



Community Planning & Permitting

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**BOULDER COUNTY PLANNING COMMISSION
PUBLIC HEARING**

July 17, 2024 at 1:00 p.m.

**Boulder County Courthouse, 3rd Floor,
1325 Pearl Street, Boulder
Virtual and in-person**

STAFF RECOMMENDATION

STAFF PLANNER: Pete L’Orange, Planner II

DATE ISSUED: July 10, 2024

Docket SU-24-0002: Pivot Solar Energy Facility

Request: Special Use Review for an approximately 4-acre solar energy facility on a 13-acre parcel at 9215 Arapahoe Road.

Location: 9215 Arapahoe Road, located on the north side of Arapahoe Road approximately 0.3 mile west of the intersection of Arapahoe Road and N. 95th Street, in Section 29, Township 1N, Range 69W.

Zoning: Rural Residential (RR)

Owner: Dewire Family Trust

Applicant: Pivot Energy

Agent: Bradley Thomas, Pivot Energy

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SUMMARY

The subject application is for a Special Review and Site-Specific Development Plan to construct a 3.42-acre solar energy facility on an approximately 13-acre property within the Rural Residential (RR) Zoning District. With the recommended conditions of approval, staff find the proposal can meet

the Special Review Criteria in Article 4-601 of the Boulder County Land Use Code (the Code) and recommend conditional approval to the Planning Commission.

DISCUSSION

The subject property is an approximately 13-acre unsubdivided parcel which is a legal building lot. The subject parcel is located on the north side of Arapahoe Road, approximately 0.3 miles west of the intersection of Arapahoe Road and N. 95th Street (see Figure 1 below). It is currently developed with a single-family residence and several agricultural structures.



Figure 1: Aerial photograph of subject parcel, with parcel indicated in red.

Staff reviewed the proposal under Art. 4-514.M of the Code (which regulates Ground-Mounted Solar Energy Systems). The project is categorized as a Ground-Mounted Solar Energy System because the panels will be mounted on racking or poles that are attached to the ground and are not mounted to parking canopies as defined in Article 4-514.M.1.

The applicants propose to install a solar energy facility on the eastern portion of the subject parcel, encompassing an area of approximately 3.42 acres in size (see Figure 2 below). The proposed project will include the installation of solar arrays, with multiple solar panels per array, arranged in rows running north/south; the proposed panels will tilt to track the movement of the sun. Per the supplemental narrative submitted on June 20, 2024, while the exact height of the panels has not been determined, the applicants intend to keep the panels as low as possible; and have committed to not exceeding 12 feet from existing grade. The solar facility will include vegetative screening on all four sides (see Figure 3 below).

The applicants have proposed to pursue “agrivoltaic” activities on the subject parcel. If determined to be feasible, the applicants would work with a local tenant farmer to grow low-growth vegetables and herbs under the solar array using the property owner’s existing water shares from the Agitator Ditch. The applicants have stated that if it is determined that agrivoltaic is not feasible, they will plant a mix of forbs, fescues, and clovers under the panels and will use sheep grazing for vegetation management.



Figure 2: June 20, 2024 site plan submitted by the applicants.

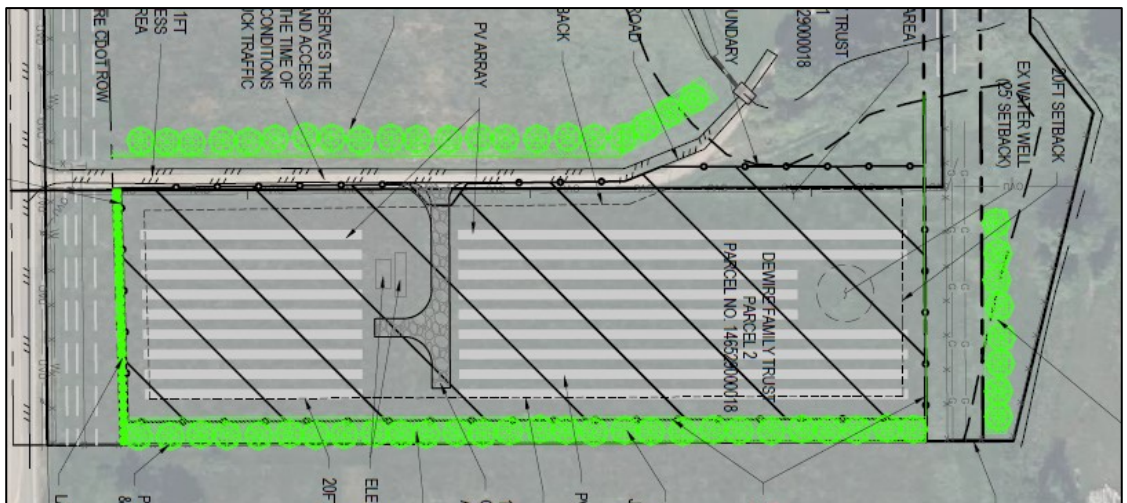


Figure 3: Site plan, with vegetative buffer. Note: north is to the right.

In addition to the proposed solar arrays, the applicants have proposed to construct a new access drive to the solar facility from the existing access driveway from Arapahoe Road. The solar facility will be

surrounded with fencing. The applicants have stated the anticipated operational life of the facility is between 21 and 41 years; at the end of the operational life, the facility will be decommissioned.

Under Article 4-103.F.4 of the Code, no parcel in the Rural Residential Zoning District may be used for more than one principal use except for allowed Agricultural uses, Forestry uses, Mining uses, or any combination thereof, or per Article 4-103.F.2.e, which allows additional principal uses through the Special Use Review process provided they do not result in an increase in density. Uses which are required to be on a legal building lot are considered increases in density; uses which are not required to be located on legal building lots are not considered an increase in density. There is currently one principal use on the subject parcel: Open Agriculture (as defined in Article 4-502.D of the Code), with a residence which is considered customary and incidental to the Open Agriculture use.

Open Agriculture (as defined in Art. 4-502.D) is not required to be located on a legal building lot unless it has an associated principal or accessory dwelling. The subject parcel has a dwelling unit; as such, the Open Agricultural use on the subject parcel requires legal building lot status. The subject parcel is approximately 13 acres and was created through a Subdivision Exemption process (SE-95-0010) and is considered a legal building lot. As such, the Open Agriculture, and the associated dwelling are considered the principal use on the subject parcel. Per Article 4-514.M.5 of the Code, ground-mounted solar energy facilities are explicitly allowed as additional principal use. As the Open Agricultural use is the principal use and Ground-Mounted Solar Facilities are expressly permitted on parcels with existing principal uses, the proposal is allowed under the Code if it meets the criteria detailed below.

Per the Boulder County Comprehensive Plan, the subject parcel is located within Agricultural Lands of National Importance (see Figure 4 below). There is also a Viewshed Protection Score for Arapahoe Road (south of the subject parcel) ranging from 0.27 to 1.42 out of 5. These resources and the potential impacts on them resulting from the proposed development are discussed in the criteria review below.

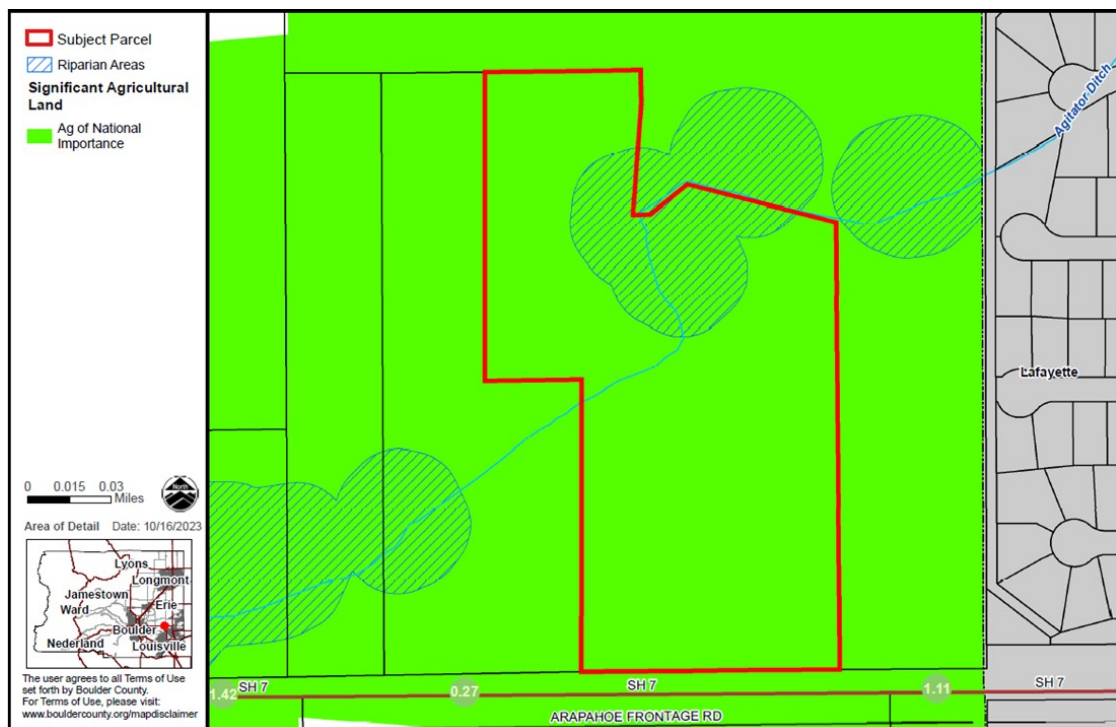


Figure 4: Comprehensive Plan map, with subject parcel indicated in red.

As detailed in the criteria review below, staff find that the proposed solar energy system can meet the

Special Review Criteria in Article 4-601 of the Code and the additional provisions for Solar Energy Systems listed in Article 4-514.M of the Code, with the recommended conditions of approval.

REFERRALS

This application was referred to the typical agencies, departments, and adjacent property owners. All responses received are attached and summarized below.

County Building Safety & Inspection Services Team: This team reviewed the proposal and stated that building permits will be required for the construction of the array and associated electrical equipment. It also noted the minimum wind and snow loading requirements.

Boulder County Public Health: This team reviewed the request and responded that the solar arrays and equipment must not be installed on top of the absorption field, and that damage to the septic system should be avoided during construction and trenching.

County Development Review Team – Access & Engineering: This team reviewed the proposal and confirmed the subject parcel has legal access to Arapahoe Road. They noted that there is an existing 11-foot wide access, but also noted that the application indicated that the access would be widened to 20 feet (or more if necessary). They stated that the Boulder County Multimodal Transportation Standards allow for an access width of up to 26 feet, but that since the access intersects with State Highway 7 (Arapahoe Road), the access will also be required to comply with Colorado Department of Transportation requirements. This teams also noted that the application did not address the increase in impervious surfaces resulting from the panels and that revised runoff calculations will be required. Finally, they noted that the project will require a Stormwater Quality Permit (SWQP) due to the amount of ground disturbance and the subject parcel being located within a municipal separate storm sewer system (MS4) urbanized area.

County Long-Range Planning Team: This team reviewed the proposal and provided comment on the proposal's relation to a number of goals and objectives of the Comprehensive Plan. They stressed the importance of balancing the county's desire to protect valuable agricultural lands with the county's policy of working to reduce the use of fossil fuels and reduce greenhouse gasses. They recommended several conditions of approval to help achieve this balance.

County Stormwater Quality Coordinator: The county Stormwater Quality Coordinator reviewed the proposal and noted that a stormwater quality permit (SWQP) is required, and that the facility is within the municipal separate storm sewer system (MS4) urbanized area, which will require a permanent stormwater management checklist be submitted.

County Parks & Open Space Natural Resources Planner: The Natural Resources Planner reviewed the application materials and expressed some concerns about some of the details of the proposal. They noted that the subject parcel is located within Agricultural Lands of National Importance, which are considered prime farmland. They also provided extensive comments on the applicants' proposal to cultivate low-growth vegetables and herbs, noting that the applicants have not determined that doing so would be feasible. They noted that the applicants' alternative proposal, sheep grazing, may be hard on the land. They also provided comment on the proposed vegetative screening and the proposed fencing. Finally, they recommended several conditions of approval to address these concerns, as well as a condition prohibiting any construction work during wet soil or weather conditions.

Wright Water Engineers, Inc.: This is a consulting firm hired by the county to review and provide comment on larger, more complicated drainage plans and reports. They reviewed the drainage report submitted by the applicants and provided comments. They noted that areas under the proposed panels

cannot be considered as “undisturbed,” as equipment and machinery driving over these areas will alter the runoff coefficient. They also provided comment on the methods of calculation used to determine potential storm runoff and noted that revised calculations should be provided. Finally, they noted that once correct calculation methods are used, it is likely that the subject parcel will be able to effectively manage stormwater runoff, but that some form of detention may be required for heavier rain events.

Colorado Department of Transportation: This agency responded, noting that CDOT has plans for a multi-use trail and some widening of Arapahoe Road to the north. They requested that the proposed solar facility be located outside of that space, so that it would not have to be relocated in the future.

Lumen Communication (CenturyLink): This agency noted that, while they do not have any facilities that might conflict with the proposal, they do have buried facilities in the northern right-of-way of Arapahoe Road between Wicklow Street and Kilkenny Street. They requested that the applicants have all utilities in the area located to ensure safety and protection of all facilities.

Xcel Energy: This agency reviewed the proposed project and noted that they own and operate an existing high-pressure natural gas transmission pipeline along the north side of the property and that any work in this area will require an engineering review.

Adjacent Property Owners: Notices were sent to 244 adjacent property owners, and staff received 15 comments. Most of these comments expressed concern and opposition to the proposed project, noting visual impacts, concerns about setting a precedent for future solar facilities in the area, requesting additional information on the decommissioning/removal of the facility, and stating that it may pose a fire risk. One member of the public expressed support for the project, stating that it would help prevent the property from being otherwise developed.

Agencies that responded with no conflict: Boulder County Historic Preservation team and Mountain View Fire Protection District.

Agencies that did not respond: Boulder County Assessor; Boulder County Attorney; Boulder County Office of Sustainability, Climate Action, and Resilience; Boulder County Sheriff; Boulder County Treasurer; Boulder County Surveyor; Northern Colorado Water Conservancy District; Agitator Ditch Company; City of Boulder Open Space and Mountain Parks; City of Lafayette; Mile High Flood District; and the Public Utilities Commission.

SPECIAL REVIEW CRITERIA

The Community Planning & Permitting staff has evaluated the Special Review standards for approval of a ground-mounted solar energy system in the Agricultural Zoning District, per Article 4-601 of the Code, and find the following:

- (1) Complies with the minimum zoning requirements of the zoning district in which the use is to be established, and will also comply with all other applicable requirements;***

As discussed above, the proposed solar facility is allowed as an additional principal use on a parcel with existing principal uses. Staff has reviewed the proposed plans and has determined that the proposed development meets the required setbacks in the Rural Residential Zoning District.

Ground-Mounted Solar Energy Systems located with Significant Agricultural Lands are an allowed use in the Rural Residential zoning district, if approved through a Special Use

Review process; they are subject to the additional provisions outlined in Article 4-514.M.5 of the Code as outlined and addressed below.

a. *This use is required to be located on a building lot, or an outlot platted for this purpose.*

The subject parcel is approximately 13-acres in size and was created through a subdivision exemption process that recognized that parcel as a legal building lot (SE-95-0010). Therefore, this provision is met.

b. *The use may be allowed on right-of-way, as permitted by the right-of-way owner and if compatible with the use of the right-of-way. For right-of-way systems, further requirements may be stipulated by the Boulder County Public Works Department or the Colorado Department of Transportation to ensure compatibility with transportation-related uses of the right-of-way.*

The use is not proposed to encroach into the right-of-way. Therefore, this provision is met.

c. *The appropriateness of a site, the specific location on the site, and the extent of site disturbance will be determined through the applicable review process.*

The proposed project area is located on the eastern, agricultural portion of the subject parcel. The portion of the subject parcel west of the project area is also agricultural. There are also agricultural lands on the adjacent parcels to the east, north, and west of the subject parcel; there are residential properties located to the south of the project area, across Arapahoe Road. While there is agricultural land immediately adjacent to the project area to the east, beyond that agricultural land is a platted, residential subdivision located within the City of Lafayette (see Figure 1 above). Additionally, there is a residential structure on the parcel to the west of subject parcel. Staff find that locating the proposed project on western portion of the subject parcel would result in significant adverse impacts. As discussed in Criterion 9 below, staff find that the impacts from the proposed solar facility on the nearby residential properties can be mitigated through staff recommended conditions of approval. As such, staff find the proposed location of the project area is the most appropriate location on the subject parcel. The proposed project area is relatively close to Arapahoe Road and will use an existing access drive on the subject parcel, reducing the amount of disturbance necessary to reach the project area. The proposed location also avoids the identified riparian area on the subject parcel (see Figure 5 above).

Therefore, as conditioned in Criterion 9 below, staff find this provision can be met.

d. *Ground-mounted systems with disturbed area greater than 0.5 acre cannot be located on areas designated by the Boulder County Comprehensive Plan as Natural Landmarks, Natural Areas, Critical Wildlife Habitats, or Wildlife Migration Corridors.*

Although the disturbed area proposed for the array is greater than .5 acres in size, the Boulder County Comprehensive Plan does not identify any Natural Landmarks, Natural Areas, Critical Wildlife Habitat, or Wildlife Migration Corridors within the boundaries of the subject property.

Therefore, staff find this provision is met.

- e. ***Ground-mounted systems are allowed as a second Principal Use on parcels subject to the review process applicable for the proposed new ground-mounted system.***

Currently, Open Agriculture (as defined in Art. 4-502.D of the Code) is the principal use of the property. The single-family dwelling that exists on the property is considered customary and incidental to the Open Agricultural use. The proposed solar energy facility is considered a second principal use; however, per this provision of the Code, ground-mounted solar energy facilities are explicitly allowed as an additional principal use.

Therefore, staff find this provision is met.

- f. ***Ground-mounted systems shall not exceed 15 feet in height, except to accommodate site specific needs and as approved through review. Systems exceeding 15 feet in height require an increased setback of 75 feet from all property lines, unless it is demonstrated that a lesser setback or topographical or vegetative screening adequately mitigates visual impacts. In no case shall a system exceed 25 feet in height.***

Plans submitted with the application materials indicate that the individual solar panels will be mounted to racking which will track the sun as it crosses the sky. In the supplemental narrative, the applicants committed to keeping the panels at or below 12 feet, noting that it is in their financial interests to keep the panels as low as possible.

Therefore, staff find this provision is met.

As discussed in more detail in Criteria 2 and 9 below, however, the proximity of the proposed facility to residential parcels and a major travel route has the potential for the proposal to result in negative visual impacts. As such, staff also find it is appropriate to limit the maximum height of the proposed panels to no more than 10 feet above existing grade and recommend this limit as a condition of approval under both Criterion 2 and Criterion 9 below.

- g. ***Ground-mounted systems with disturbed area greater than 2.5 acre are not permitted in the Forestry Zoning District unless the site has been previously contaminated or the soil otherwise damaged, making it unsuitable for agricultural or forestry uses. Qualifying areas may include properties that have previously undergone intensive development and where it is determined, through the review process, that installation of a ground-mounted system will not have additional significant impacts.***

The property where the proposed system will be located is within the Rural Residential zoning district. Therefore, this provision is not applicable.

- h. ***Ground-mounted systems with a disturbed area greater than 0.5 acre on lands designated as Significant Agricultural Lands under the Boulder County Comprehensive Plan, and located in the Agricultural, Estate Residential, or Rural Residential zone districts, require Special Review and are subject to the following additional requirements intended to preserve and maintain soil and agricultural integrity:***

- i. ***The total disturbed area associated with the ground-mounted system cannot exceed 7 acres on parcels smaller than 70 acres in size, or 14 acres on parcels larger than 70 acres in size.***

Per the drainage report included in the original application materials, the proposed amount of land to be disturbed during construction was estimated to be 0.11 acres. However, per Article 18-136A of the Code, in relation to solar energy systems, “Disturbed Area” is defined as “*That area of the land's surface disturbed or in any way changed as a result of construction activity, including but not limited to new structures, access and areas used for access or parking during and following the construction process.*” Staff find that this definition would include any areas which construction traffic would drive over, any areas impacted by stormwater detention and/or runoff controls, areas used for plantings, and any structures or utility infrastructure. The 0.11 acres given in the drainage report does not include any of these other areas. Per the supplemental materials submitted in June 2024, the applicants’ estimated area of disturbance was revised to “>1 acre.” While an exact area of disturbance has not been determined, the total project area is 3.42 acres, which is well below the 7 acre threshold required by this provision.

Therefore, staff find this provision is met.

Please see Criteria 4 and 13 below for further discussions on site disturbance.

ii. *Application for the ground-mounted system must contain a solar energy system development report as set forth in Article 3-203*

The submitted application materials included a development report that meets the requirements of Article 3-203.

Therefore, staff find this provision is met.

The applicants propose to connect the solar energy facility with the Xcel Energy infrastructure via underground utility lines running from the project area to the Xcel infrastructure along Arapahoe Road. This is in accordance with Article 7-1200.B.1 of the Code.

Therefore, as conditioned in Criteria 2, 4, 9 and 13 below, staff find this criterion can be met.

