole is then commenced. The rig

uses a closed-loop pit-less drilling system. The average total measured depth for the proposed wells is 18,200 ft, (vertical depth is approx. 7,900 ft.) depending on the directional reach and the formation being targeted. Upon reaching total depth production casing is run to total depth and cemented to isolate the oil and gas productive intervals from communication with shallower formations.

Water used in drilling and completion of the wells will be obtained from a commercial water hauling contractor from a source approved by both COGCC and the State Engineer's office.

COMPLETION PHASE

The completion phase begins after the drilling equipment is transported off the location. Completion operations are conducted intermittently over a period of several weeks. Completion Operations will be run 24 hours and last approximately 12 days per well. Prior to beginning Completion activities, the site is bladed and leveled to accommodate the completion rig, anchors are set for the completion rig, and drilling mud is removed from the pits. Additional operations including cementing, drilling and logging may occur as circumstances require. The Niobrara or Codell formations are perforated through the casing and are hydraulically fractured. During this form of stimulation water is pumped at high rates and pressures which hydraulically fractures the formation. Sand is then pumped into the formation to allow oil and gas to flow freely from the formation into the well bore. The equipment will consist of multiple tanks for water storage, pressure pumps, blending and bulk material trucks with other necessary equipment. Hydraulic fracturing will take about 7 days per well and preparing for the procedure requires up to three weeks to move in necessary equipment and schedule services. After fracturing is completed the mobile equipment is removed, excluding tanks that are used to retain the water that is produced during flowback and testing operations. All water is hauled to approved disposal sites. The flowback tanks will remain on location until the well is rerouted through standard production equipment.

RESTORATION / RECLAMATION

Interim reclamation will be conducted under company supervision per COGCC regulations after all planned wells are drilled. During drilling operations, all excess drilling mud and cuttings will be removed from the location and will be trucked offsite to an approved land farming site or to an approved commercial disposal facility, per COGCC regulations. The pad will be backfilled with soils in the reverse order removed and capped with the separated topsoil. Sub soils will be mechanically compacted while backfilling if necessary.

PRODUCTION PHASE

Production facilities will comply with Adams County and COGCC regulations. The standard production equipment to be installed on the wellhead pad is a Plunger Lift Lubricator on each well and an Automation box. The separators and tanks must be located 75' from each other and the wellhead, per COGCC regulations.

The production facility pad will be located to the South of the proposed well pad. Thirty Six (36) low profile 533 bbls (16' tall) steel oil tanks, six (6) low profile 533 bbls (16' tall) fiberglass water tanks, thirty-six (36) 3-phase separators, six (6) horizontal heater treaters (12' tall), two (2) Horizontal Free Water Knockout (12' tall), three (3) Vapor Recovery Towers (32' tall), twelve

(12) ECDs (25' tall), three (3) vertical gas line scrubbers (12' tall), two (2) vapor recovery units, two (2) gas sales wellhead compressors, two (2) custody transfer gas meter per the attached facility detail site plan. A berm will be constructed around the oil and water tanks to hold a minimum 110% of the capacity of the largest tank located within the berm.

Within thirty days after completion of operations, Great Western shall provide to the Town "as built" drawings showing all facilities, pipelines, flow lines and gathering lines installed to service the proposed wells. Building permits will be obtained for permanent above-ground structures. A "pumper/lease operator" (Great Western employee or contractor), will monitor the well every day. The pumper/lease operator reports the tank measurements of the oil, gas sales and pressure readings and performs normal maintenance duties. This production information is compiled and submitted to the Colorado Oil & Gas Commission on a monthly basis. Pumper traffic will be light after the initial 120 days of production after each drilling rig visit. During the initial 120 days there will be a continuous operator on site. Water trucks will be on site to haul produced water. The frequency will be based on production rates. Trucks haul 130 bbls at a time. Initially there will be trucks through the site continuously. Oil trucks will be on site to haul oil off the site. The frequency will be based on production rates. The trucks haul between 180-250 bbls at a time. Initially they will be on site continuously.

If an oil line is installed oil will be pipelined out and only trucked if the pipeline is down.

VISUAL & NOISE MITIGATION

Pursuant to COGCC Rule 804, the tank battery shall be painted in uniform, non-reflective, earth tones selected after consultation with the surface owner. This site was chosen in cooperation with the surface owner in accordance with future plans, an earthen berm is being placed on the west side of the pad to reduce the visual and noise impacts to the adjacent homeowners located to the west of the pad. In addition to the berm installation sound walls will be utilized on the north, west and east sides of the pad on an as needed basis based on a baseline noise survey.