(2) *Will be compatible with the surrounding area. In determining compatibility, the Board should consider the location of structures and other improvements on the site; the size, height and massing of the structures; the number and arrangement of structures; the design of structures and other site features; the proposed removal or addition of vegetation; the extent of site disturbance, including, but not limited to, any grading and changes to natural topography; and the nature and intensity of the activities that will take place on the site. In determining the surrounding area, the Board should consider the unique location and environment of the proposed use; assess the relevant area that the use is expected to impact; and take note of important features in the area including, but not limited to, scenic vistas, historic townsites and rural communities, mountainous terrain, agricultural lands and activities, sensitive environmental areas, and the characteristics of nearby development and neighborhoods;*

The proposed solar facility will be located in transitional area between residential and agricultural portions of the county, very near to the City of Lafayette. As discussed above, the land surrounding the project area to the east, north, and west is agricultural with associated residential structures, while the parcels to the south of the project area are residential. Beyond the immediately adjacent land, however, there are platted subdivisions to the east, the

northwest, and south of the subject parcel, and a commercial development to the southeast at the corner of Arapahoe and State Highway 52 (see Figure 1 above).

The application proposes a number of solar panel arrays over most of the 3.42-acre project area. They are arranged in a series of rows, running north/south. As discussed above, the applicants have committed to limiting the height of these arrays to no more than 12 feet above existing grade. However, due to the proximity of the project area to residences, a major roadway (Arapahoe), and the planned CDOT multi-use trail, staff find that reducing the height of the panels to no more than 10 feet above existing would help to ensure that the resulting size of the development is appropriate for the character of the surrounding area and recommend this as a condition of approval.

Staff has not identified any long-term traffic impacts resulting from the proposed project. After construction is completed, the use will have little-to-no traffic impacts on the surrounding area as traffic will be minimal and there will be no noise or daily activity. The proposed access drive to the solar facility must meet the Boulder County Multimodal Transportation Standards; this requirement is discussed in Criterion 7 below.

The narrative also indicates that the array will be removed from the property at the end of the lease (21 to 41 years), after which time the project area will be returned to a state to be usable as agricultural land. However, the applicants have not provided any specific plans for how this will happen. To ensure that the subject property is returned to a condition which may allow it to be used for agricultural purposes, staff recommend several conditions of approval. First, staff recommend a condition of approval that there be a project “sunset” of 40 years after construction is complete or at the end of the effective lifespan of the facility, whichever is sooner. Second, staff recommend as a condition of approval that the applicants submit a detailed decommissioning plan for the proposed project for review and approval by Community Planning & Permitting staff prior to recordation of the Development Agreement. Third, staff recommend as a condition of approval that the applicants submit a full post-decommission revegetation plan to be reviewed and approved by Community Planning & Permitting staff prior to the issuance of any deconstruction permits. Staff also recommend as a condition of approval that decommissioning and remediation begin within 90 days of the project sunset and be completed within 1 year of decommissioning commencing. Finally, to help ensure that the decommissioning and restoration of the project area is carried out, staff recommend a condition of approval that, prior to the recordation of the development agreement, the applicants provide Boulder County with a security bond for the cost of removing the system and remediation of the project area.

Because of the mitigating factors related to the siting of the project as described above and with the recommended conditions of approval, staff find the proposed solar energy system can be compatible with the surrounding area.

Therefore, as conditioned, staff find this criterion can be met.

(3) *Will be in accordance with the Boulder County Comprehensive Plan;*

Staff reviewed the proposed project in relation to the Boulder County Comprehensive Plan and identified several goals and policies which are particularly applicable to this proposal.

Agricultural Element Policy AG 1.03 Agricultural Land of Importance. This policy states that the county should encourage the preservation and utilization of identified significant agricultural lands for agricultural or rural uses. As discussed above, the Comprehensive Plan identifies Agricultural Lands of National Importance on the subject parcel. Staff find that,

while a solar energy facility as proposed in this project is not necessarily an “agricultural or rural” use, with the recommended conditions of approval in Criterion 2 above, it is a use that can allow for the land to return to an agricultural or rural use at a later date.

Per the application materials, the applicants propose to pursue agrivoltaic activities on the subject parcel. If determined to be feasible, the applicants would work with a local tenant farmer to grow low-growth vegetables and herbs under the solar array using the property owner’s existing water shares from the Agitator Ditch. The applicants have stated that if it is determined that agrivoltaic is not feasible, they will plant a mix of forbs, fescues, and clovers under the panels and will use sheep grazing for vegetation management. However, the applicants have not actually determined that agrivoltaics are feasible or not. As discussed in the referral responses from both the Long Range Planning team and the Natural Resources Planner, staff find that agrivoltaics is the preferred activity as that is more in line with this policy, and that the applicants’ alternative of planting a mix of forbs, fescues, and clover and maintaining it through sheep grazing should only be pursued in the event that agrivoltaics are truly not possible. As such, staff recommend as a condition of approval that, prior to the recordation of the Development Agreement, the applicants submit a full farm management plan for review and approval. If the applicants determine that agrivoltaics are not feasible, the farm management plan must provide a detailed explanation as to why agrivoltaics cannot be carried out on the subject parcel and provide an alternative plan for staff review and approval.

As conditioned, staff find the proposal is not in conflict with this policy.

Agricultural Element Policy AG 1.04 Development Review. This policy states that the county should consider potential impacts on existing agricultural uses and can impose conditions of approval through the review process in order to mitigate those impacts. As discussed above, staff find that the proposed project will impact adjacent agricultural properties; however, staff also find that these impacts can be sufficiently mitigated through the recommended conditions of approval. As such, staff find the proposal is not in conflict with this policy.

Natural Hazards Element Policy NH 3.02 Drainage and Erosion. This policy states that any drainage from development shall not increase erosion either on- or off-site. Per the application materials submitted, the applicants state that the proposed project would result in minimal runoff impacts. However, per the referral response from Wright Water Engineers, the assumption that a solar field will not change the degree of imperviousness is not consistent with research and recent Mile High Flood District (MHFD) evaluations. As such, mitigation will be necessary for the project to not conflict with this policy. The potential drainage and erosion impacts, and recommended conditions of approval to mitigate these impacts, are discussed in more detail in Criterion 13 below. With the recommended conditions of approval set forth in Criterion 13, staff find the proposal can be in accordance with this policy.

Sustainability Element Goal 4 Identify & Implement Actions to Diminish Greenhouse Gas Emissions. This goal directs the county to identify and implement actions that will lead to a decrease in the county’s contribution to total greenhouse gas emissions through an increase in energy efficiency. The proposed project is intended to support and increase the percentage of energy which comes from renewable, non-greenhouse gas producing sources. Per the referral response from the Boulder County Long-Range Planning team, the proposed project will generate enough energy to power the equivalent of approximately 135 average Colorado homes annually, offsetting approximately 526 tons of CO₂ emissions per year based on Xcel Energy’s 2022 generation mix. Staff find that a project which increases the amount of energy from solar facilities supports this goal. As such, staff find the proposal is in accordance with this goal of the Comprehensive Plan.

Therefore, as conditioned in Criteria 2 and 13, staff find this criterion can be met.

- (4) ***Will not result in an over-intensive use of land or excessive depletion of natural resources. In evaluating the intensity of the use, the Board should consider the extent of the proposed development in relation to parcel size and the natural landscape/topography; the area of impermeable surface; the amount of blasting, grading or other alteration of the natural topography; the elimination or disruption of agricultural lands; the effect on significant natural areas and environmental resources; the disturbance of plant and animal habitat, and wildlife migration corridors; the relationship of the proposed development to natural hazards; and available mitigation measures such as the preservation of open lands, the addition or restoration of natural features and screening, the reduction or arrangement of structures and land disturbance, and the use of sustainable construction techniques, resource use, and transportation management.***

As outlined in the project discussion and Criterion 1 above, the proposed solar energy facility is considered an additional principal use on the subject parcel and does increase the overall intensity of use on the subject property; however, staff find that as conditioned, the use is not over-intensive. The Open Agricultural use is an appropriate and reasonable use in the Rural Residential Zoning District and Solar Energy Facilities are explicitly allowed as a second principal use so are not considered an increase in density. While there will be traffic impacts during construction, staff find the traffic impacts are relatively minor and will only occur during construction and decommissioning activities. Additionally, as discussed below, staff find that while the proposal increases the intensity of use, these impacts can be sufficiently mitigated.

As discussed above, the proposed project is located on Significant Agricultural Land and will disrupt that agricultural land. However, with proposed decommissioning and remediation of the project site, and with the recommended conditions of approval related to decommissioning and remediation, staff find that the disruption of agricultural land can be mitigated and that the land can be returned to productive agricultural activities in the future. Additionally, to minimize the impacts to the soil conditions during construction, staff recommend an additional condition of approval that no construction occur under wet soil conditions.

As discussed in Criterion 13 below, the Access & Engineering Team have determined that the proposed project will increase the impermeable surface on the subject parcel, and staff recommend conditions of approval under Criterion 13 below to mitigate this increase.

Therefore, as conditioned here and in other criteria, staff find this criterion can be met.

- (5) ***Will not have a material adverse effect on community capital improvement programs;***

There is no indication the proposal will have an adverse effect on community capital improvement programs, and no referral agencies responded with any such concerns.

Therefore, staff find this criterion is met.

- (6) ***Will not require a level of community facilities and services greater than that which is available;***

Staff does not anticipate the proposal will have an adverse effect on community facilities and services. Both Xcel Energy and Lumen Communications noted that they have facilities in the

area of the project, but do not expect any adverse impacts and stated they have no conflicts with the proposal.

Therefore, staff find this criterion is met.

(7) *Will support a multimodal transportation system and not result in significant negative impacts to the transportation system or traffic hazards;*

The subject parcel is accessed from Arapahoe Road, also known as State Highway 7, a Colorado Department of Transportation (CDOT) owned and maintained right-of-way (ROW). Legal access has been demonstrated via adjacency to this public ROW. The proposed solar facility would be accessed from the existing access drive from Arapahoe Road to the existing residential and agricultural structures on-site; no new access is required or proposed.

Per the application materials, the applicants propose to widen the existing 11-foot wide access to 20 feet wide; Access & Engineering staff confirmed that this is allowed by the [Boulder County Multimodal Transportation Standards \(MMTS\)](#). To ensure full compliance with the MMTS, staff recommend as a condition of approval that plans submitted for permitting must demonstrate compliance with the MMTS. The Access & Engineering referral response also noted that Arapahoe Road is a CDOT owned and maintained ROW and the applicants should ensure that the proposed access meets CDOT requirements. Additionally, per the CDOT referral response, the plans as originally submitted would potentially conflict with a planned CDOT multi-use path. Staff informed the applicants of this potential conflict; the revised plans submitted June 20, 2024, appear to avoid the CDOT multi-use path. Staff also recommend as a condition of approval that the applicants provide documentation from CDOT that the access to Arapahoe Road meets its requirements.

As Arapahoe Road is a major travel route, to help reduce the potential for construction traffic to result in adverse traffic impacts, staff recommend as a condition of approval that construction traffic to and from the subject parcel be limited to between 8:30 a.m. and 3:30 p.m., Monday through Friday. Additionally, staff recommend as a condition of approval that during construction, all materials, machinery, dumpsters, vehicles, and other items associated with the project be staged on the subject parcel.

With the recommended conditions of approval described above, staff find the proposal does not conflict with the multimodal transportation system and do not anticipate that the request will have a negative impact on the transportation system.

Therefore, as conditioned, staff find this criterion can be met.

(8) *Will not cause significant air, odor, water, or noise pollution;*

Staff have no concerns that the proposed solar energy system would result in the creation of air, odor, or water pollution. Several members of the public expressed concerns about the noise impacts of the proposed development. In response to these concerns, the applicants have provided detailed noise analysis information for various project components, including anticipated noise levels from the inverters, transformers, and racking equipment to be used. This analysis demonstrated that the proposed equipment and project will not exceed the Boulder County Noise Ordinance requirements, which allow for a maximum noise of 55 decibels (dB) at 10 feet beyond the property line during the day and 50 dB at night (see Tables 1 and 2 below).

Equipment Element	Decibels at 1 meter	Decibels at Property Line	Decibels at Nearest Residence
Inverters	Approx. 65 dB	31 dB	21 dB
Transformers ¹	Approx. 65 dB	31 dB	21 dB
Racking	69.6 dB	47 dB	29 dB

Table 1: Anticipated noise levels for project equipment.

Decibel Level	Common Sound Level Descriptions
70 dB	Gas lawn mower at 30 meters
65 dB	Suburban commercial area or Normal indoor speech at 1 meter
45 dB	Quiet urban area at night
30 dB	Quiet bedroom at night
20 dB	Rustling leaves

Table 2: Common sound levels defined by the Federal Highway Administration.

While the noise levels are relatively high in close proximity to the equipment, staff find that the noise levels at the property lines meet the county’s Noise Ordinance requirements, and the levels at the nearest residences are quite low. Additionally, staff find that any incidental noise will be drowned out by road noise from vehicles on nearby public rights-of-way.

Therefore, staff find this criterion is met.

(9) Will be adequately buffered or screened to mitigate any undue visual impacts of the use;

As discussed above, there are a significant number of residential properties and developments in the vicinity of the project area (see Figure 5 below); these include both platted subdivisions and individual residences on unplatted parcels, often with associated agricultural structures. There is also a commercial shopping center located to the southeast of the subject parcel.

Per the supplemental narrative materials, the applicants have committed to limiting the height of the panels to a maximum of 12 feet above existing grade at their maximum tilt. As discussed in Criterion 1 above, this is below the maximum allowed height of 15 feet. Additionally, the applicants conducted a ground-level glare study, using industry standard glare study software (see Attachment B – Supplemental Narrative). This study evaluated the potential for reflective glare from the proposed panels from Arapahoe Road, Kilkenny Road, and Wicklow Street, and from a total of 16 individual observation points to the east, south, and west of the proposed project area, at one-minute intervals. Based on this study, it does not appear that there will be any glare impacts from the proposed array. Additionally, the applicants have stated that they use antireflective coating on all of their panels.

¹ Decibel levels for the transformers listed are when they are operating at 100% capacity; per the supplemental materials submitted by the applicants, the transformers will be operating at 55%.

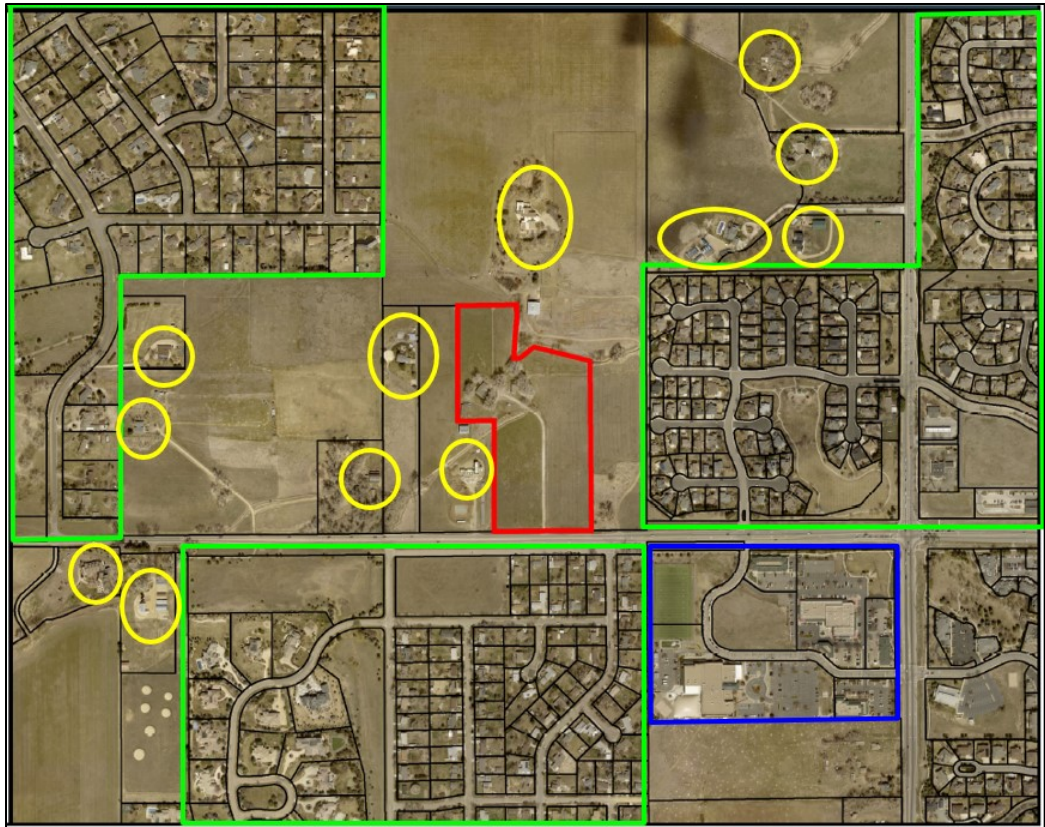


Figure 5: Aerial photograph of the area around the subject parcel (indicated in red); nearby residences (indicated in yellow); platted subdivisions (indicated) in green; and commercial development (indicated in blue).

The applicants have proposed to install vegetative screening on all four sides of the project area (see Figure 6 below). Specifically, the applicants have proposed a mix of Smith Buckthorn and Red Osier Dogwood bushes. Based on staff research, Smith Buckthorn typically grow to between eight and 10 feet tall, and Red Osier Dogwood typically grow to between five and 13 feet tall. Both species are native to Colorado. To ensure that the vegetative screening is properly installed and maintained, staff recommend as a condition of approval that the applicants submit a detailed landscaping plan at permitting, showing the location of all landscape plantings, information on the specific species to be used, and watering and maintenance information. Additionally, staff recommend as a condition of approval that the applicants remove and replace any of the vegetative screening that dies or fails throughout the life span of the facility.

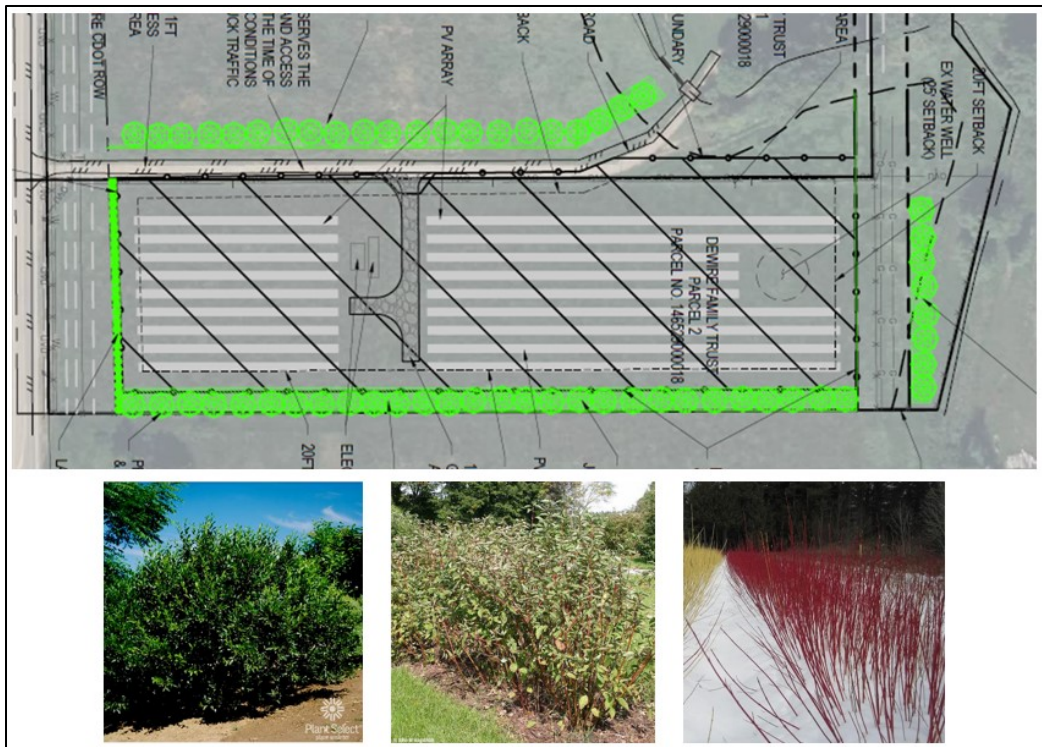


Figure 6: Proposed vegetative screening (note: north is to the right in map); sample images of Smith Buckthorn (lefthand image) and Red Osier Dogwood in the summer (center image) and winter (righthand image).

Staff find that the proposed vegetative screening will help to reduce and mitigate the visual impacts of the proposed project. However, given that the proposed plantings are between five and eight feet tall at the lower end of their typical growth, staff finds there is still the potential for significant visual impacts from panels at a height of 12 feet above existing grade. At 12 feet above existing grade, potentially as much as seven feet of the panels would be visible above the vegetation. To further mitigate the visual impacts of the proposed panels, staff recommend as a condition of approval that the maximum height of the panels be limited to no more than 10 feet above existing grade. This will help to ensure that at least half of the panels' height is screen by the vegetative plantings. Staff find that 10 feet above grade is an appropriate height limit as that is the height which the county has determined to have minimal visual impacts from solar arrays. This determination was reflected in the Land Use Code amendments related to Accessory Solar Energy Systems adopted by the Board of County Commissioners in January 2023 (docket DC-22-0002).

Therefore, as conditioned, staff find this criterion is met.

(10) Will not otherwise be detrimental to the health, safety, or welfare of the present or future inhabitants of Boulder County;

There is no indication the proposal will have detrimental effects on the health, safety, or welfare of the present or future inhabitants of Boulder County, and no referral agency has responded with such a concern.

Therefore, staff find this criterion is met.

- (11) ***Will establish an appropriate balance between current and future economic, environmental, and societal needs by minimizing the consumption and inefficient use of energy, materials, minerals, water, land, and other finite resources;***

With the recommended conditions of approval, the construction of the proposed solar energy system will minimize the consumption and inefficient use of resources by providing a sustainable source of energy generation. Inefficient use of land will also be minimized through the required remediation of the site after the system's life cycle has ended, as conditioned in Criterion 2 above.

Therefore, as conditioned in Criterion 2 above, staff find this criterion can be met.

- (12) ***Will not result in unreasonable risk of harm to people or property – both onsite and in the surrounding area – from natural hazards. Development or activity associated with the use must avoid natural hazards, including those on the subject property and those originating off-site with a reasonable likelihood of affecting the subject property. Natural hazards include, without limitation, expansive soils or claystone, subsiding soils, soil creep areas, or questionable soils where the safe-sustaining power of the soils is in doubt; landslides, mudslides, mudfalls, debris fans, unstable slopes, and rockfalls; flash flooding corridors, alluvial fans, floodways, floodplains, and flood-prone areas; and avalanche corridors; all as identified in the Comprehensive Plan Geologic Hazard and Constraint Areas Map or through the Special Review or Limited Impact Special Review process using the best available information. Best available information includes, without limitation, updated topographic or geologic data, Colorado Geologic Survey landslide or earth/debris flow data, interim floodplain mapping data, and creek planning studies.***

The Comprehensive Plan does not identify any natural hazards on or near the subject parcel. No referral agencies have responded with any concerns related to natural hazards.

Therefore, staff find this criterion is met.

- (13) ***The proposed use shall not alter historic drainage patterns and/or flow rates unless the associated development includes acceptable mitigation measures to compensate for anticipated drainage impacts. The best available information should be used to evaluate these impacts, including without limitation the Boulder County Storm Drainage Criteria Manual, hydrologic evaluations to determine peak flows, floodplain mapping studies, updated topographic data, Colorado Geologic Survey landslide, earth/debris flow data, and creek planning studies, all as applicable given the context of the subject property and the application.***

As discussed above, the applicants state that the existing storm water flow characteristics are expected to remain unchanged on-site. However, per the referral response from Wright Water Engineers, the assumption that a solar field will not change the degree of imperviousness is not consistent with research and recent Mile High Flood District (MHFD) evaluations. Per Wright Water Engineers, the proposed solar panels will concentrate runoff, and will create "rain shadow" areas beneath the panels that will not be fully utilized for infiltration. The solar panel orientation plays a large role in how well the runoff infiltrates. The pending MHFD criteria for solar fields, which use imperviousness of 5% when panels are parallel to contours (maximum tilt), 20% when diagonal, and 40% when perpendicular (minimum tilt). In order to fully determine the runoff impacts of the proposed panels, staff recommend as a condition of approval that, at permitting, the applicants submit revised runoff calculations and detention requirements in light of this information. Post-development runoff numbers must account for the change in runoff from the solar panels.

Additionally, the proposed project is subject to full-spectrum detention and permanent water quality controls as identified in Section 1200 of the [Boulder County Storm Drainage Criteria Manual \(SDCM\)](#). Section 1200 of the SDCM states that full-spectrum detention is required for all new development unless it meets one of four specific exceptions:

1. Parcels that are 3 acres or larger, have one single-family dwelling, and have a total imperviousness of less than 10 percent;
2. Additions to buildings where the total impervious area, both existing and proposed, covers less than 5,000 square feet of impervious paved and roof surfaces;
3. Fill areas that are not paved over or otherwise made impervious; or
4. Other situations as may be determined by the County Engineer to be in the best interest of the county.

Staff has determined that the proposed project does not meet any of these exceptions. While the property is more than 3 acres in size, it has more than one single-family dwelling, so does not meet exception #1; exceptions #2 and #3 are not applicable; and granting the project an exception from the full-spectrum detention requires (exception #4) has not been determined to be in the best interest of the county. As such, staff recommend as a condition of approval that the plans submitted for permitting must demonstrate compliance with this section of the SDCM.

Finally, since the project as proposed would include more the one acre of ground disturbance, it will require a Boulder County Stormwater Quality Permit (SWQP). Staff recommend as a condition of approval that the applicants submit an application for a SWQP at building permit application.

Therefore, as conditioned, staff find this criterion can be met.

RECOMMENDATION

Staff has determined that the proposal can meet all the applicable criteria of the Boulder County Land Use Code for Special Review. Therefore, staff recommend that the Boulder County Planning Commission recommend to the Board of County Commissioners ***CONDITIONAL APPROVAL*** of ***docket SU-24-0005 Pivot Solar Energy Facility*** with the following conditions:

1. The site plans dated June 20, 2024, are approved as submitted, subject to all additional conditions of approval.
2. ***Prior to the issuance of any permits by the Boulder County Community Planning & Permitting Department and within one-year of the signing of the Resolution***, the applicants must provide a Development Agreement for review and approval by County staff. Once approved by County staff, the Development Agreement must be signed and notarized by the applicants, and will be recorded by County staff.
3. The solar energy facility as proposed is subject to a sunset date of 40 years after construction is complete or at the end of the effective lifespan of the facility, whichever is sooner.
4. ***Prior to the recordation of the Development Agreement***, the applicants must submit a detailed decommissioning plan for the proposed project for review and approval by Community Planning & Permitting staff. This plan must include details on the removal of all equipment and infrastructure.

5. ***Prior to the issuance of any deconstruction permits***, the applicants must submit a full post-decommission revegetation plan to be reviewed and approved by Community Planning & Permitting staff. This plan must include details on soil restoration and revegetation of all disturbed areas.
6. Decommissioning and remediation of the facility and project area must begin within 90 days of the project sunset, and must be completed within 1 year of decommissioning commencing.
7. ***Prior to the recordation of the Development Agreement***, the applicants must provide Boulder County with a security bond for the cost of removing the system and remediation of the project area. The amount of the bond must be based on documented anticipated costs for removal of all above and below ground infrastructure as described in the decommissioning plan submitted by the applicants and all required post-decommissioning revegetation. The bond amount must be reviewed and approved by Community Planning & Permitting staff.
8. ***Prior to the recordation of the Development Agreement***, the applicants must submit a full farm management plan for review and approval by Community Planning & Permitting staff. If the applicants determine that agrivoltaics are not feasible, the farm management plan must provide a detailed explanation as to why agrivoltaics cannot be carried out on the subject parcel.
9. No construction is permitted occur under wet soil conditions.
10. ***At building permit***, plans submitted for permitting must demonstrate a Boulder County Multimodal Transportation Standards compliant access.

At final inspection, the Community Planning & Permitting Department must verify that the access and driveway has been constructed to comply with the Standards.
11. ***At building permit***, the applicant must provide documentation from the Colorado Department of Transportation that the access from Arapahoe Road meets CDOT requirements.
12. ***During construction***, all materials, machinery, dumpsters, vehicles, and other items associated with the project should be staged on the subject parcel.
13. ***During construction***, construction traffic to and from the subject parcel shall be limited to between 8:30 a.m. and 3:30 p.m., Monday through Friday.
14. The construction trailer and portable toilet must be removed from the subject property within 30 days of completion of construction.
15. ***Prior to the issuance of any building or grading permit***, the applicants must submit a detailed landscaping plan, showing the location of all landscape plantings, information on the specific species to be used, and watering and maintenance information, for county staff review and approval.
16. The applicants must remove and replace any of the vegetative screening that dies or fails throughout the life span of the facility.
17. The maximum height of the panels shall be limited to no more than 10 feet above existing grade.

18. ***At permitting***, the applicants must submit revised runoff calculations and detention requirements in light of the pending MHFD criteria for solar fields, which use imperviousness of 5% when panels are parallel to contours (maximum tilt), 20% when diagonal, and 40% when perpendicular (minimum tilt). Post-development runoff numbers must account for the change in runoff from the solar panels.
19. ***At building permit***, the applicants must submit plans that demonstrate compliance with Section 1200 of the Boulder County Storm Drainage Criteria Manual.
20. ***At building permit***, the applicants must submit a Boulder County Stormwater Quality Permit application; the Stormwater Quality Permit must be issued before work can commence.
21. The applicants are subject to the terms, conditions, and commitments of record and in the file for docket ***SU-24-0002 Pivot Solar Energy Facility***.



Boulder County Land Use Department

Courthouse Annex Building
 2045 13th Street • PO Box 471 • Boulder, Colorado 80302
 Phone: 303-441-3930
 Email: planner@bouldercounty.org
 Web: www.bouldercounty.org/lu
 Office Hours: Mon., Wed., Thurs., Fri. 8 a.m. to 4:30 p.m.
 Tuesday 10 a.m. to 4:30 p.m.

Shaded Areas for Staff Use Only
Intake Stamp

Planning Application Form

The Land Use Department maintains a submittal schedule for accepting applications. Planning applications are accepted on Mondays, by appointment only. Please call 303-441-3930 to schedule a submittal appointment.

Project Number		Project Name			
<input type="checkbox"/> Appeal <input type="checkbox"/> Correction Plat <input type="checkbox"/> Exemption Plat <input type="checkbox"/> Final Plat <input type="checkbox"/> Limited Impact Special Use <input type="checkbox"/> Limited Impact Special Use Waiver <input type="checkbox"/> Location and Extent		<input type="checkbox"/> Modification of Site Plan Review <input type="checkbox"/> Modification of Special Use <input type="checkbox"/> Preliminary Plan <input type="checkbox"/> Resubdivision (Replat) <input type="checkbox"/> Rezoning		<input type="checkbox"/> Road Name Change <input type="checkbox"/> Road/Easement Vacation <input type="checkbox"/> Site Plan Review <input type="checkbox"/> Site Plan Review Waiver <input type="checkbox"/> Sketch Plan <input checked="" type="checkbox"/> Special Use/SSDP	<input type="checkbox"/> Special Use (Oil & Gas development) <input type="checkbox"/> State Interest Review (1041) <input type="checkbox"/> Subdivision Exemption <input type="checkbox"/> Variance <input type="checkbox"/> Other:
Location(s)/Street Address(es) 9215 Arapahoe Rd, Boulder, CO 80301					
Subdivision Name					
Lot(s)	Block(s)	Section(s) 29	Township(s) 1N	Range(s) 69	
Area in Acres 13.42 total/6.77 permit area	Existing Zoning Rural Residential	Existing Use of Property Residential		Number of Proposed Lots	
Proposed Water Supply N/A, no potable water required		Proposed Sewage Disposal Method N/A, no sewage required			

Applicants:

Applicant/Property Owner Dewire Family Trust (Property Owner)			Email dewirefamily9215@gmail.com	
Mailing Address 9215 Arapahoe Rd				
City Boulder	State CO	Zip Code 80301	Phone (303) 666-9459	
Applicant/Property Owner/Agent/Consultant Pivot Solar 48 LLC (Applicant)			Email bradley.thomas@pivotenergy.net	
Mailing Address 1601 Wewatta St #700				
City Denver	State CO	Zip Code 80202	Phone (415) 306-6332	
Agent/Consultant			Email	
Mailing Address				
City	State	Zip Code	Phone	

Certification (Please refer to the Regulations and Application Submittal Package for complete application requirements.)

I certify that I am signing this Application Form as an owner of record of the property included in the Application. I certify that the information and exhibits I have submitted are true and correct to the best of my knowledge. I understand that all materials required by Boulder County must be submitted prior to having this matter processed. I understand that public hearings or meetings may be required. I understand that I must sign an Agreement of Payment for Application processing fees, and that additional fees or materials may be required as a result of considerations which may arise in the processing of this docket. I understand that the road, school, and park dedications may be required as a condition of approval.

I understand that I am consenting to allow the County Staff involved in this application or their designees to enter onto and inspect the subject property at any reasonable time, without obtaining any prior consent.

All landowners are required to sign application. If additional space is needed, attach additional sheet signed and dated.

Signature of Property Owner	Printed Name Larry Dewire	Date 2-15-24
Signature of Property Owner	Printed Name LAURENT DEWIRE	Date

The Land Use Director may waive the landowner signature requirement for good cause, under the applicable provisions of the Land Use Code.



Community Planning & Permitting

2045 13th Street, Boulder, CO 80302 303-441-3930 www.bouldercounty.org

Vicinity

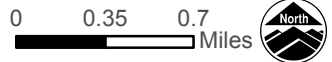
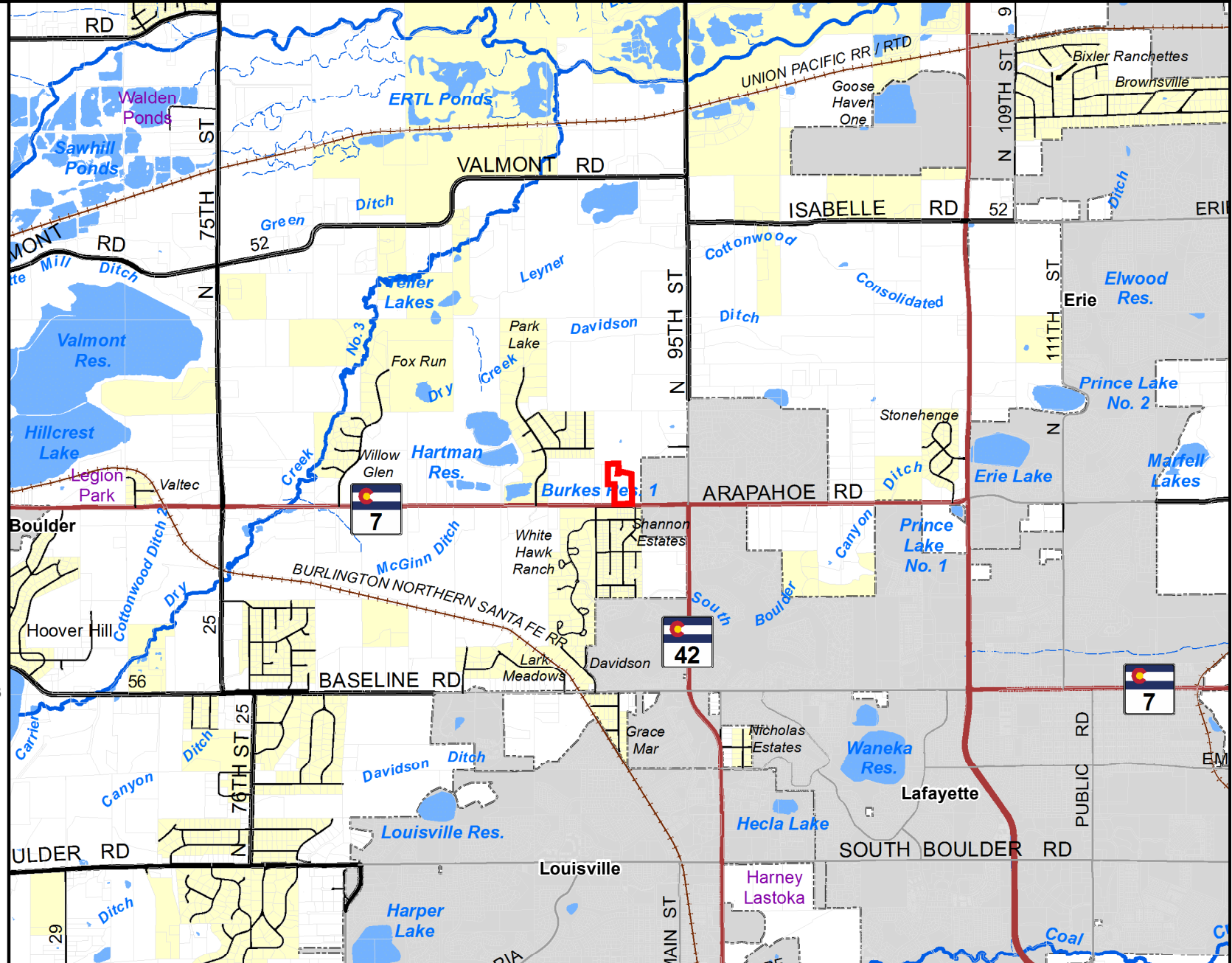
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Subject Parcel

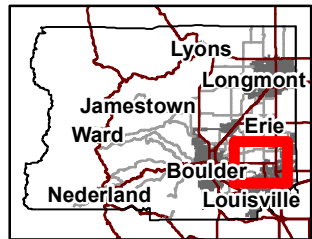
Municipalities

Subdivisions

Subdivisions



Area of Detail Date: 10/16/2023



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Aerial

9215 ARAPAHOE RD

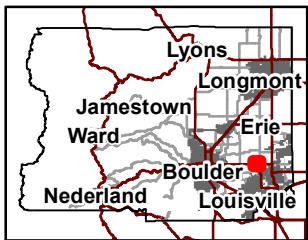
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Location

9215 ARAPAHOE RD

Subject Parcel

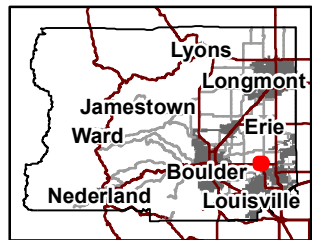
Subdivisions

Subdivisions

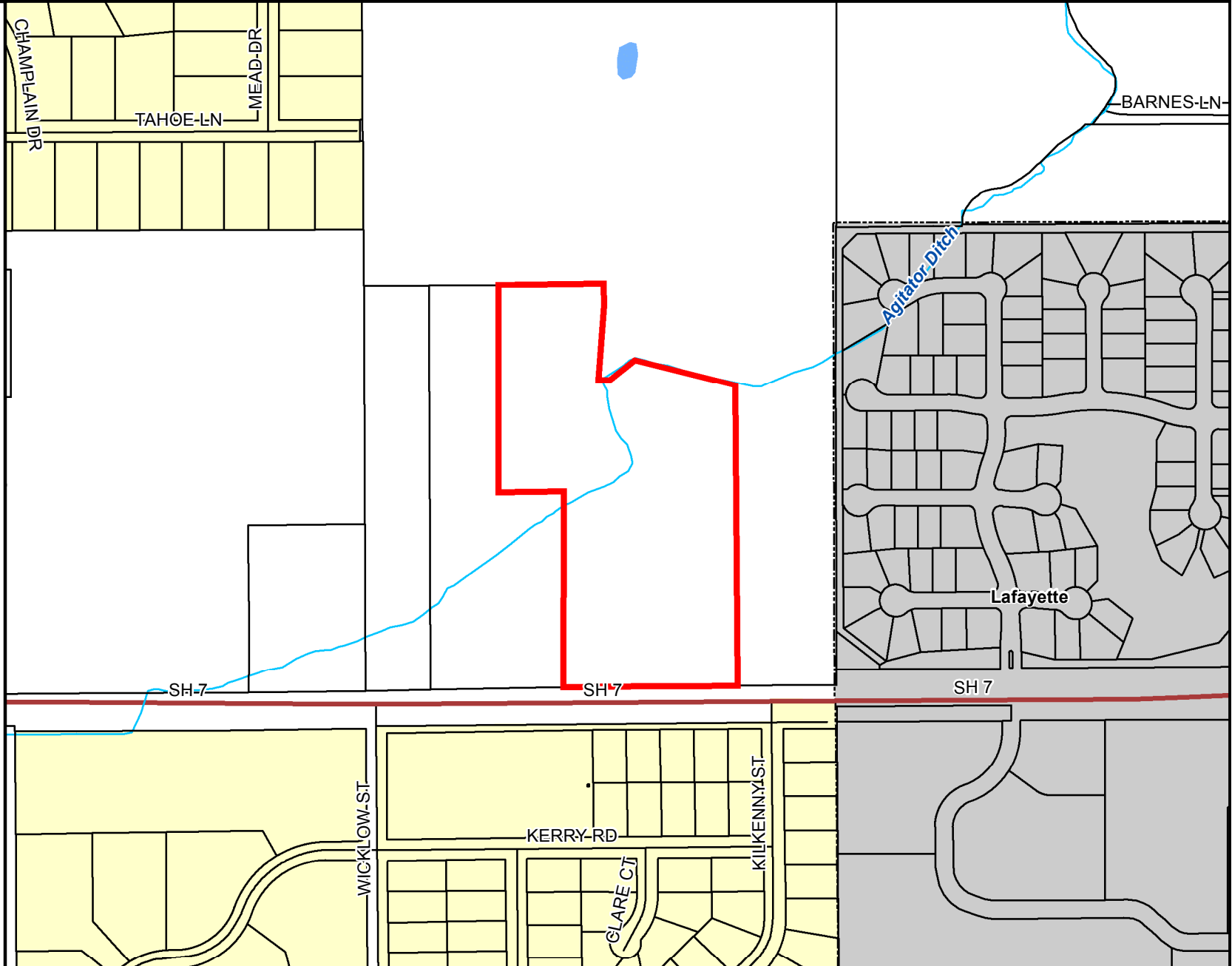
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Zoning