An Ambient Sound Study will be conducted no sooner than (3) weeks prior to the construction of the location to account for any new sounds not associated with this oil and gas location in order to get the most accurate baseline noise survey and recommendations for noise mitigation.

LIGHT MITIGATION

Light sources will be directed downwards, and away from occupied structures where possible. Once the drilling and completion rigs leave the site, there will be no permanently installed lighting on site.

LANDSCAPING

The berm to the west of the berm will be farmed by the Surface Owner initially. Upon additional planned improvement of the surrounding lands landscaping will be installed. A plan has been provided with plants and landscaping materials.

FENCING

Great Western will comply with Colorado Oil and Gas Conservation Commission (COGCC) rule 604.c(2)M At a minimum GWOC will install appropriate fencing to restrict access by any unauthorized persons. This fencing may vary depending on site-specific situations. Chain-link

fencing with slat covering will be installed on the North side of the pad to break the light of sight from HWY 7.

WEED CONTROL

The site will be maintained to prevent accumulation of trash and noxious weeds. Great Western will comply with the Colorado Oil and Gas Conservation Commission (COGCC) rules 603g, 1003e1, 1003f, 1004c2 regarding weed control. All weeds, noxious or otherwise, will be prevented from growing or will be removed from the tank battery site, access road and wellhead pad. Weed spraying by a licensed applicator will be conducted annually, and any fugitive weeds will be removed manually.

ROAD MAINTENANCE

Access roads will be bladed or “dragged” to minimize ruts following wet weather. Fugitive dust is not expected to be a problem as disturbed areas will be either reseeded or graveled. GWOC will work with the county/Town road department to ensure any damage caused by GWOC activities is properly repaired.

SIGNS

Signs required by COGCC will be maintained in good, readable condition.

AIR POLLUTION MITIGATION

All drilling, well completion and production activities will be in compliance with the permit and control provisions of the Colorado Air Quality Control Program, Title 25, Article 7, C.R.S.

ENDANGERED SPECIES

The site has been continuously maintained as cropland and as such is not a habitat for Preble’s meadow jumping mouse or other endangered species, and the operator will take all reasonable precautions to protect same if encountered.

ABANDONMENT

At the time that the well becomes permanently sub-economic to operate Great Western will engage the services of a plugging rig to remove production equipment from the wellbore and plug the productive zones with a combination of bridge plugs and cement plugs in accordance with Section 319 of the rules and regulations promulgated by the Colorado Oil & Gas Conservation Commission. After the well has been plugged, the surface separator and tanks will be removed. Flow lines will be filled with water and capped in accordance with Section 1103 of the COGCC regulations. Surface restoration will involve removal of any above-ground casing and installation of required markers that will not interfere with subsequent surface use.

After all production equipment is removed, the surface will be restored to the original grade in a matter compatible with the then-existing surface usage.

Location Map:

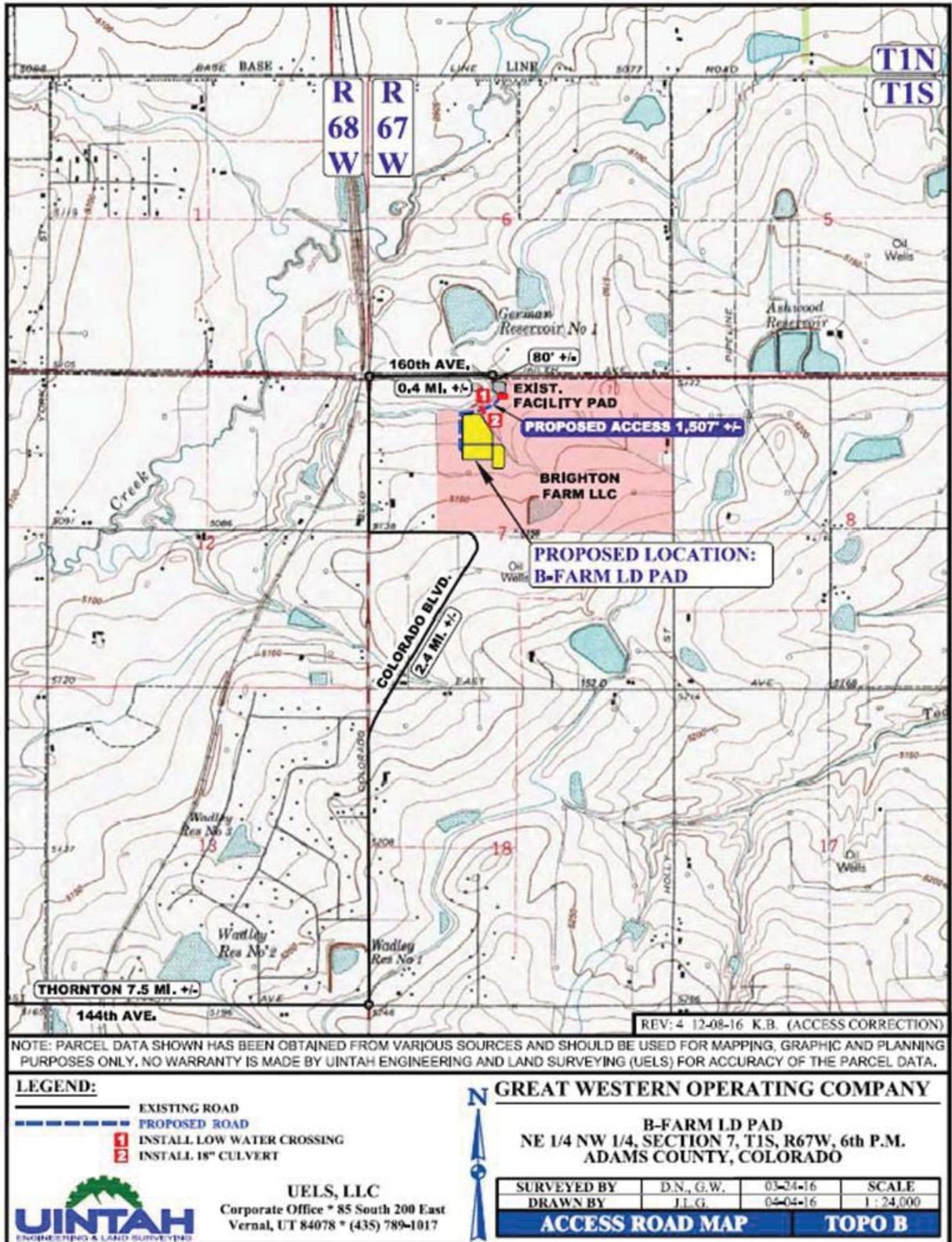


EXHIBIT 5.2
PROPERTY OWNER MAILING LABELS

160TH INVESTMENTS LLC
15187 MADISON ST
BRIGHTON CO 80602-7704

BROWN BRYAN R
5755 E 162ND AVE
BRIGHTON CO 80602

ALVARADO MARK A
16295 IVANHOE ST
BRIGHTON CO 80602-7960

BUNN WILLIAM P AND
BUNN SHERRI L
16610 STEELE ST
BRIGHTON CO 80602

ANAYA LUIS C AND
ANAYA WENDY L
6998 KIDDER DR
DENVER CO 80221-2840

CAMERON HOLLY T AND
CAMERON PHILLIP J
5777 E 162ND PL
BRIGHTON CO 80602-7988

APPELHANS ALEXANDER AND
APPELHANS LORRAINE K
16625 IVANHOE ST
BRIGHTON CO 80602-6069

CARLSON CLAY F 2014 TRUST
PO BOX 247
EASTLAKE CO 80614-0247

BARTON LILA B
15650 COLORADO BLVD
BRIGHTON CO 80602

CASADY PATRICK EDWARD
5842 E 165TH PL
BRIGHTON CO 80602

BEDDO CHRISTOPHER AND
BEDDO AUBRIE
16235 IVANHOE ST
BRIGHTON CO 80602-7960

CHAPMAN LARY
15742 COLORADO BLVD
BRIGHTON CO 80602

BELL STAN W AND BELL BARBARA B
15880 JACKSON ST
BRIGHTON CO 80601

CHRISTOPHER EDWARD AND
CHRISTOPHER SANDRA
4600 E 168TH AVE
BRIGHTON CO 80602-6657

BELTRAN CESAR AND
BELTRAN VALERIE ELLEN
4500 E 168TH AVE
BRIGHTON CO 80602-6656

CITY OF THORNTON
9500 CIVIC CENTER DR
THORNTON CO 80229

BRIGHTON FARM LLC
15600 HOLLY ST
BRIGHTON CO 80602-7911

CITY OF THORNTON
9500 CIVIC CENTER DR
THORNTON CO 80229-4326

BRINK LAWRENCE A AND
BRINK CHARLOTTE J
3525 E 156TH AVE
BRIGHTON CO 80602

CLEMENT BRIAN K AND
CLEMENT ROBIN ELIZABETH
5867 E 162ND PL
BRIGHTON CO 80602-7965

CORCILIOUS WILLIAM A
4200 E 168TH AVE
BRIGHTON CO 80602-6601

GRABLIN MARK A AND GRABLIN CARLA PATRICI
TRUSTEES OF THE GRABLIN FAMILY TRUST
15800 JACKSON ST
BRIGHTON CO 80602-7795

CORDOVA MARK C AND
GOULD SHERIE F
5680 E 165TH PL
BRIGHTON CO 80602-6060

HANGAR 160 LLC
8450 E CRESCENT PKWY STE 200
GREENWOOD VILLAGE CO 80111-2816

CROFF ROBERT E AND
CROFF LINDA L
3505 E 156TH AVE
BRIGHTON CO 80602-7767

HAPPS JOHN T REVOCABLE TRUST 1/2 INT AND
MEETZ ROBIN R REVOCABLE TRUST 1/2 INT
16165 IVANHOE ST
BRIGHTON CO 80602-7982

DAVIS ROGER D AND
DAVIS DAWN A
5740 E 165TH AVE
BRIGHTON CO 80602

HARDING DEBRA J
5585 E 160TH AVE
BRIGHTON CO 80602

DE BRUYNE DANIEL C AND
DE BRUYNE BETTY J
16731 IVANHOE ST
BRIGHTON CO 80602-6070

HARRISON DAVID J AND
HARRISON NICOLA S
5700 EAGLE SHADOW AVE
BRIGHTON CO 80602-6063