9215 ARAPAHOE RD

Subject Parcel

Zoning Districts

Rural Residential

Ditch Setbacks

20 feet

50 feet

Major Road Setbacks

110 feet

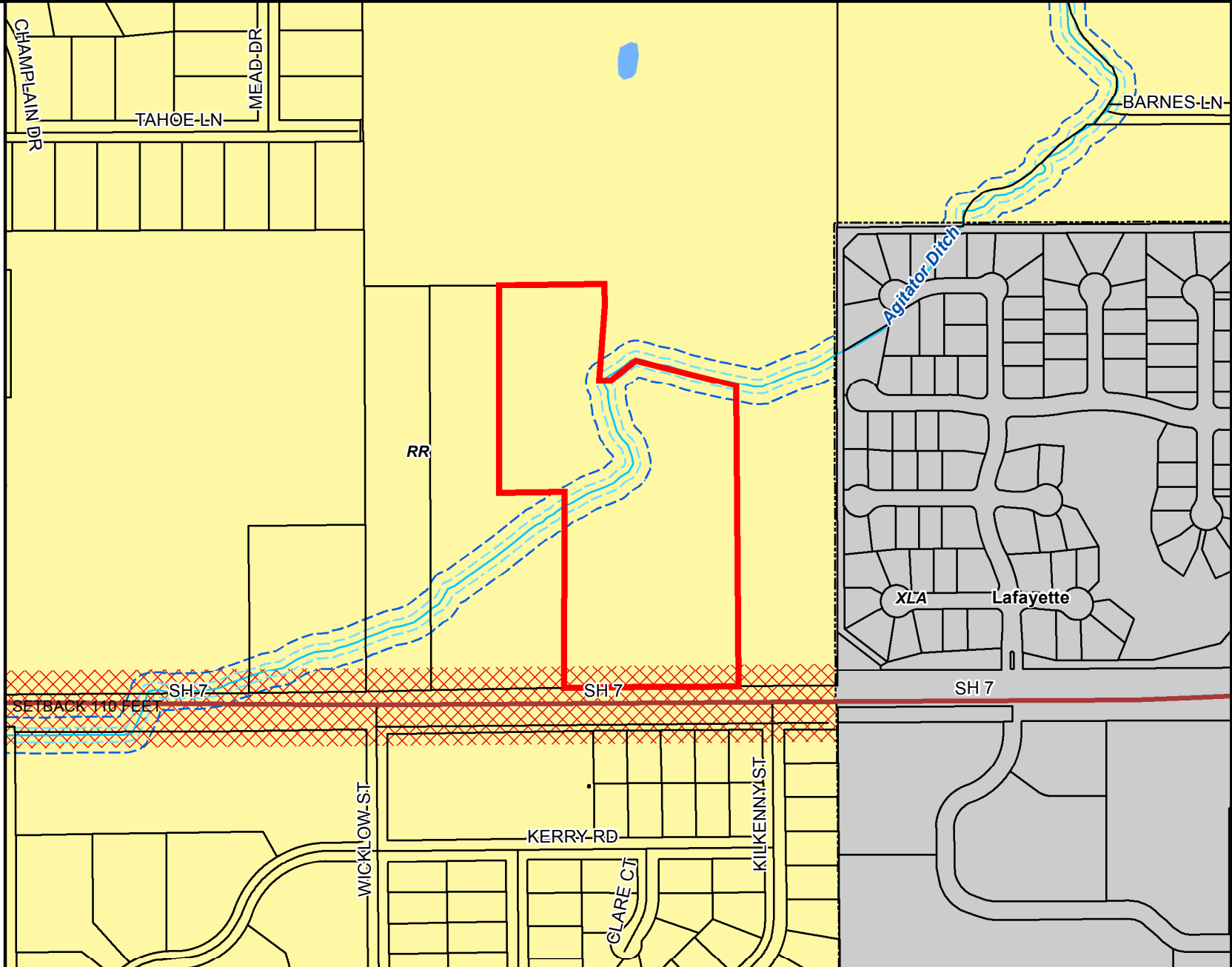
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Comprehensive Plan

9215 ARAPAHOE RD

Subject Parcel

Riparian Areas

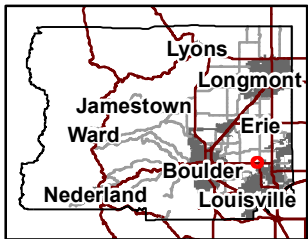
Significant Agricultural Land

Ag of National Importance

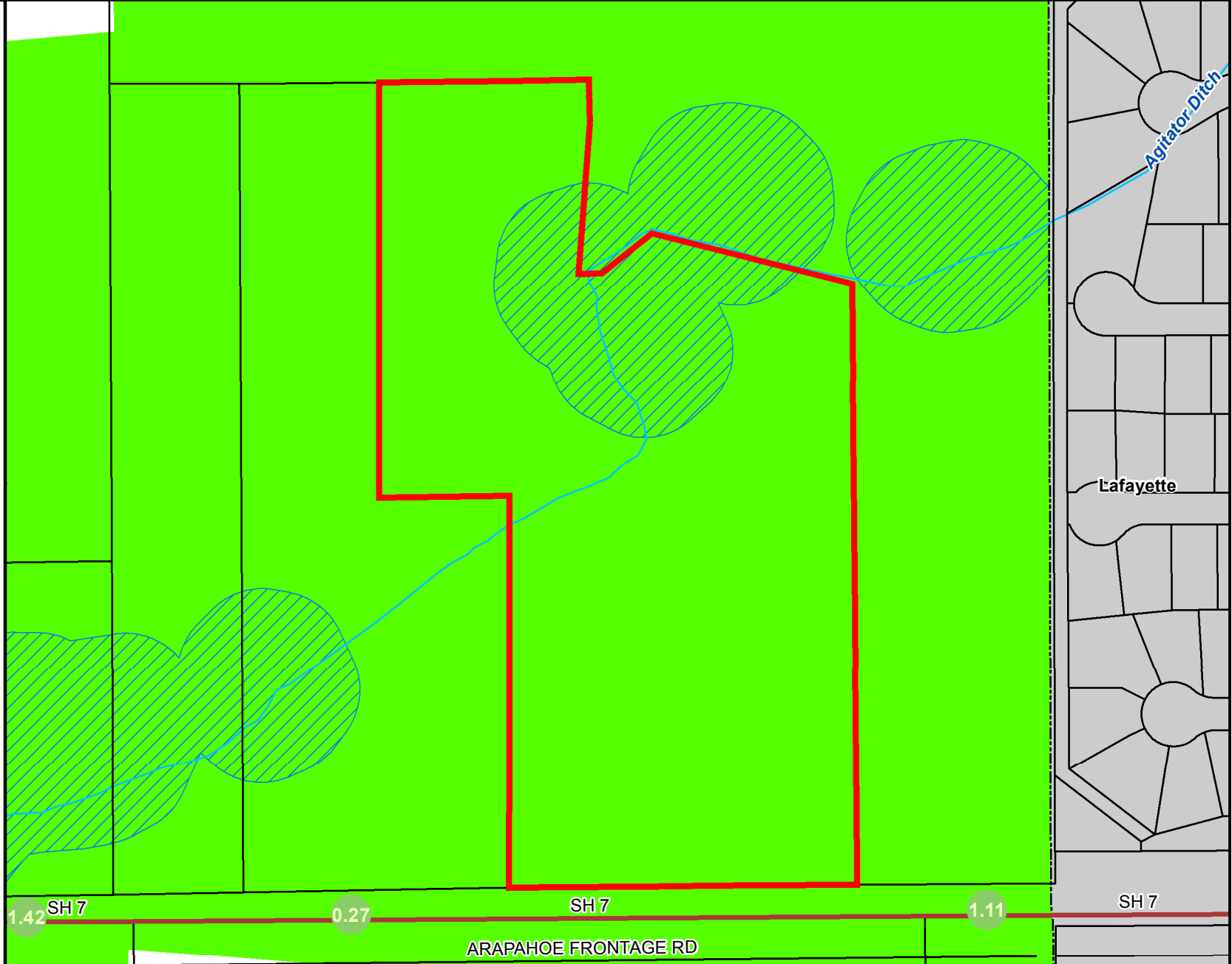
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Area of Detail Date: 10/16/2023



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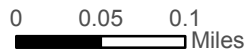
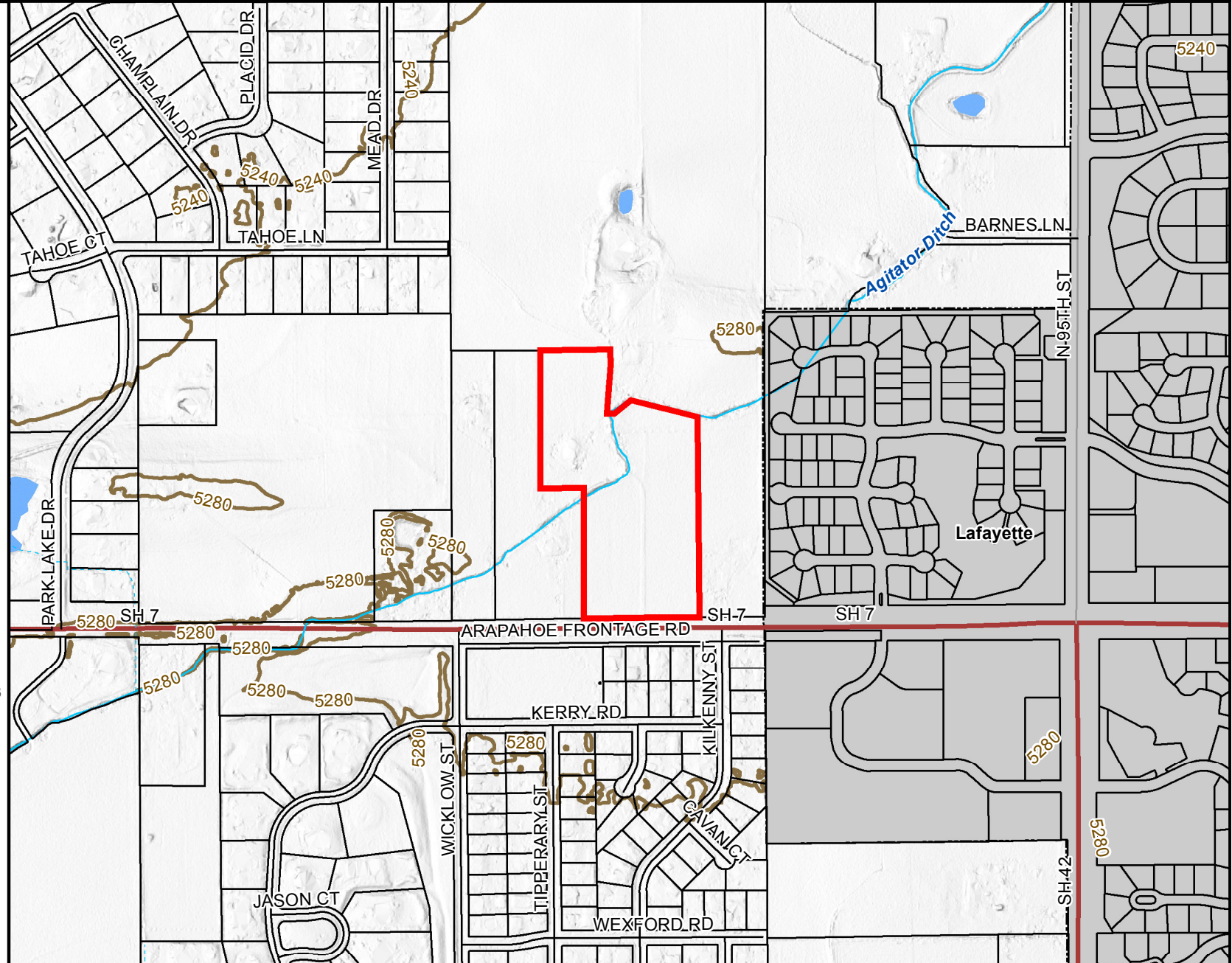
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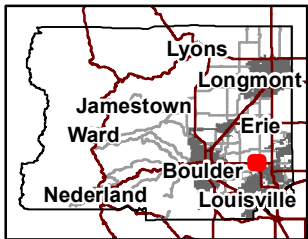
Elevation Contours

9215 ARAPAHOE RD

-  Subject Parcel
-  Contours 40'



Area of Detail Date: 10/16/2023



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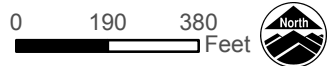
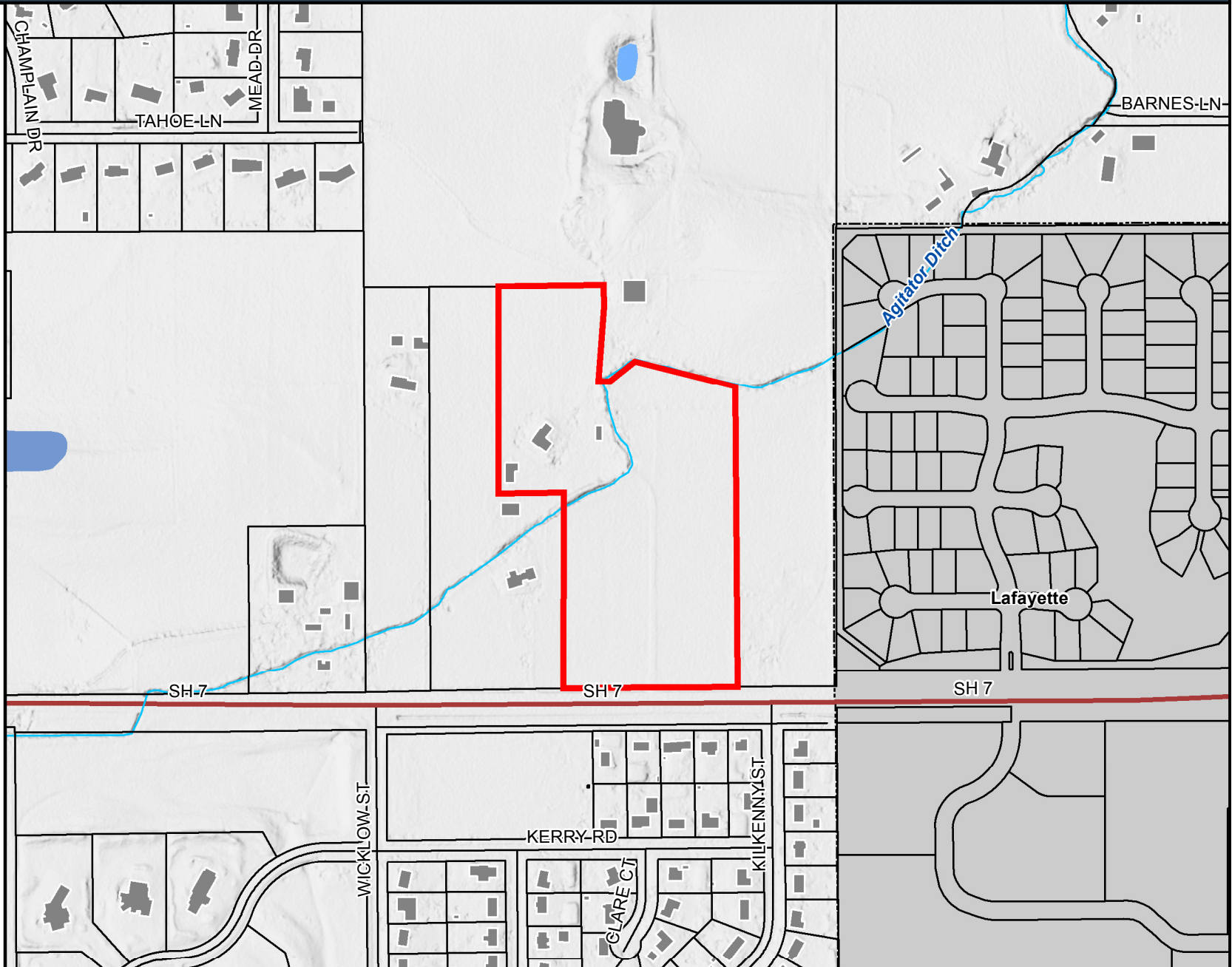
Community Planning & Permitting

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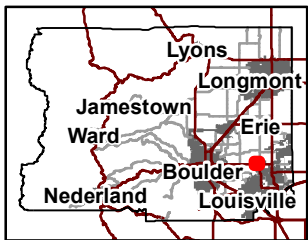
Geologic Hazards

9215 ARAPAHOE RD

Subject Parcel



Area of Detail Date: 10/16/2023



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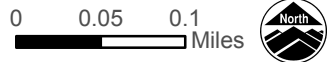
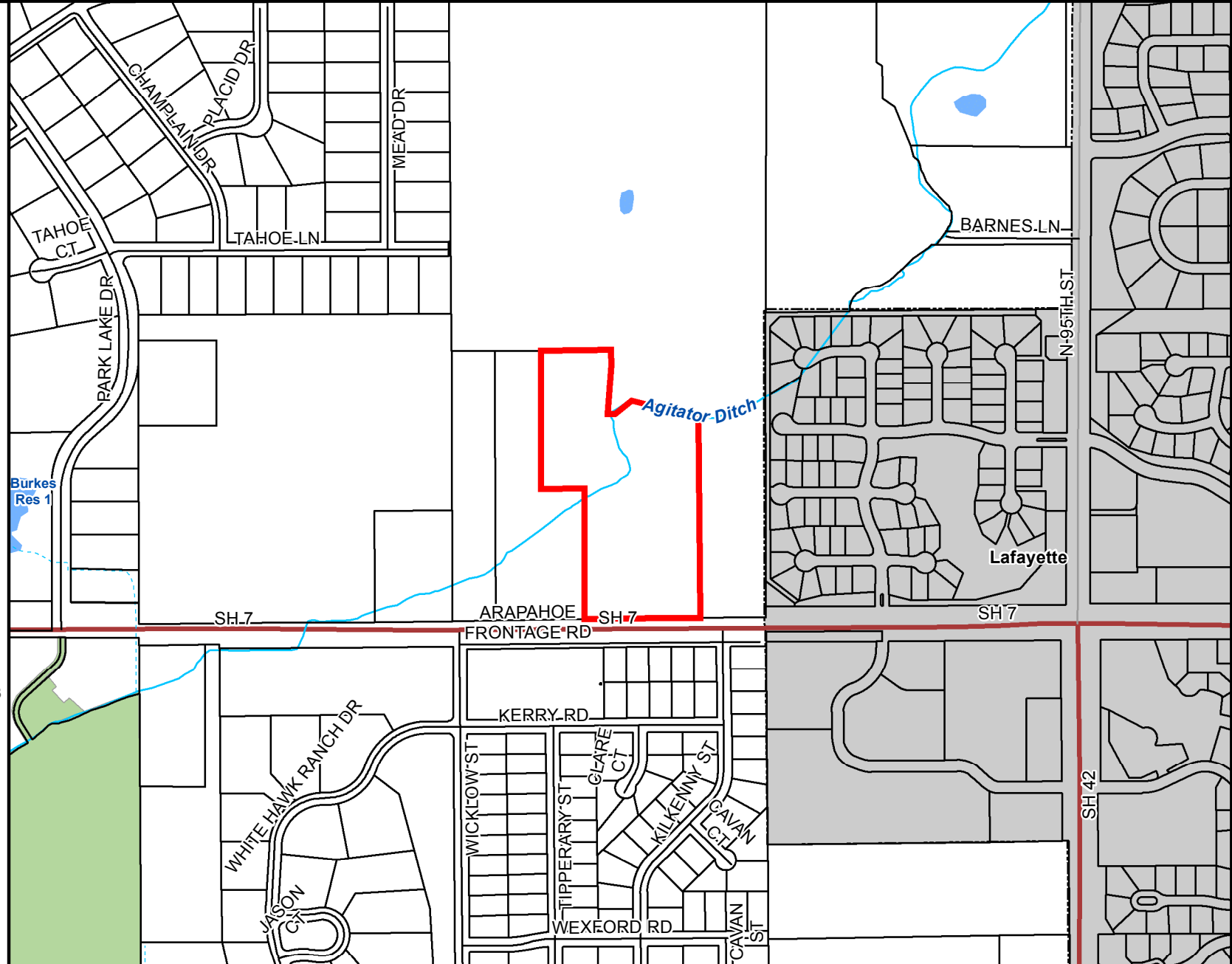
Community Planning & Permitting

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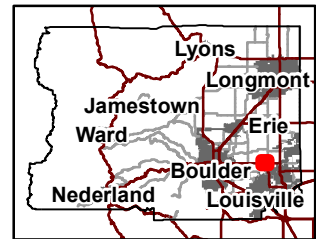
Public Lands & CEs

9215 ARAPAHOE RD

-  Subject Parcel
-  OSMP Properties
-  Other Municipal OS-BCPOS data



Area of Detail Date: 10/16/2023



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Pivot Solar 48: Development Narrative

April 1, 2024

Project Background and Overview

Public Service Company of Colorado (“Xcel Energy”) has contracted with Pivot Energy to design, permit, and build a 550 kilowatt (kW) solar energy facility on a parcel of land owned by Dewire Family Trust, located at 9215 Arapahoe Rd (Parcel # 146529000018). Pivot has an active ground lease in place with the Dewire Family Trust for twenty-one years with two additional ten-year option periods. The ground lease includes approximately 8 acres of the larger 13-acre parcel. All 8 acres under lease are currently vacant. The parcel is zoned as Rural Residential and is primarily undeveloped open land. Months in advance of this application’s submission, Pivot Energy began working directly with neighbors of the project to ensure their feedback was incorporated into the application. This is discussed in the community outreach and engagement section below.

The facility will participate in Xcel Energy’s Solar*Rewards Offsite Program, generating clean energy for a large local offtaker. This 550-kW project will generate enough energy to power the equivalent of approximately 134 average Colorado homes annually, offsetting approximately 526 tons of CO₂ emissions per year based on Xcel Energy’s 2022 generation mix. Pivot Energy will own and operate the solar energy facility for its operational life, which is expected to be 21-41 years.

Pivot Solar 48 is being evaluated as part of a new and innovative “agrivoltaics” (agriculture + photovoltaics) initiative at Pivot Energy, going above and beyond industry standard practices and Boulder County requirements. If determined to be feasible at the site, Pivot will work with a local tenant farmer to cultivate low-growth vegetables and herbs underneath the rows of solar panels using water already available onsite via the Agitator Ditch and an existing well. Notably, cultivation of low-growth crops will not require the solar racking to be increased in height as has been required at other local agrivoltaics sites – this comes with the same benefits of improving the agricultural integrity of the land without the additional visual impact of taller rows of solar panels.

If crop production is not feasible, Pivot plans to utilize sheep grazing as a means of vegetation management, returning the property to its historic use. A mix of forbs, fescues, and clovers will be planted on site. Pivot works with professional ecologists and civil firms to specify the seed mixes in order to ensure that the chosen plants will provide the right balance of biodiversity and high forage content to support the herd and improve soil quality over time. Pivot also aims to include a mixture of some nitrogen fixing and some nitrogen feeding varieties, which eliminates the need for using chemical fertilizers onsite. Sheep grazing helps to further establish plants via animal hooves integrating seeds into the soil, and their waste acts as a natural and low-odor fertilizer to enrich the soil, improving the land’s agricultural integrity.

The project will use industry standard solar equipment including photovoltaic (PV) solar modules and single axis tracking racks. The racks follow the angle of the sun during the day, maximizing the amount of energy produced by the solar modules. Pivot Energy has completed a review of any potential impacts to air traffic and has received a generated conclusion that no additional FAA review is required, which has been included in this narrative as Appendix A.

During construction, crews of manual laborers, equipment operators, and deliveries will access the site via Arapahoe Rd. On any given day, up to 15-20 people could be on site working on the project. The construction period will last approximately 16 to 20 weeks. Once construction is complete, the solar array operates with no on-site personnel. Periodic site visits with a pickup truck are required to ensure mechanical and electrical connections and communications equipment are operating as expected. These operation and maintenance visits typically occur 4-8 times per year with a single pickup truck and a crew of up to four people. If crop production is determined to be feasible onsite, tenant farmer operations may require additional visits. In either case, crop production or not, site visits during operations will not impact area roads and traffic, as the total number of annual visits will be less than that of even a single-family residence.

The solar equipment will operate with minimal noise, and importantly, only during daylight hours. The racks follow the sun during the day and are powered by electric motors that advance the racks at small increments. Located on the equipment pad, inverters and an Xcel-owned transformer work together to convert the direct current electricity ("DC") produced by the solar panels to alternating current electricity ("AC") at a suitable voltage for injection to the local electrical grid. This process creates roughly as much noise as a residential air conditioner unit during daylight hours. At a distance of 150 feet from the inverters, noise levels generally approach background levels, per a study conducted by the Massachusetts Clean Energy Center. The nearest residential home to this project is roughly 415 feet away from the equipment pad. It is also important to note that there is a major boulevard immediately adjacent to the site, and even within 150 feet of the equipment pad, the sound of traffic is likely to be louder than any perceptible noise from the solar array. The energy produced by the array is clean, eliminating the greenhouse gas and pollutant emissions associated with traditional fossil-fuel energy generators. The proposed project will not generate any odors and the site will have no onsite lighting.

The proposed project will not require potable water, septic system, public water, or sewer because the site will be mostly unmanned once construction is complete. During construction and any maintenance visits, appropriate on-site services will be maintained to ensure work crews have adequate access to portable toilets and potable water for drinking and washing hands. Because the site will generally not be staffed, a minimal level of emergency service will be required. Emergency services will have full access to the site off Arapahoe Road.

Partially as a result of the multiple community meetings that were hosted in advance of this applications submission, Pivot has designed the site from the ground up to mitigate visual impacts to the greatest degree possible. Array locations have been moved as far

as possible away from neighboring property lines, and vegetative screening measures are being taken, as further described in the landscaping plan. In front of the fence lines, larger landscaping is proposed to help break up the bulk and mass of the system. Underneath the panels, crop production is currently being evaluated as a secondary use. Areas not being cultivated will have native, pollinator-friendly, low-growth vegetation that will help the array blend into the natural surroundings and act as screening from adjacent landowners. Included in figure 1 below are photos of past projects as an example.



Figure 1: Vegetation before and after construction at a local site

Community Outreach and Engagement

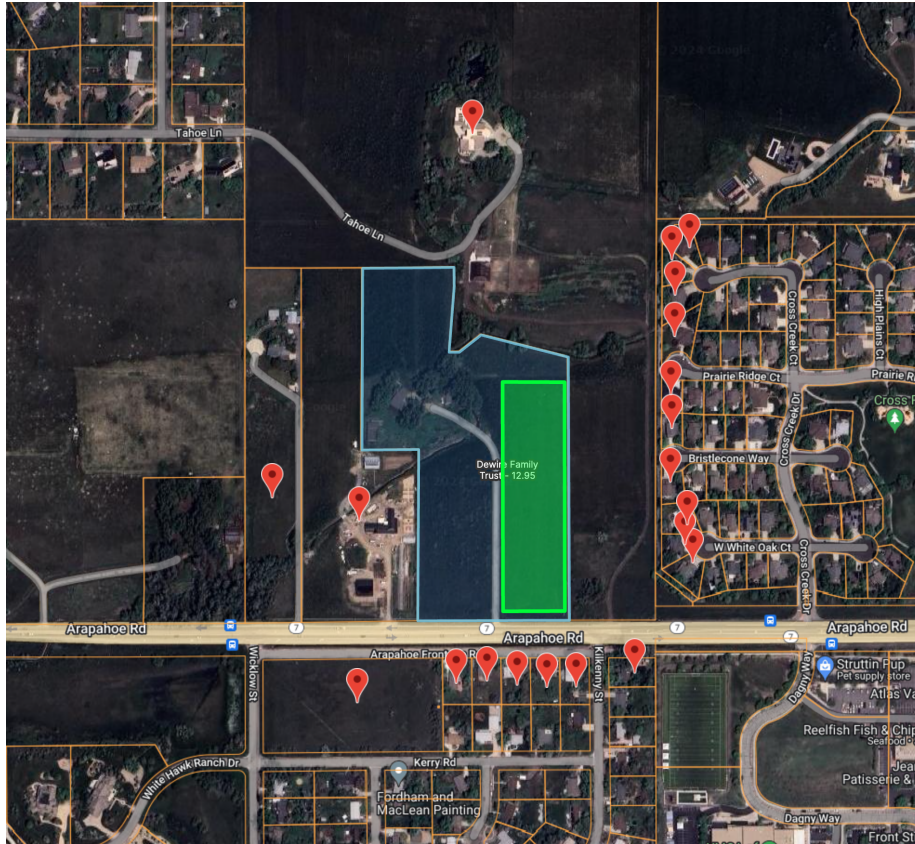


Figure 2: Map of abutters contacted prior to application

Community engagement is a critical piece of the way Pivot Energy develops solar projects – in fact, we even have a dedicated community engagement team that works alongside our developers to facilitate this process. Unlike many other developers, we aim to proactively address questions and incorporate feedback from neighbors well in advance of permit application submission. Though it is difficult and time consuming to incorporate feedback from many additional stakeholders, Pivot is committed to thoughtfully developing projects to suit the unique needs of the neighborhoods we work in.

In preparation for application submission, all adjacent residential property owners were sent USPS Priority mail flat envelopes on February 6th, 2024, including information about the project, contact information, a request to provide feedback and questions, and an invitation to a community meeting on 2/15/24. A total of 20 letters were sent to adjacent neighbors (as indicated in the aerial image above). No direct responses from the landowners received, but there was a strong turnout of roughly 20-30 people to the community meeting. As requested by the neighbors, a second community meeting, complete with a presentation, was held on 3/14/24. Pivot answered questions and solicited feedback from neighbors regarding the use for extra space on the parcel, landscaping, and site layout, which has been incorporated into this application. Select neighbors also requested to visit an operating Pivot Energy solar facility in order to view firsthand what our projects look like, which is scheduled for mid-April.

Response to Boulder County Land Use Code Article 4 • 4-514 Utility and Public Service Uses

M. Solar Energy – Ground-Mounted System

1. Definition: A solar energy system mounted on a rack or poles that rests on or is attached to the ground, not including a solar energy system mounted on parking canopies. **Applicant Response: noted.**
2. Districts Permitted:

Zoning District	Small < 2.5 acres disturbed area	Medium 2.5 to 10 acres disturbed area	Large 10+ acres disturbed area
MF, MH, MI, SR, H	SPR	Not allowed	Not allowed
A, ER, RR, F	SPR/SU*	LU/SU*	SU*
LI, GI, C, B, T	SPR	SPR	LU

*Note: Special Review is required for Significant Agricultural Lands in A, RR, ER, as listed in the additional provisions, below. Medium and Large systems are not permitted in platted subdivisions in ER and RR.

3. Parking Requirements: To be determined through review. **Applicant Response: noted.**
4. Loading Requirements: None. **Applicant Response: noted.**
5. Additional Provisions:
 - a. This use is required to be located on a building lot, or an outlot platted for this purpose. **Applicant Response: the proposed project is located on a building lot.**
 - b. The use may be allowed on right-of-way, as permitted by the right-of-way owner and if compatible with the use of the right-of-way. For right-of-way systems, further requirements may be stipulated by the Boulder County Public Works Department or the Colorado Department of Transportation to ensure compatibility with transportation-related uses of the right-of-way. **Applicant Response: this project is not located within right-of-way.**
 - c. The appropriateness of a site, the specific location on the site, and the extent of site disturbance will be determined through the applicable review process. **Applicant Response: noted.**
 - d. Ground-mounted systems with disturbed area greater than 0.5 acre cannot be located on areas designated by the Boulder County Comprehensive Plan as Natural Landmarks, Natural Areas, Critical Wildlife Habitats, or Wildlife Migration Corridors. **Applicant Response: the proposed project is not located in an area designated any of the above categories.**
 - e. Ground-mounted systems are allowed as a second Principal Use on parcels subject to the review process applicable for the proposed new ground-mounted system. **Applicant Response: noted.**
 - f. Ground-mounted systems shall not exceed 15 feet in height, except to accommodate site specific needs and as approved through review.

Systems exceeding 15 feet in height require an increased setback of 75 feet from all property lines, unless it is demonstrated that a lesser setback or topographical or vegetative screening adequately mitigates visual impacts. In no case shall a system exceed 25 feet in height. **Applicant Response: noted - the proposed project will conform to this design standard.**

- g. Ground-mounted systems with disturbed area greater than 2.5 acre are not permitted in the Forestry Zoning District unless the site has been previously contaminated or the soil otherwise damaged, making it unsuitable for agricultural or forestry uses. Qualifying areas may include properties that have previously undergone intensive development and where it is determined, through the review process, that installation of a ground-mounted system will not have additional significant impacts. **Applicant Response: N/A**
- h. Ground-mounted systems with a disturbed area greater than 0.5 acre on lands designated as Significant Agricultural Lands under the Boulder County Comprehensive Plan, and located in the Agricultural, Estate Residential, or Rural Residential zone districts, require Special Review and are subject to the following additional requirements intended to preserve and maintain soil and agricultural integrity:
 - i. The total disturbed area associated with the ground-mounted system cannot exceed 7 acres on parcels smaller than 70 acres in size, or 14 acres on parcels larger than 70 acres in size. **Applicant Response: the proposed project conforms to this design standard.**
 - ii. Application for the ground-mounted system must contain a solar energy system development report as set forth in Article 3-203. **Applicant Response: attached.**

Response to Boulder County Land Use Code Article 4 • 4-601 Review Criteria

A. A use will be permitted by Special Review or Limited Impact Special Review only if the Board finds that the proposed use meets the following criteria as applicable:

1. Except as otherwise noted, the use will comply with the minimum zoning requirements of the zoning district in which the use is to be established, and will also comply with all other applicable requirements;

Applicant Response: the proposed project complies with requirements laid out in Boulder County Land Use Code Article 4 • 4-514(M), as noted above.

2. The use will be compatible with the surrounding area. In determining compatibility, the Board should consider the location of structures and other improvements on the site; the size, height and massing of the structures; the number and arrangement of structures; the design of structures and other site features; the proposed removal or addition of vegetation; the extent of site disturbance, including, but not limited to, any grading and changes to natural topography; and the nature and intensity of the activities that will take place on the site. In determining the surrounding area, the Board should consider the unique location and environment of the proposed use; assess the relevant area that the use is expected to impact; and take note of important features in the area including, but not limited to, scenic vistas, historic townsites and rural communities, mountainous terrain, agricultural lands and activities, sensitive environmental areas, and the characteristics of nearby development and neighborhoods;

Applicant Response: The proposed project is compatible with the surrounding area. The site sits on undeveloped private land near low-density residences and will be a significantly lower impact than further residential or commercial development in the area would be. The solar panels are shorter than a single-story residence and conform to the maximum height restrictions in Boulder County Land Use Code Article 4 • 4-514(M)(5)(F). While final engineering has not yet been completed and thus a maximum height above grade cannot be determined with certainty, Pivot is financially incentivized to make the panels as short as possible and commits to adhering to applicable code.

The equipment itself maintains neat, orderly, and consistent spacing and appearance across the project area. Existing site drainage patterns will not be changed. Infiltration rates across the site will also remain consistent with current rates due to the extremely limited increases in site imperviousness (racking posts and the equipment pad). The power generated onsite will be clean, renewable energy that will help the County meet its carbon reduction goals by keeping the electricity local.

As mentioned earlier in this narrative, the proposed project is evaluating crop production onsite as a secondary use, which will increase the utilization of the currently unused significant agricultural lands within the project footprint. In the

past, the Dewire property has been used for sheep grazing – if crop production is not feasible, sheep grazing will be the preferred method of vegetation management, restoring the property to its historic use.

After a construction period of approximately 4 – 5 months, the proposed project will operate for at least 20 years. During operation, no personnel will be stationed on the site. No external lighting is required, and the system only generates energy during daylight hours. Any noise associated with the system will be negligible to nearby residences due to their distance from the equipment. Semi-annual equipment maintenance will be supplemented with infrequent visits to manage vegetation (total visits anticipated to be 4 – 8 annually). Relative to almost any other use, the proposed project will generate less odor, noise, light, and traffic ensuring the site remains quiet and compatible with the low-density nature of the surrounding community.

3. The use will be in accordance with the Comprehensive Plan;

Applicant Response: The Boulder County Comprehensive Plan provides wide-ranging guidance for development within unincorporated Boulder County. The proposed project is consistent with the Comprehensive Plan generally, and directly addresses several key components of the plan as well. The Plan's Guiding Principles provide a coherent overview of the Plan's intent. Additional responses are contained in Appendix B.

1. Consider and weigh the interconnections among social, environmental, and economic areas in all decisions.

Applicant Response: The proposed project utilizes an under-used property to advance environmental and social goals by generating and delivering clean energy locally.

2. Encourage and promote the respectful stewardship and preservation of our natural systems and environment by pursuing goals and policies that achieve significant reductions in our environmental footprint.

Applicant Response: The proposed project will generate enough clean energy to meet the annual needs of approximately 134 residences. The low impacts associated with the project mean the underlying land will be preserved for a time in the future when the project is complete and decommissioned. At that time, the land will become available for other suitable and appropriate development. Further, the proposed solar facility will preserve the natural environment more than any residential or commercial use would on this property.

3. Create policies and make decisions that are responsive to issues of social equity, fairness, and access to community resources for all county residents.

Applicant Response: The proposed project will generate tax revenue while not utilizing public resources, which would contribute to the accessibility of community

resources for Boulder County's residents. For all projects, Pivot also invests in community organizations in line with our community donation pillars.

4. Encourage and support a dynamic, stable, and flexible local economy that distinguishes between urban and rural economies and directs uses to appropriate locations. Applicant Response: Smaller solar arrays (such as this one) must be close to existing electrical infrastructure to "plug into" the electric grid. In many circumstances, open lands with enough space to support a project of this scope that are also close enough to acceptable infrastructure are simply too expensive to be used as a solar generation location. The subject property is a perfect location for a solar array, as it will have a minimal impact on neighboring parcels and the county at large while generating stable value for the local, rural economy on underutilized private land.

5. Maintain the rural character and function of the unincorporated area of Boulder County by protecting environmental resources, agricultural uses, open spaces, vistas, and the distinction between urban and rural areas of the county.

Applicant Response: The proposed project is passive in nature. There are no odors or emissions produced from the array. There are no external lights, and the project only operates during daylight hours. The noise associated with normal operations is negligible (and silent outside of daylight hours), and there will be negligible impacts to area roads and traffic. These factors make this project consistent with the existing rural character and function of the immediate area. Other possible uses of this property would result in further suburbanization of the surrounding area rather than preservation of rural character.

6. Encourage and promote regional cooperation and coordination in working with other entities and jurisdictions.

Applicant response: The proposed project will be developed in direct coordination with a local offtaker to provide clean energy that could not have otherwise been generated locally.

7. Actively engage the public in the planning process.

Applicant response: In preparation for this application's submission, Pivot Energy has gone above and beyond industry standard practices and Boulder County requirements to engage the neighboring public. On February 15 and March 14, 2024, Pivot Energy hosted community meetings to directly engage with abutters, the nearby HOA, and other neighbors to solicit input and feedback related to the project. A visit to an operating Pivot solar project is also planned for neighbors in mid-April so that nearby residents have an opportunity to see firsthand what the project may look like.

4. The use will not result in an over-intensive use of land or excessive depletion of natural resources. In evaluating the intensity of the use, the Board should consider the extent of the proposed development in relation to parcel size and the natural landscape/topography; the area of impermeable surface; the amount of blasting, grading, or other alteration of the natural topography; the elimination or disruption of agricultural lands; the effect on significant natural areas and environmental resources; the disturbance of plant and animal habitat, and wildlife migration corridors; the relationship of the proposed development to natural hazards; and available mitigation measures such as the preservation of open lands, the addition or restoration of natural features and screening, the reduction or rearrangement of structures and land disturbance, and the use of sustainable construction techniques, resource use, and transportation management;

Applicant Response: The proposed project will have a minimally intensive impact on the land and will not deplete natural resources. We do not anticipate any grading will be required to complete the project. Overall site drainage patterns will remain the same. The amount of equipment in contact with the ground is very limited and will not impact the site's ability to infiltrate water. No blasting is necessary for the project. Please see the drainage letter for additional information. When the project is decommissioned at the end of its life, the land will again become available for consideration of appropriate development. Any temporary disturbance of plant or animal habitat related to the construction of the project will be mitigated during post-construction site stabilization, including reseeded with appropriate low-growth vegetation as selected or recommended by the County staff and civil consultants. There are no mapped wildlife migration corridors within the project site. There are no known natural hazards at this location. The nature of the project preserves open lands and protects them from more intensive development for decades to come.

5. The use will not have a material adverse effect on community capital improvement programs;

Applicant Response: no impacts expected.

6. The use will not require a level of community facilities and services greater than that which is available;

Applicant Response: Due to their largely passive nature, Solar projects require very little in terms of community facilities. No potable water or additional sewage is required, and there is a negligible impact to traffic once construction is complete (typically 1 pickup truck visit 4-8 times per year).

7. The use will support a multimodal transportation system and not result in significant negative impacts to the transportation system or traffic hazards;

Applicant Response: Transportation impacts are negligible as noted above.

8. The use will not cause significant air, odor, water, or noise pollution;

Applicant Response: Solar farms are not a source of air, odor, water, or noise pollution.

9. The use will be adequately buffered or screened to mitigate any undue visual impacts of the use;

Applicant Response: The proposed project includes vegetative screening, as described further in the attached landscaping plan.

10. The use will not otherwise be detrimental to the health, safety, or welfare of the present or future inhabitants of Boulder County; and

Applicant Response: The proposed project will enhance the health, safety, and welfare of the present and future inhabitants of Boulder County by creating clean, sustainable, and emission-free energy for decades to come.

11. The use will establish an appropriate balance between current and future economic, environmental, and societal needs by minimizing the consumption and inefficient use of energy, materials, minerals, water, land, and other finite resources.

Applicant Response: The proposed use benefits both the current and future economic, environmental, and societal needs by creating clean, low-cost, renewable energy to be consumed in the immediate community without consuming local energy, materials, minerals, water, land, or other finite resources.

12. The use will not result in unreasonable risk of harm to people or property – both onsite and in the surrounding area – from natural hazards. Development or activity associated with the use must avoid natural hazards, including those on the subject property and those originating off-site with a reasonable likelihood of affecting the subject property. Natural hazards include, without limitation, expansive soils or claystone, subsiding soils, soil creep areas, or questionable soils where the safe-sustaining power of the soils is in doubt; landslides, mudslides, mudfalls, debris fans, unstable slopes, and rockfalls; flash flooding corridors, alluvial fans, floodways, floodplains, and flood-prone areas; and avalanche corridors; all as identified in the Comprehensive Plan Geologic Hazard and Constraint Areas Map or through the Special Review or Limited Impact Special Review process using the best available information. Best available information includes, without limitation, updated topographic or geologic data, Colorado Geologic Survey landslide or earth/debris flow data, interim floodplain mapping data, and creek planning studies.

Applicant Response: The proposed project site is not identified on the Comprehensive Plan and Geologic Hazard and Constraint Areas as a Geologic Constraint Area.

Based on the physical conditions of the site, it is not anticipated that landslides, mudslides, mud falls, or debris fans have the potential to impact the proposed project. We have completed on-site topographic mapping with a Colorado-licensed Professional Land Surveyor (PLS). Geotechnical studies are currently in process and will further inform Pivot's engineering.

- 13.** The proposed use shall not alter historic drainage patterns and/or flow rates unless the associated development includes acceptable mitigation measures to compensate for anticipated drainage impacts. The best available information should be used to evaluate these impacts, including without limitation the Boulder County Storm Drainage Criteria Manual, hydrologic evaluations to determine peak flows, floodplain mapping studies, updated topographic data, Colorado Geologic Survey landslide, earth/debris flow data, and creek planning studies, all as applicable given the context of the subject property and the application.