DROTAR ARTHUR DUANE AND
DROTAR JENNIFER M
5779 E 163RD AVE
BRIGHTON CO 80602-7983

HARWOOD STEPHEN R
15661 COLORADO BLVD
BRIGHTON CO 80602-7801

EGAN ARTHUR G AND
EGAN EDNA R
4695 E 160TH AVE
BRIGHTON CO 80602

HAVANA AND ILIFF LLC
18685 EAST PLAZA DR
PARKER CO 80134

FISCHER CYNTHIA L AND
ROBERTS MICHAEL K
15611 COLORADO BLVD
BRIGHTON CO 80602

HERRERA TROY A AND
HERRERA MONICA
15805 JACKSON ST
BRIGHTON CO 80602-7795

FRAMPTON KYLE B AND
FRAMPTON ADREA M
16285 IVANHOE ST
BRIGHTON CO 80602-7960

HOLGATE JULIE A AND
HOLGATE DANNY D
5749 E 163RD AVE
BRIGHTON CO 80602-7983

FRETTER LOIS
15620 COLORADO BLVD
BRIGHTON CO 80602-7808

HOLLY HOLDINGS LLC
PO BOX 247
EASTLAKE CO 80614-0247

HUCKINS ROBERT R AND
HUCKINS SHARON A
5755 E 165TH PL
BRIGHTON CO 80602-6060

LUCIO JOE LOUIS
4705 E 168TH AVENUE
BRIGHTON CO 80602

IRA GLENDA L
3300 E 160TH AVE
BRIGHTON CO 80602

MARI THOMAS G AND
MARI VICTORIA L
5790 E 165TH PL
BRIGHTON CO 80602

JACKSON RAYMOND D AND
JACKSON MARLA LOOS
5760 EAGLE SHADOW AVE
BRIGHTON CO 80602

MIHALCIN MICHAEL G AND
MIHALCIN JANET E
9660 W 70TH AVENUE
ARVADA CO 80004

JOHNSON DARIN L AND
JOHNSON KATHLEEN D
5823 E 165TH PL
BRIGHTON CO 80602-6060

MITCHELL RHONDA
PO BOX 521
DACONO CO 80514-0521

KARL JUSTINE M AND
LOMBARDI GEORGE A
15880 COLORADO BLVD
BRIGHTON CO 80602-7806

MOLLEVIK MICHAEL T AND
MOLLEVIK KELLY L
4993 E 111TH PL
DENVER CO 80233-3815

KASTEN TONY M AND
KASTEN DANA A
5695 E 165TH PLACE
BRIGHTON CO 80602

MOORE MICHAEL AND
MONK MICHELLE
4961 E 116TH AVE
THORNTON CO 80233-5823

KRECH FAMILY TRUST THE
16655 IVANHOE ST
BRIGHTON CO 80602-6069

MORRISON LYNNETTE
2131 S COOK ST
DENVER CO 80210-4913

LEASE THOMAS S AND
LEASE LINDA R
16265 IVANHOE ST
BRIGHTON CO 80602-7960

MUNSELL ANDREW W
16645 IVANHOE STREET
BRIGHTON CO 80602

LOMBARDI BRIGHTON PROPERTIES LLC
15800 COLORADO BLVD
BRIGHTON CO 80602-7806

MYERS JAMES I AND
MYERS MELISSA L
16225 IVANHOE ST
BRIGHTON CO 80602-7960

LOMBARDI GEORGE/DIANE LIVING TRUST THE
15840 COLORADO BLVD
BRIGHTON CO 80602-7806

NORTHERN HILLS CHRISTIAN CHURCH
5061 E 160TH AVE
BRIGHTON CO 80602

O NEILL LEONARD L AND
O NEILL SHEILA JO
15700 COLORADO BLVD
BRIGHTON CO 80602-7806

ROBERSON DEAN AND MELODY
16781 HOLLY ST