Applicant Response: The proposed project's plan sets have been created using data collected by a Colorado-licensed Professional Land Surveyor who completed a topographic survey of the site. Historic drainage patterns will not be changed because of this project. Please see drainage letter for additional information.

B. If the proposed use is approved or conditionally approved, the Board may impose such conditions and safeguards to insure compliance with the requirements, standards, and conditions of this Section 4-600. Where development or activity associated with the proposed use cannot completely avoid one or more natural hazard, whether because no other site on the subject property can be reasonably designated or developed for the use or because the proposed site is the best location due to the need to avoid or minimize significant adverse impacts under other applicable review criteria, the use may be conditionally approved only if one or more measures will satisfactorily mitigate all significant natural hazard risk posed by the proposed use to the subject property and to the surrounding area. The violation of any condition, safeguard, or commitment of record shall be sufficient grounds for revocation of the Special Review approval by the Board, after a public hearing held in accordance with provisions of 3-205.C.

Applicant Response: Noted.

C. An application for a use by Special Review shall include a development agreement which must be submitted and approved by the Board.

Applicant Response: Noted.

D. Where appropriate, in order to enable the proposed use to meet the standards set forth in (A) above, the Board may require the dedication of a perpetual conservation easement upon so much of the site as may be determined necessary to mitigate impacts of special uses.

Applicant Response: Noted.

Response to Boulder County Land Use Code Article 3 • 3-203 Standards for Submittal Requirements (as determined by applicant to be applicable)

F. Development Report

1. A development report is required for subdivision requests to plat unsubdivided land, PUDs, special review approvals, rezonings, and exemptions. At a minimum the development report shall include the following information, unless specifically waived by the Director.
 - a. An address list of all owners and their addresses of real property adjacent to the subject property.

Applicant Response: This has been attached as Appendix C.

- b. A description of site features such as streams, areas subject to flooding, lakes, high ground water areas, topography, vegetative cover, climatology, and other features that may aid in the evaluation of the proposed development.

Applicant Response: There are no streams, areas subject to flooding, lakes, or high-water areas on the site. Site vegetation is generally weeds and grasses which can be easily cut during site preparation. There is an irrigation ditch near the solar facility, but the facility conforms to the 50' setback requirement set forth in the code.

- c. A description of soil characteristics of the site which have a significant influence on the proposed use of the land.

Applicant Response: The site is currently being evaluated by a geotechnical engineer, who is performing onsite sampling at several points throughout the site. Pivot does not expect existing geological conditions to pose an issue for construction of the project.

- d. The long- and short-term effect on Environmental Resources shall be determined through field surveys, and/or expert opinions or other competent information. The applicant shall address any material adverse impacts of the development on any identified Environmental Resources, including plans for the mitigation of these impacts. Wildlife impact reports shall be required in accordance with Article 7-1700.

Applicant Response: A local environmental consultant completed a Phase 1 ESA. The assessment has revealed no evidence of recognized environmental conditions (REC) in connection with the subject property.

- e. The effect on significant cultural (archaeological and historic) resources shall be assessed and plans for protection of such resources included.

Applicant Response: A local environmental consultant completed a Phase 1 ESA, SHPO search, and T&E report. The assessment has revealed no evidence of recognized environmental conditions (REC) or cultural resources in connection with the subject property. Additionally, a referral to Boulder County Historic Preservation determined that the subject site “lacks significance.”

- f. An evaluation of any potential radiation hazard that may have been identified by the State or County Public Health Departments.

Applicant Response: N/A

- g. An evaluation of the expected demands and effects of the development on the ability of local governments and quasi-governmental agencies to provide water, sanitation, natural gas, electricity, access, fire protection, schools, hospitals, police, flood protection, solid waste disposal, and other services to this development while maintaining adequate levels of service to other areas.

Applicant Response: proposed project does not expect any demands of the listed items.

- h. Provision of financial guarantees for public or communal improvements.

Applicant Response: N/A

I. Solar Energy System Development Report

Applicant Response: The Solar Energy System Development Report is included with the application as item #20.

Appendix A – Determination of No Hazard to Air Navigation

2/14/23, 2:43 PM

Notice Criteria Tool


[« OE/AAA](#)

Notice Criteria Tool

[Notice Criteria Tool - Desk Reference Guide V_2018.2.0](#)

The requirements for filing with the Federal Aviation Administration for proposed structures vary based on a number of factors: height, proximity to an airport, location, and frequencies emitted from the structure, etc. For more details, please reference [CFR Title 14 Part 77.9](#).

You must file with the FAA at least 45 days prior to construction if:

- your structure will exceed 200ft above ground level
- your structure will be in proximity to an airport and will exceed the slope ratio
- your structure involves construction of a traverseway (i.e. highway, railroad, waterway etc...) and once adjusted upward with the appropriate vertical distance would exceed a standard of 77.9(a) or (b)
- your structure will emit frequencies, and does not meet the conditions of the [FAA Co-location Policy](#)
- your structure will be in an instrument approach area and might exceed part 77 Subpart C
- your proposed structure will be in proximity to a navigation facility and may impact the assurance of navigation signal reception
- your structure will be on an airport or heliport
- filing has been requested by the FAA

If you require additional information regarding the filing requirements for your structure, please identify and contact the appropriate FAA representative using the [Air Traffic Areas of Responsibility map](#) for Off Airport construction, or contact the [FAA Airports Region / District Office](#) for On Airport construction.

The tool below will assist in applying Part 77 Notice Criteria.

* Structure Type:	SOLAR Solar Panel
Please select structure type and complete location point information.	
Latitude:	40 Deg 00 M 57.27 S N
Longitude:	105 Deg 08 M 16.01 S W
Horizontal Datum:	NAD83
Site Elevation (SE):	5273 (nearest foot)
Structure Height :	12 (nearest foot)
Is structure on airport:	<input checked="" type="radio"/> No <input type="radio"/> Yes

Results

You do not exceed Notice Criteria.

Appendix B-1 – References from 2023 Boulder County Sustainability Plan

Mission Statement: “To advance policies and programs that conserve resources, protect the environment, and safeguard our climate in order to build a sustainable, just, and resilient community.”

Applicant Response: The proposed project represents an opportunity to put into action the mission to safeguard our climate and build a sustainable community. All emission-free energy produced by this facility will be used locally and will offset energy generated by fossil fuel resources in the County.

Climate Goal: “Achieve rapid and deep emission reductions and increase resilience to the impacts of climate change.”

“Boulder County is now committed to reducing countywide emissions 80% over 2021 levels by 2030 and achieving carbon neutrality by 2035. . . . Reaching this target will require an ‘all hands on deck’ approach, with every community member, business, and political leader contributing to this work.”

Applicant Response: As noted in the climate section of the sustainability plan, reaching an ambitious target of 80% emissions in a 9-year period requires an all-hands on deck approach. The proposed project will serve as a local way of reducing the carbon intensity of electricity generation, which comprise the largest portion (37%) of Boulder County’s total emissions.

Energy Goal: “Reduce energy consumption, promote energy efficiency, increase the use of clean energy, and transition away from fossil fuels.”

“Meet all of Boulder County’s electrical needs with 100% renewable energy by 2025.”

“Support additional community solar garden capacity to increase the availability of renewable electricity to the residents and businesses of Boulder County”

Applicant Response: The proposed project lines up well with many of the strategies listed in the Energy section of the sustainability plan. It represents a further step toward the goal of powering Boulder County with 100% renewable energy and operates similarly to a community solar garden – just with one large energy user as opposed to many small users.

Appendix B-2 – References from Boulder County Comprehensive Plan

E.6 Adequate facilities and services to assure the health, safety and welfare of all citizens should be promoted. **Applicant Response: Energy is an essential need for all people. Creating energy from clean, renewable resources reduces pollution and benefits all people by creating healthier living conditions. Healthier living conditions increase the welfare of all Boulder County citizens, as well as those across Colorado.**

B.2 Air, water and noise pollution and overall environmental degradation should be reduced as much as possible or eliminated in order to prevent potential harm to life, health and property. **Applicant Response: The proposed solar project reduces all the noted hazards by offsetting electricity generated from fossil fuel sources.**

B.4 Boulder County recognizes that climate change is having significant impacts on our environmental resources. As the body of climate science knowledge grows and potential effects are better understood, Boulder County shall incorporate the best scientific information into planning and decision-making to adapt to and offset those impacts. **Applicant Response: As noted above, access to energy is essential to all people. The proposed project creates clean energy locally and offsets fossil-fuel energy that would otherwise have to be imported to the area.**

B.5 Boulder County shall continue to protect air, water and soil resources and quality, as well as restore resources in a degraded condition to enhance overall environmental health. Pollution of air, water, and soil, and pollution caused by noise or light, shall be eliminated, or minimized to the greatest extent possible in order to prevent potential harm to life, health and property, and to reduce incremental degradation of the environment. **Applicant Response: The proposed project protects air, water, and soil resources by creating clean, renewable energy. Further, the project will improve the land's overall soil quality and agricultural integrity over time as discussed in the Solar Energy System Development Report. The equipment no audible noise outside of the fence line during daylight operations and has no external lighting.**

ER 2.01 Boulder County shall seek to protect overall public and environmental health by enforcing regulations concerning air, soil, water, noise, and light pollution at the local level in accordance with applicable law. **Applicant Response: See response to B.5 above.**

ER 2.02 Boulder County shall evaluate land use proposals and other planned activities considering their cumulative impacts on public and environmental health. Sufficient mitigation and minimization of any impacts shall be required for the proposal or activity to be approved. These proposals and activities shall at a minimum comply with air, soil, and water quality standards, as well as noise level and lighting standards, established by county and state agencies or the Boulder County Land Use Code. **Applicant Response: See response to B.5 above.**

NH 1.03.01 Development activities should be designed to minimize alteration of the natural landform to the greatest extent possible, thus reducing slope instability and drainage problems. **Applicant Response: We do not anticipate any grading will be necessary during the construction phase of the project. Please see the drainage letter and Solar Energy System Development report for additional information.**

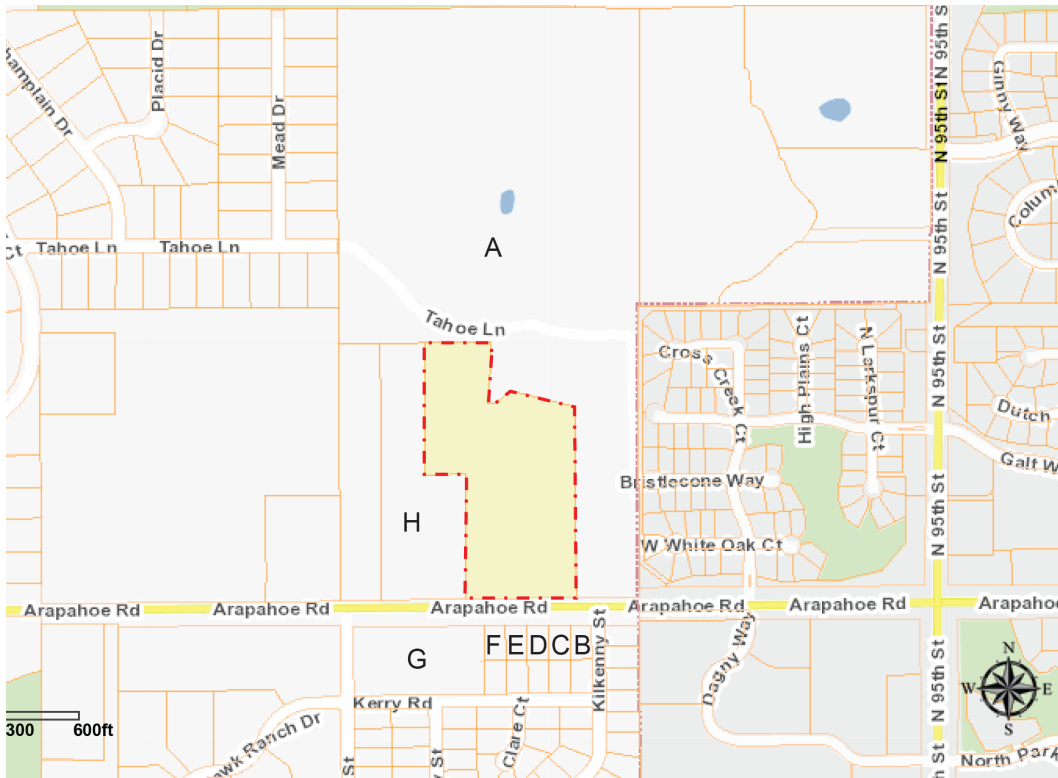
NH 1.05 Upon county review of a new development proposal, all impacts and concerns should be considered, but safety and environmental concerns should take precedence over aesthetic concerns. **Applicant Response: The project will change the appearance of the site from adjacent property owners but will not impact the skyline, as it is lower to the ground than even a single-story building would be in the same place. Pivot Energy will ensure proper screening mitigation practices are taken so that the array will blend in as seamlessly as possible to the natural surroundings.**

NH 3.01 Erosion from development and other land use activities should be minimized and disturbed or exposed areas should be promptly restored to a stable, natural, and/or vegetated condition using native plants and natural materials. **Applicant Response: Construction of solar facilities is simple and low impact, requiring minimal disturbance of soils onsite. Additionally, grading is not expected to be necessary to construct the proposed project. Pivot Energy pre- and post- seeds all projects to maintain site stability during construction. Please see the Solar Energy System Development Report and Drainage Letter for more information.**

NH 3.02 Drainage from development or any alterations to historic drainage patterns shall not increase erosion either on site or on adjacent properties. **Applicant Response: The project will incorporate BMPs to ensure no erosion leaves the site. The site will retain its overall drainage patterns with no impacts to off site or adjacent properties. Please see Drainage Letter and Solar Energy System Development Report for more information.**

Appendix C – Address list of all owners and their addresses of real property adjacent to the subject property

Property Owner	Map Reference	Mailing Address	City	State	Zip
SACKS JOSHUA & SUZANNE BRUCH	A	9191 TAHOE LN	Boulder	CO	80301
CORBADZIC MEHMED & FATIMA	B	9292 Arapahoe Rd	Boulder	CO	80303
IBARRA JOSE MANUEL & ANGEL	C	9278 Arapahoe Rd	Boulder	CO	80303
BECKWITH LEE M	D	9260 Arapahoe Rd	Boulder	CO	80303
TOBIN MERRILEE LAURA	E	9234 Arapahoe Rd	Boulder	CO	80303
DAVIDSON LINDA R	F	1999 Hardscrabble Pl	Boulder	CO	80305
TIN KAO CHIEN & SHAN SHAN CHU	G	361 Amethyst Way	Superior	CO	80027
KESSLER FRED & ISABELLE	H	11500 Otis St	Westminster	CO	80020





1515 Market Street
Denver, CO 80202
(609) 234-5502
rick.hagmayer@enertiag.com

March 28, 2024

Boulder County Planning and Permitting Department
2045 13th St
Boulder, CO 80302

RE: Traffic Impact Letter
Use by Special Review – Dewire Parcel
NW of Arapahoe Rd & N 95th St

To whom it may concern:

I. Introduction

In fulfillment of the Boulder County Use by Special Review (USR) permitting requirements, Enertia Consulting Group (Enertia) has completed this Traffic Impact Letter for the proposed Pivot Energy Solar Facility on the Dewire Parcel located on approximately:

4.148 acres north of Arapahoe Rd, between Wicklow St & Kilkenny St.

The intent of this Report is to provide traffic related information and identify potential project impacts to affected roadways within Boulder County.

The following information is included in this letter report:

- Project Location, Components and Construction Schedule
- Designated Travel Route
- Daily Vehicle Trip Generation
- Conclusions

II. Existing Conditions

Location

The project is located on an approximately 4.148 acre project site within a larger 13.08 acre parcel along the north side of Arapahoe Rd on Boulder County Parcel No. 146529000018 in S29, T1N, R66W of 6th P.M. .

III. Proposed Condition

Components

The Pivot Energy Solar Facility on the Dewire Parcel project shall generally include: up to a 1 MW solar facility with approximately 2,000 tracking solar panels mounted on steel I-beams; concrete pad mounted inverters and transformers; an access drive with emergency turn-around and perimeter fence with gate.

Construction Schedule

It's currently anticipated that the Use by Special Review Permit will be issued by Boulder County on or before April 01, 2025. Accordingly, a construction start/mobilization date of April 15, 2025 has been established. Based on this, the following preliminary schedule is currently considered:

- Driveway and material staging area prep April 15, 2025 – May 05, 2025
- Solar Facility Component Delivery May 06, 2025 – June 05, 2025
- Perimeter Fence Installation May 06, 2025 – June 05, 2025
- Solar Panel Foundation Installation June 05, 2025 – August 04, 2025
- Transformer and Inverter Installation August 05, 2025 – August 19, 2025
- Solar Panel Installation August 22, 2025 – October 06, 2025

Designated Travel Route

The designated access route is: I-36 north to 96th St via Northwest Pkwy. 96th St & 95th St north to Arapahoe Rd. Arapahoe Rd west to the site. Figure 1 illustrates the access route. The following is a

I-36 – I-36, in the vicinity of Northwest Pkwy, is a 6-lane concrete-paved road with left turn lanes and acceleration/deceleration lanes; and a posted speed limit of 65mph. It's anticipated that 100 percent of material deliveries will be from the south.

96th St – The +/- 4.7 mile segment of 96th St & 95th St included in the travel route is a 2-lane, asphalt-paved road with intermittent bar ditches. The road surface appears to be in good condition.

Arapahoe Rd – The +/- 0.3 mile segment of Arapahoe Rd included in the travel route is a 2-lane, asphalt-paved road with intermittent bar ditches. The road surface appears to be in good condition. It's anticipated that all material deliveries will travel along Arapahoe Rd from 95th St & 96th St via I-36.

Daily Vehicle Trip Generation and Distribution

Project development may be divided into the following 4 phases (site preparation, material and equipment delivery, solar facility construction and solar facility maintenance). The following Table 1 illustrates the estimated average daily trip generation by vehicle type for each Project phase.

Table 1 – Vehicle Trip Generation

Project Phase (Time Period)	Vehicle Type	Estimated Gross Vehicle Weight	Number of Vehicles Per Day	Maximum and Average Vehicle Trips Per Day
Site Preparation (approx. 1-3 weeks)	Equipment Hauling Trucks	30,000-65,000 lbs	0-2	4-0
	Passenger Vehicles	2,000-10,000 lbs	2-5	10-4
	Fuel Delivery	20,000-30,000 lbs	1	2
				Max – 16/Ave - 9
Material and Equipment Delivery (approx. 4-5 weeks)	Conex Container and Delivery Trucks	30,000-50,000 lbs	5-15	15-5
	Equipment Hauling Trucks	20,000-40,000 lbs	0-8	8-0
				Max – 23/Ave - 5
Solar facility Installation (6-7 months)	Passenger Vehicles	2,000 to 10,000 lbs	5-10	10-2
	Fuel Truck	20,000 to 30,000 lbs	1	2
	Material Delivery Truck	20,000 to 30,000 lbs	1	2
				Max – 12/Ave - 6
Operations (ongoing once operational)	Utility Vehicle	2,000 to 10,000 lbs	1 per month or less	
				Max - 2/Ave - 0

As illustrated in Table 1, the majority of traffic generated as a result of solar facility installation shall occur during the 9-month solar facility installation (max 23/ave 5vtpd). This traffic will generally be site worker passenger vehicles.

The majority of heavy truck traffic including conex container delivery (total of 40-80) conex containers/delivery trucks) and equipment (rubber tire loader, pile driver, forklift) delivery and pickup will travel to and from the Project between 9:30 AM and noon and 1:30PM and 4:00PM.

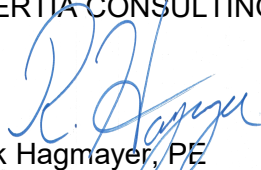
Project related traffic during all phases will not be significant during AM and PM peak periods (7:30 – 9:00 AM and 4:30 – 6:00 PM, respectively).

IV. Conclusions

1. The Project is expected to generate up to 23 vehicle trips per day during material and equipment delivery (anticipated to be up to one month at the beginning of the project and one month at the end of the project), up to 10 vehicle trips per day during solar facility installation (6-7 months) and up to 2 vehicle trips per month during solar facility operation.
2. Site preparation and solar facility installation anticipated to begin in April 2025 and be completed in October 2025.
3. The phase with the greatest amount of traffic (23vtpd material and equipment delivery) is expected to occur over a 4-5 week period (May 2025 – June 2025).
4. Daily Project related truck traffic is not expected to impact AM and PM peak traffic periods.
5. Sight distance at the Project entrance is well over 1,000 feet both east and west along Arapahoe Rd.
6. Access to the project site is through an existing driveway. Therefore, a Boulder County access permit will not be required.
7. As proposed, the solar garden site preparation, installation and ongoing inspection/maintenance is not anticipated to create adverse traffic related impacts on Boulder County roads. Based on anticipated vehicle type and weight, the project is not anticipated to degrade/damage Boulder County roads and a Public Works Improvement Agreement is not likely warranted.

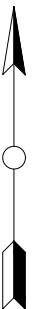
We trust that this Traffic Impact Letter for the Pivot Energy Solar Facility on the Dewire Parcel is acceptable and complete. Please contact me at rick.hagmayer@enertiaccg.com or (609) 234-5502 should you require additional information.

Sincerely,
ENERTIA CONSULTING GROUP, LLC



Rick Hagmayer, PE
Senior Project Manager

attachment



Grading Calculation

Cut and fill calculations are necessary to evaluate the disturbance of a project and to verify whether or not a Limited Impact Special Review is required. Limited Impact Special Review is required when grading for a project involves more than 500 cubic yards (minus normal cut/fill and backfill contained within the foundation footprint).

If grading totals are close to the 500 yard trigger, additional information may be required, such as a grading plan stamped by a Colorado Registered Professional Engineer.

Earth Work and Grading

This worksheet is to help you accurately determine the amount of grading for the property in accordance with the Boulder County Land Use Code. Please fill in all applicable boxes.

Note: Applicant(s) must fill in the shaded boxes even though foundation work does not contribute toward the 500 cubic yard trigger requiring Limited Impact Special Use Review. Also, all areas of earthwork must be represented on the site plan.

Note: Earthwork associated with installing the post/base and trenching for the solar panels will be considered foundational earthwork. Anything outside of that please put under non-foundational

Earth Work and Grading Worksheet: **CUT + FILL = TOTAL**

	Cut	Fill	Subtotal
Driveway and Parking Areas		224	224
Berm(s)			
Other Grading <u>electrical pads</u>	9		9
Subtotal			233

Box 1

* If the total in Box 1 is greater than 500 cubic yards, then a Limited Impact Special Review is required.

	Cut	Fill	Total
Foundation			
Material cut from foundation excavation to be removed from the property			

Excess Material will be Transported to the Following Location:

Excess Materials Transport Location:	n/a

Narrative

Use this space to describe any special circumstances that you feel the Land Use Office should be aware of when reviewing your application, including discussion regarding any factors (listed in Article 4-806.2.b.i) used to demonstrate that the presumptive size limitation does not adequately address the size compatibility of the proposed development with the defined neighborhood. If more room is needed, feel free to attach a separate sheet.

The solar panels will be supported with H-Piles. A pile is essentially a nail that is hammered into the ground. Unlike other foundations, piles do not create excess soil. They utilize the outward compaction of the soil to increase friction in the soil. There will be drive aisles, concrete pads, landscaping, and a several hundred feet of medium voltage conduit on site. The site will general 9 yards of cut at the concrete pad locations. The drive aisles will be installed on top of existing ground, and therefore does not require excavation.

Is Your Property Gated and Locked?

Note: If county personnel cannot access the property, then it could cause delays in reviewing your application.

Certification

I certify that the information submitted is complete and correct. I agree to clearly identify the property (if not already addressed) and stake the location of the improvements on the site within four days of submitting this application. I understand that the intent of the Site Plan Review process is to address the impacts of location and type of structures, and that modifications may be required. Site work will not be done prior to issuance of a Grading or Building Permit.

Signature 	Print Name Rick Hagmayer, PE	Date 4/1/24
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PIVOT ENERGY SOLAR FACILITY ON DEWIRE PARCEL SPECIAL USE PERMIT PLAN

CASE NUMBER: _____

LOCATED IN SECTION 29, TOWNSHIP 1 NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF BOULDER, STATE OF COLORADO

LEGAL DESCRIPTION:

PARCEL 1

A PART OF THE SOUTHWEST 1/4 OF THE SOUTHEAST 1/4 OF SECTION 29, TOWNSHIP 1 NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF BOULDER, STATE OF COLORADO, DESCRIBED AS FOLLOWS: BEGINNING AT THE SOUTHWEST CORNER OF THAT PARCEL DESCRIBED IN DEED RECORDED NOVEMBER 26, 1971 ON FILM 753, UNDER RECEPTION NO. 998535, BOULDER COUNTY RECORDS, A POINT ON THE SOUTH LINE OF THE SAID SOUTHWEST 1/4 OF THE SOUTHEAST 1/4, FROM WHENCE THE SOUTH 1/4 CORNER OF SAID SECTION 29 BEARS SOUTH 89°47'40" WEST 824.38 FEET; THENCE ALONG THE EXTERIOR BOUNDARY OF SAID PARCEL RECORDED UNDER RECEPTION NO. 998535 AS FOLLOWS: NORTH 00°02'32" EAST, 819.00 FEET PARALLEL WITH THE NORTH-SOUTH CENTERLINE OF SAID SECTION 29, SOUTH 89°47'40" WEST 265.93 FEET, PARALLEL WITH THE SOUTH LINE OF THE SAID SOUTHWEST 1/4 OF THE SOUTHEAST 1/4 AND NORTH 00°02'52" EAST, 351.00 FEET, PARALLEL WITH THE NORTH-SOUTH CENTERLINE OF SAID SECTION 29 TO THE NORTHEAST CORNER ON THE NORTH LINE OF SAID PARCEL RECORDED UNDER RECEPTION NO. 998535; THENCE NORTH 89°47'40" EAST, PARALLEL WITH THE SOUTH LINE OF THE SAID SOUTHWEST 1/4 OF THE SOUTHEAST 1/4, 112.63 FEET; THENCE SOUTH 01°05'07" EAST 62.24 FEET; THENCE SOUTH 04°22'33" EAST, 33.07 FEET; THENCE NORTH 52°25'07" EAST, 90.47 FEET; THENCE SOUTH 75°59'10" EAST, 293.55 FEET; THENCE SOUTH 00°02'52" WEST, PARALLEL WITH THE NORTH-SOUTH CENTERLINE OF SAID SECTION 29, 879.45 FEET TO A POINT ON THE SOUTH LINE OF THE SAID SOUTHWEST 1/4 OF THE SOUTHEAST 1/4, FROM WHENCE THE POINT OF BEGINNING BEARS SOUTH 89°47'40" WEST, 223.52 FEET; THENCE SOUTH 89°47'40" WEST ALONG THE SOUTH LINE OF SAID SOUTHWEST 1/4 OF THE SOUTHEAST 1/4, 223.52 FEET TO THE OF BEGINNING.

AND

PARCEL 2

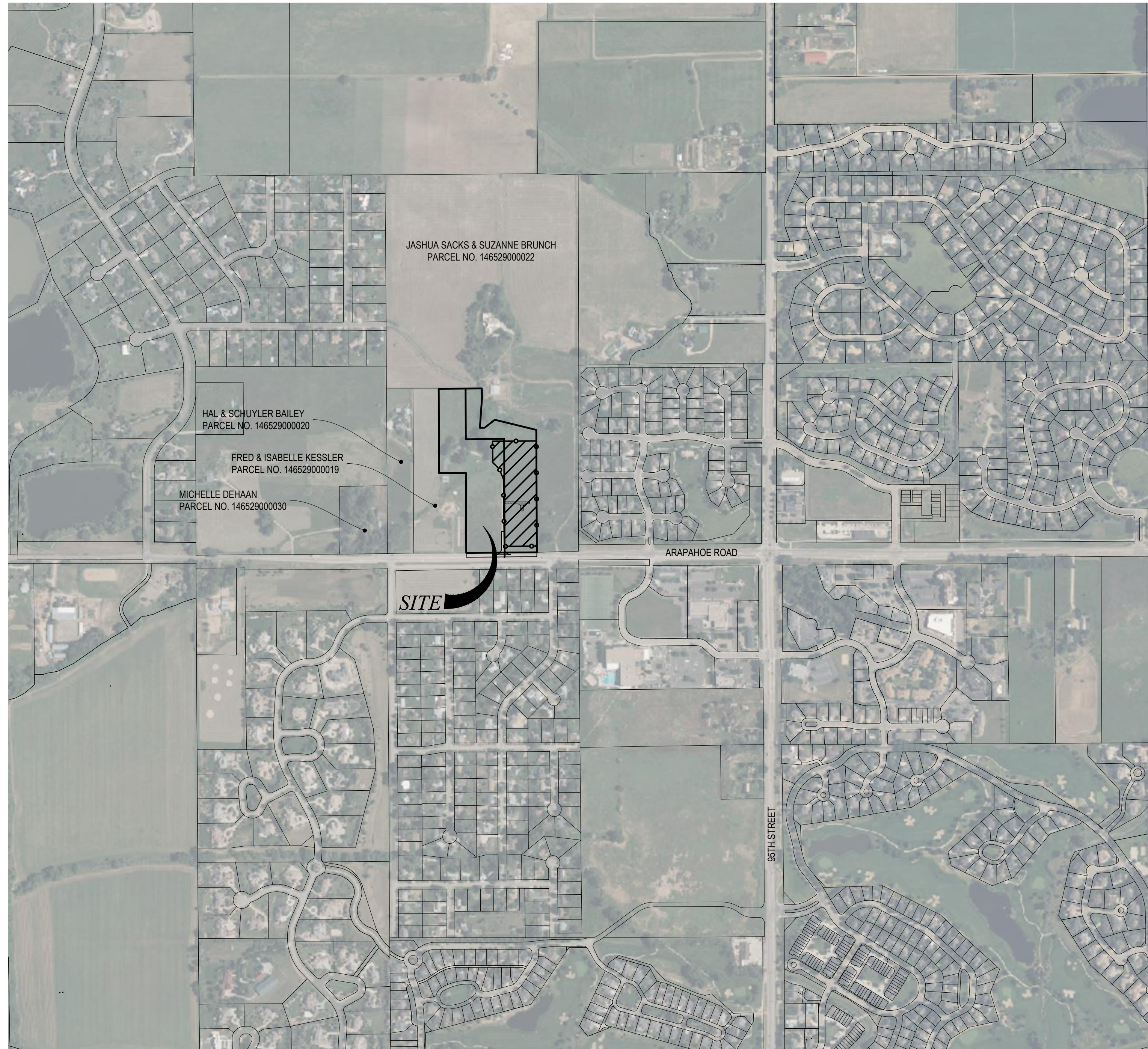
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SITE DATA

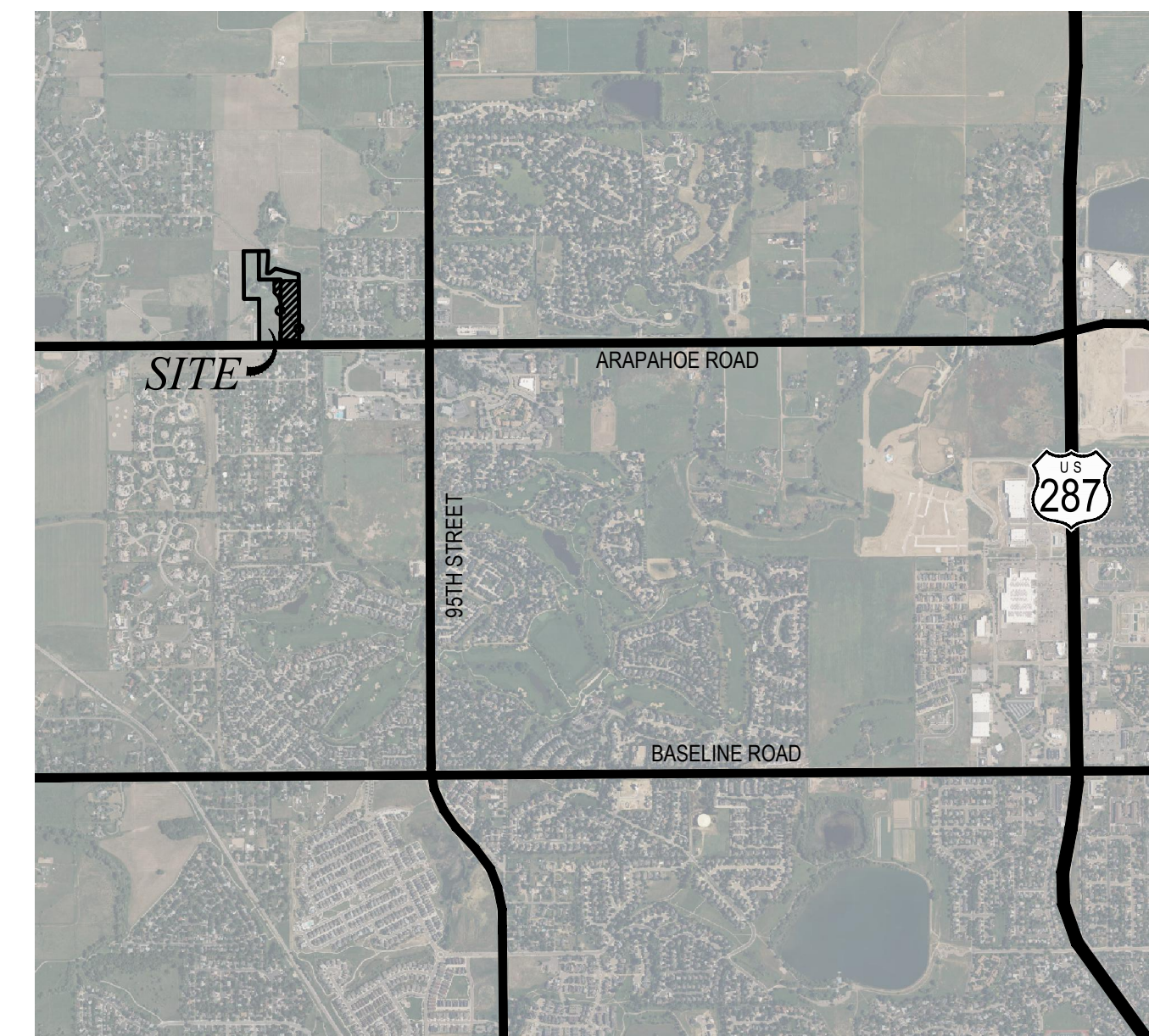
- PARCEL AREA: ±13.08 ACRES
- PROJECT AREA: ± 4.148 ACRES
- INDUSTRY STANDARD PV MODULES
- INDUSTRY STANDARD CENTRAL INVERTERS
- INDUSTRY STANDARD SINGLE-AXIS TRACKING SYSTEM

SOIL TYPES:

- ASCALON SANDY LOAM, 0 TO 3% SLOPES (79.7%)
 - NUNN SANDY CLAY LOAM, 0 TO 3% SLOPES (20.3%)
- (FROM USDA NATURAL RESOURCES CONSERVATION SERVICE)

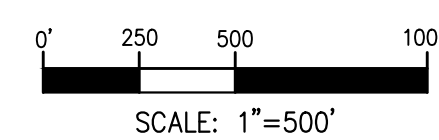


SHEET INDEX	
SHEET #	DESCRIPTION
1	COVER SHEET
2	EXISTING CONDITIONS
3	SITE PLAN
4	GRADING AND EROSION CONTROL PLAN
5	DETAILS (1 OF 3)
6	DETAILS (2 OF 3)
7	DETAILS (3 OF 3)



REGIONAL AREA MAP
SCALE: 1" = 2000'

VICINITY MAP



APPLICANT
PIVOT SOLAR 48 LLC
PIVOT ENERGY INC
1601 WEWATTA ST, SUITE 700
DENVER, CO 80202
CONTACT: KYLE SUNDMAN
(888) 734-3033

ENGINEER
ENERTIA CONSULTING GROUP, LLC
1515 MARKET STREET
DENVER, COLORADO 80202
CONTACT: RICK HAGMAYER, PE
(609) 234-5502

LAND OWNER
DEWIRE FAMILY TRUST
9215 ARAPAHOE RD
BOULDER, COLORADO 80303

CASE NUMBER: _____

NO.	DATE	DSGN	PIVOT	DR	TN	CHK	RH	APVD	RH

ENERTIA
CONSULTING GROUP, LLC
1515 MARKET STREET, SUITE 100
DENVER, COLORADO 80202

Pivot Energy
1601 WEWATTA ST, #700
DENVER, CO 80202

PIVOT ENERGY SOLAR FACILITY ON
DEWIRE PARCEL PS48
SPECIAL USE PERMIT PLAN
BOULDER COUNTY, COLORADO

COVER SHEET

VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. SCALE	DATE
	MAR 28, 2024
FILE	
DWG	
SHEET	1 OF 7

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THREE (3) BUSINESS DAYS BEFORE YOU DIG
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WWW.UNCC.ORG

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PIVOT ENERGY SOLAR FACILITY ON DEWIRE PARCEL SPECIAL USE PERMIT PLAN

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LOCATED IN SECTION 29, TOWNSHIP 1 NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF BOULDER, STATE OF COLORADO



LEGEND

- PROPERTY BOUNDARY (±13.08 ACRES)
- PARCEL BOUNDARIES
- RIGHT-OF-WAY
- SECTION LINE
- EASEMENT
- EXISTING FENCE
- EXISTING TELEPHONE
- EXISTING WATER LINE
- EXISTING OVERHEAD UTILITY W/ POLES
- EXISTING GAS LINE
- EXISTING 36" CMP
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- EDGE OF ASPHALT/ROAD
- PROJECT AREA (±6.73 ACRES)
- PV ARRAY FOOTPRINT
- EXISTING WATER WELL (25' SETBACK)
- FLOW ARROW

NOTES

1. A LAYOUT OF THE SOLAR FACILITY IS NOT YET CONCEPTUALIZED. FINAL LOCATIONS FOR EQUIPMENT AND ALL OTHER FACILITY COMPONENTS MAY BE ANYWHERE WITHIN THE SOLAR SITING ENVELOPE SHOWN ON THESE PLANS.
2. TREES WERE NOT OBSERVED WITHIN THE MAJORITY OF PROPOSED SOLAR ARRAY AREAS. IF NECESSARY, TREES AND SHRUBS ARE TO BE REMOVED TO ALLOW FOR THE INSTALLATION OF THE ARRAYS AND TO ELIMINATE SHADING.
3. ENERTIA CONSULTING GROUP, LLC ASSUMES NO RESPONSIBILITY FOR UTILITY LOCATIONS. UTILITIES SHOWN ON THIS DRAWING HAVE BEEN LOCATED VIA FIELD SURVEY. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO MOBILIZATION.
4. AN 8 FT. GAME FENCE WILL BE INSTALLED TO SURROUND THE SOLAR ARRAYS. GATES WILL BE PROVIDED FOR ACCESS.
5. THE PROPERTY OWNER OR OPERATOR SHALL BE RESPONSIBLE FOR CONTROLLING NOXIOUS WEEDS ON THE SITE.
6. THE ACCESS TO THE SITE SHALL BE MAINTAINED TO MITIGATE ANY IMPACTS TO THE PUBLIC ROAD, INCLUDING DAMAGES AND/OR OFF-SITE TRACKING.
7. THE HISTORICAL FLOW PATTERS AND RUNOFF AMOUNTS ON THE SITE WILL BE MAINTAINED.
8. ACCESS TO THE SITE IS PROVIDED FROM ARAPAHOE ROAD RIGHT-OF-WAY.