BRIGHTON CO 80602

O ROURKE KEVIN M AND
O ROURKE BARBARA
16230 IVANHOE ST
BRIGHTON CO 80602-7960

ROHRIG ROBERT K AND
ROHRIG DEBRA J
16555 JASMINE STREET
BRIGHTON CO 80602

OUELLETTE PARICK M AND
OUELETTE DEBRA A
3550 E 160TH AVENUE
BRIGHTON CO 80602

SACK ALBERT F AND
SACK ANNE V
5100 E 168TH AVE
THORNTON CO 80602

PETROCCO JOSEPH P AND
PETROCCO EWA
15970 JACKSON ST
BRIGHTON CO 80602-7795

SCHROEDER TODD M AND
SCHROEDER ALEXIS M
16255 IVANHOE ST
BRIGHTON CO 80602-7960

QUILLEN SARAH A
15955 JACKSON STREET
BRIGHTON CO 80602

SEMP TONY AND SEMP BETH
5889 E 163RD AVE
BRIGHTON CO 80602

RANDOLPH ROBERT M AND
RANDOLPH TONJA S
15885 JACKSON ST
BRIGHTON CO 80602-7795

SHAW KEVIN LEE AND
SHAW SARA
16650 IVANHOE ST
BRIGHTON CO 80602-6065

REID ROBERT ALAN/JEANIE C
JOINT REVOCABLE TRUST THE
15845 JACKSON ST
BRIGHTON CO 80602-7795

STEPHENS LINDY LOU
1076 S 935 RD
EL DORADO SPRINGS MO 64744-7279

RENTZ LIVING TRUST THE
16685 IVANHOE STREET
BRIGHTON CO 80602

STOCKEY PATRICK J AND
STOCKEY SANDRA L
1879 DORLAND CT
FAIRFIELD CA 94534-3025

RICHARDS MARK D AND
RICHARDS LUANA M
5820 EAGLE SHADOW AVE
BRIGHTON CO 80602

STRUNK GARY W AND
STRUNK CINDY L
5878 E 163RD AVE
BRIGHTON CO 80602-7983

RIO LA LLC
812 GRAVIER ST STE 360
NEW ORLEANS LA 70112-1408

SUNSET VISTA ESTATES HOMEOWNERS ASSN
C/O SARA QUILLEN SECRETARY/TREASURER
15955 JACKSON ST
BRIGHTON CO 80602

SW BIG CIRCLE RANCH LLC
5600 S QUEBEC ST STE 110A
GREENWOOD VILLAGE CO 80111-2205

TCIRATO LLC
7353 S ALTON WAY STE 100
ENGLEWOOD CO 80112-2330

TEMPEST KENDRA JO HARRIS REVOCABLE TRUST
TEMPEST RONALD EUGENE JR REVOCABLE TRUST
5725 EAGLE SHADOW AVE
BRIGHTON CO 80602-6064

THOMAS JOSEPH JEFFREY AND
THOMAS KIM TERES
15930 JACKSON STREET
BRIGHTON CO 80602

TODD CREEK VILLAGE PARK
AND RECREATION DISTRICT
1700 N LINCOLN ST STE 2000
DENVER CO 80203-4554

TODD CREEK VILLAGE PARK AND
RECREATION DISTRICT
1700 N LINCOLN ST STE 2000
DENVER CO 80203-4554

TODD CREEK VILLAGE PARK AND RECREATION
DISTRICT C/O SPENCER FANE & GRIMSHAW LLP
1700 LINCOLN STREET SUITE 2000
DENVER CO 80203

WARE MATTHEW J AND
WARE ERICA A
15865 JACKSON ST
BRIGHTON CO 80602-7795

WEINS JOHN AND
WEINS LINDA
312 MESA ST
BRIGHTON CO 80601-4178

YOUNG SUSAN
15825 JACKSON ST
BRIGHTON CO 80602