NO.	DATE	DR	TN	CHK	RH	APVD	RH			

ENERTIA
CONSULTING GROUP, LLC
1515 MARKET STREET, SUITE 100
DENVER, COLORADO 80202

Pivot Energy
1601 MEWATTA ST., #700
DENVER, CO 80202

PIVOT ENERGY SOLAR FACILITY ON
DEWIRE PARCEL PS48
SPECIAL USE PERMIT PLAN
BOULDER COUNTY, COLORADO

EXISTING CONDITIONS

VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING.	DATE
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FILE	
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SHEET	2 OF 7

811
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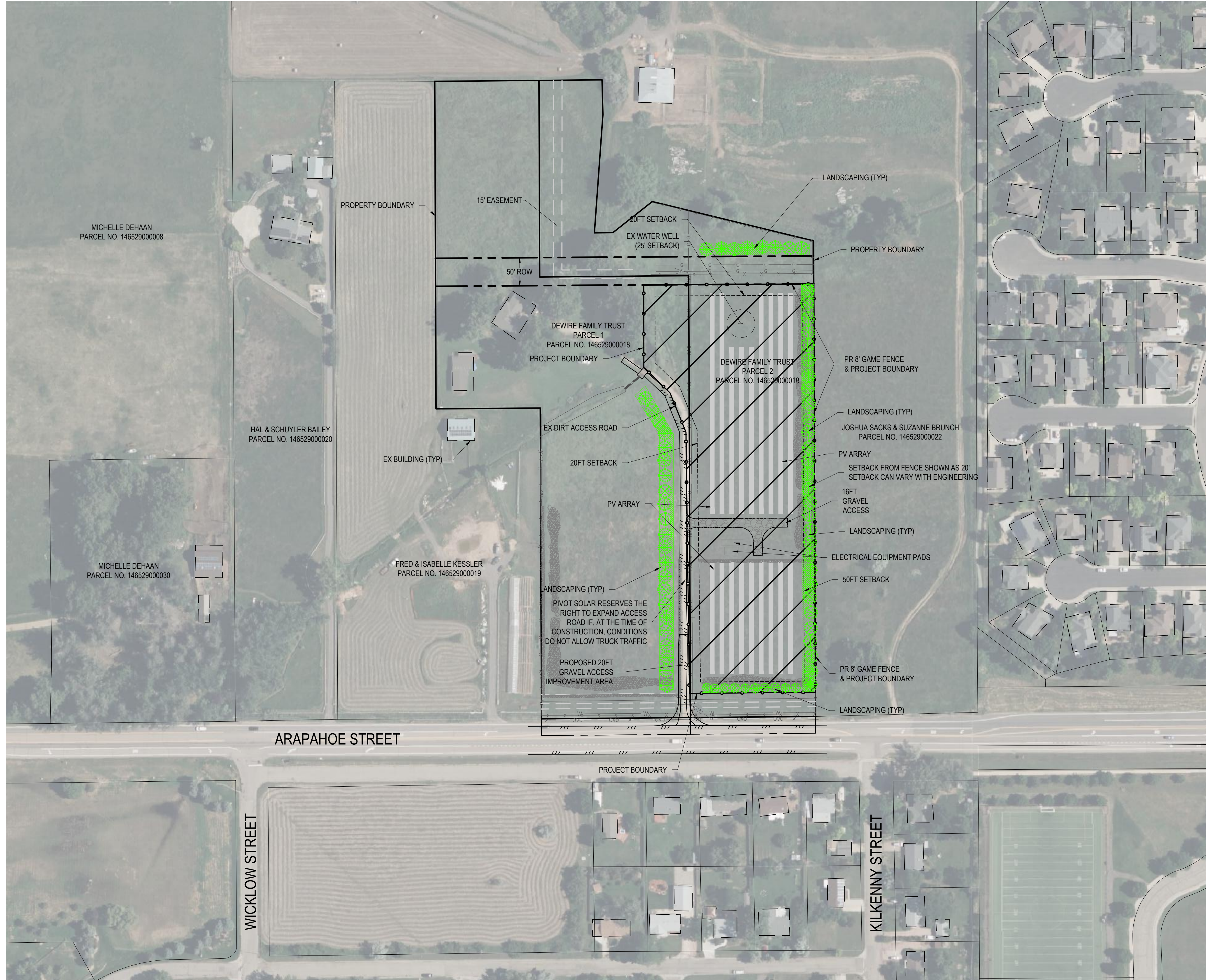
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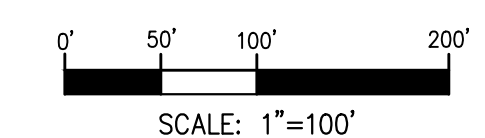
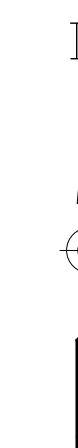


LEGEND

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- EXISTING TELEPHONE
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- EXISTING GAS LINE
- EXISTING 36" CMP
- PV ARRAY
- EDGE OF ASPHALT/ROAD
- GRAVEL FIRE LANE & ACCESS ROAD
- 8' GAME FENCE (±4.15 ACRES)
- PV ARRAY OFFSET
- ELECTRICAL EQUIPMENT PADS
- EXISTING WATER WELL (25' SETBACK)

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1515 MARKET STREET, SUITE 100
DENVER, COLORADO 80202

1601 MEWATTA ST., #700
DENVER, CO 80202

PIVOT ENERGY SOLAR FACILITY ON
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SITE PLAN

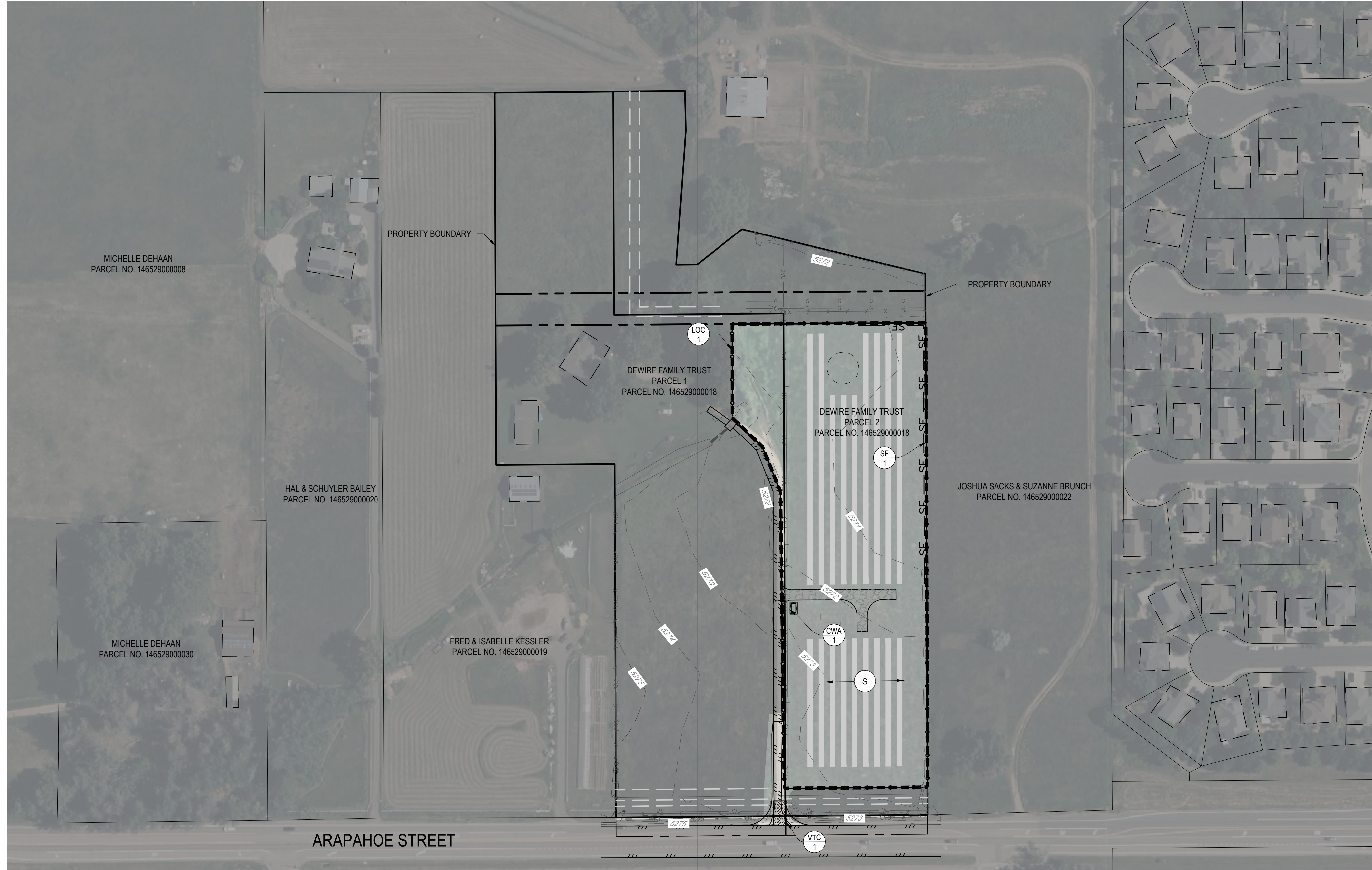
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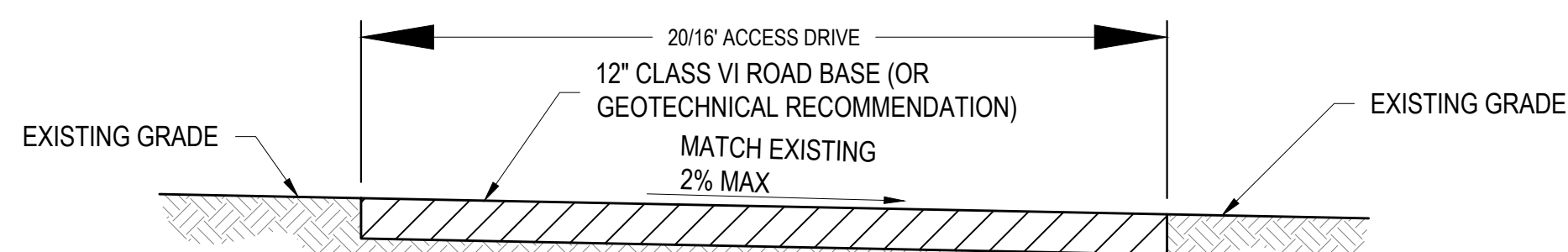
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- EDGE OF ASPHALT/ROAD
- GRAVEL FIRE LANE & ACCESS ROAD
- 8' GAME FENCE (±4.15 ACRES)
- ELECTRICAL EQUIPMENT PADS
- EXISTING WATER WELL (25' SETBACK)
- LIMITS OF CONSTRUCTION
- SILT FENCE
- VEHICLE TRACKING CONTROL
- CONCRETE WASHOUT
- SEEDING

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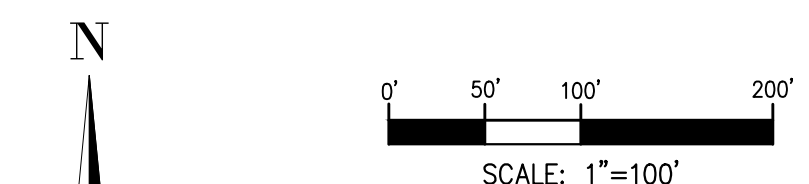
LIMITS OF CONSTRUCTION: ± 4.148-ACRES
TOTAL DISTURBANCE: 0.18-ACRES



BOX OUT ADDITIONAL TOPSOIL (IF PRESENT) AND REPLACE WITH SUBGRADE FILL. RECOMPACT SUBGRADE TO 95% STANDARD PROCTOR AND PROOF ROLL PRIOR TO CLASS VI INSTALLATION.

SEED MIX (BELOW ELEVATION 5,500FT)

Common Name	Species Name	Variety	% of Mix	#PLS/ Acre
Side Oats Grama	<i>Bouteloua curtipendula</i>	Vaughn	15%	2.74
Blue Grama	<i>Bouteloua gracilis</i>	Native, Alma, or Hachita	20%	0.84
Buffalograss	<i>Buchloe dactyloides</i>	Native	15%	9.33
Western Wheatgrass	<i>Pascopyrum smithii</i>	Arriba	12.5%	3.96
Western Wheatgrass	<i>Pascopyrum smithii</i>	Native	12.5%	3.96
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Green Needlegrass	<i>Stipa viridula</i>	Lodorm or Native	12%	2.31
Totals:			100%	24.88



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CALL 811
(303) 440-9322-1987
UTILITY NOTIFICATION
CENTER OF COLORADO (UNCC)
WWW.UNCC.ORG

CASE NUMBER: _____

NO.	DATE	DR	TN	CHK	RH	APVD	RH			
DSGN	PIVOT									

1515 MARKET STREET, SUITE 100
DENVER, COLORADO 80202

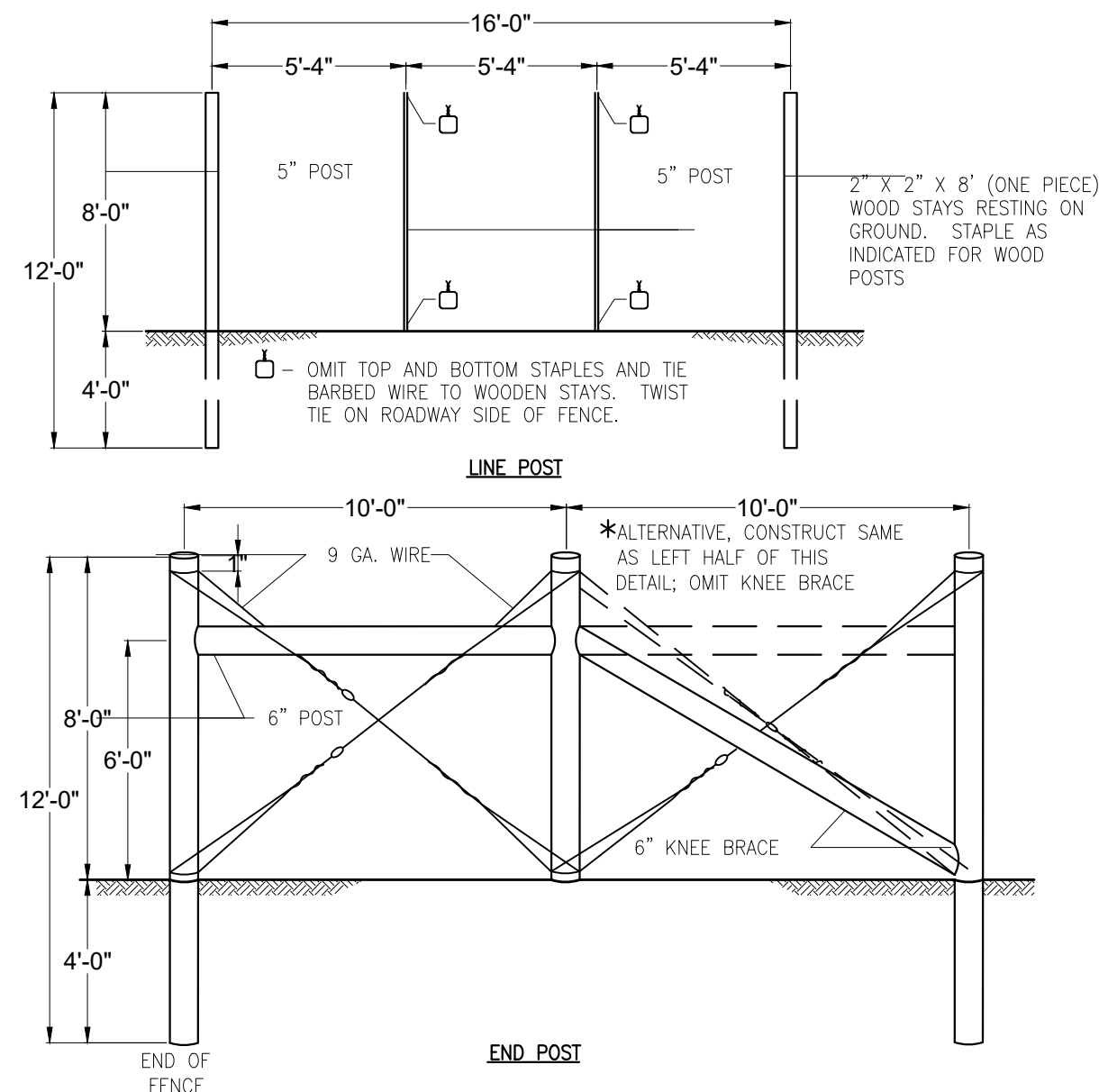
1601 WEWATTA ST. #700
DENVER, CO 80202

PIVOT ENERGY SOLAR FACILITY ON DEWIRE PARCEL PS48 SPECIAL USE PERMIT PLAN BOULDER COUNTY, COLORADO

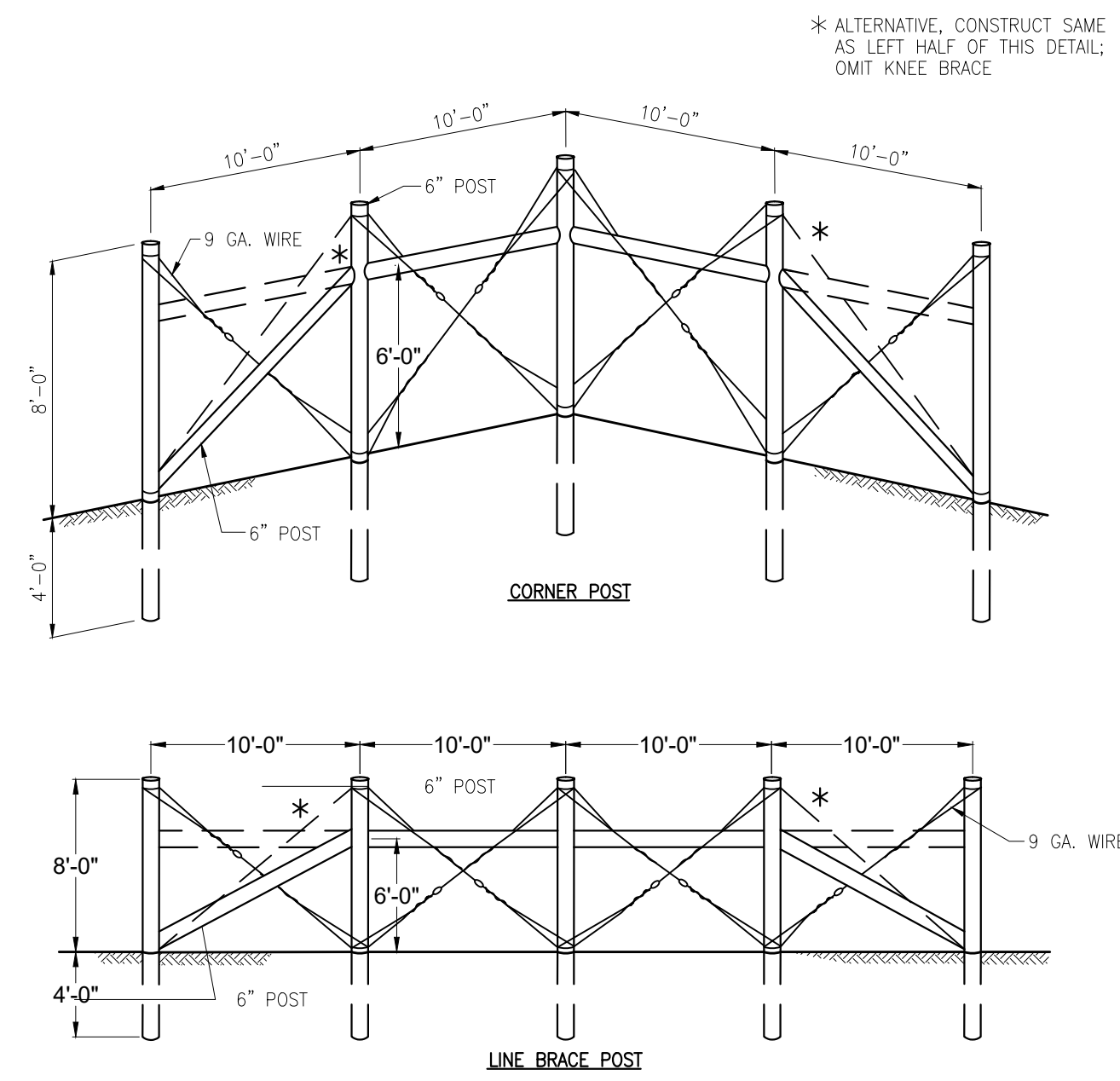
GRADING AND EROSION CONTROL (GEC) PLAN AND INSTALLATION PLAN

VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING.	
DATE	MAR 28, 2024
FILE	
DWG	
SHEET	4 OF 7

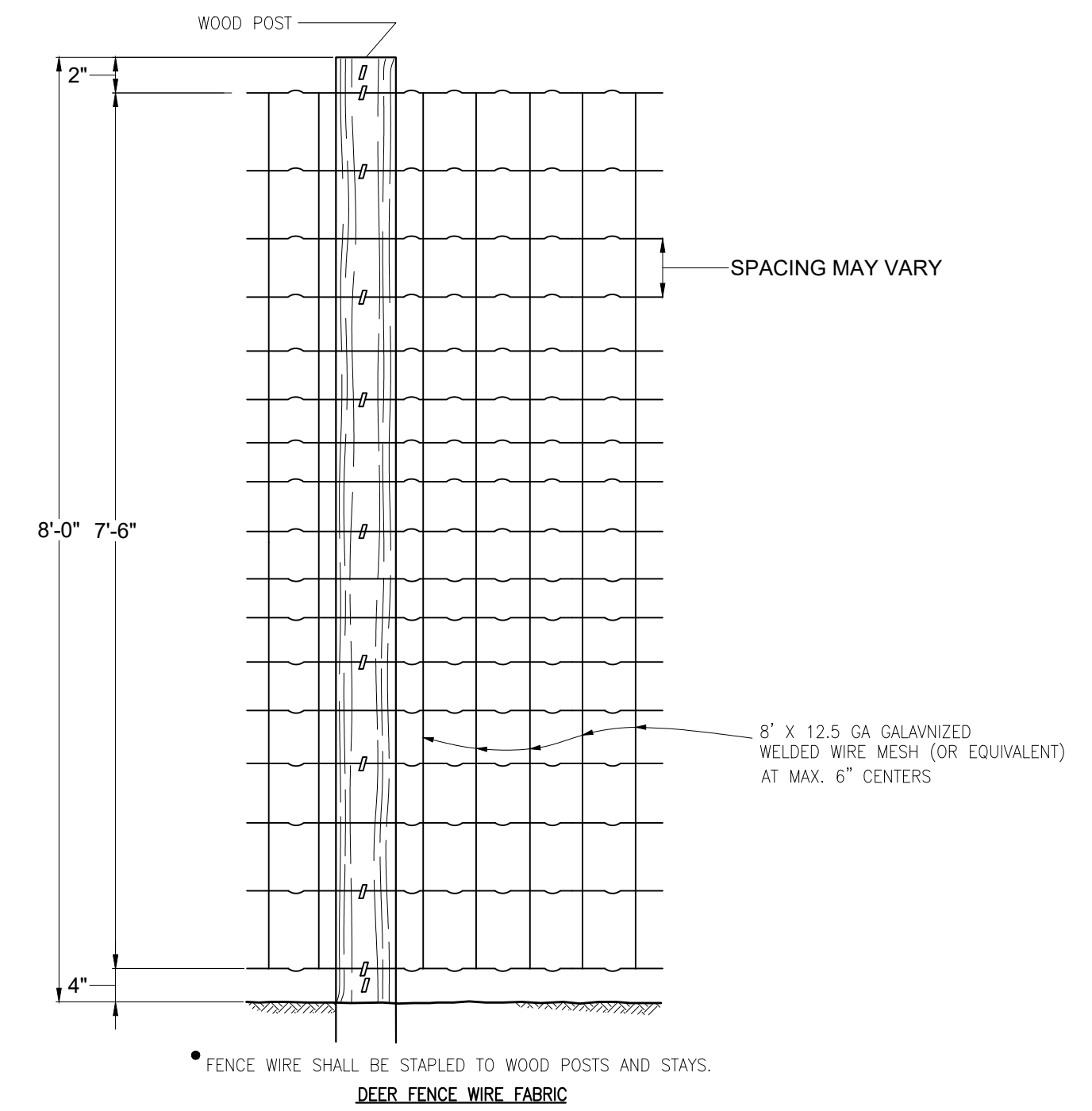
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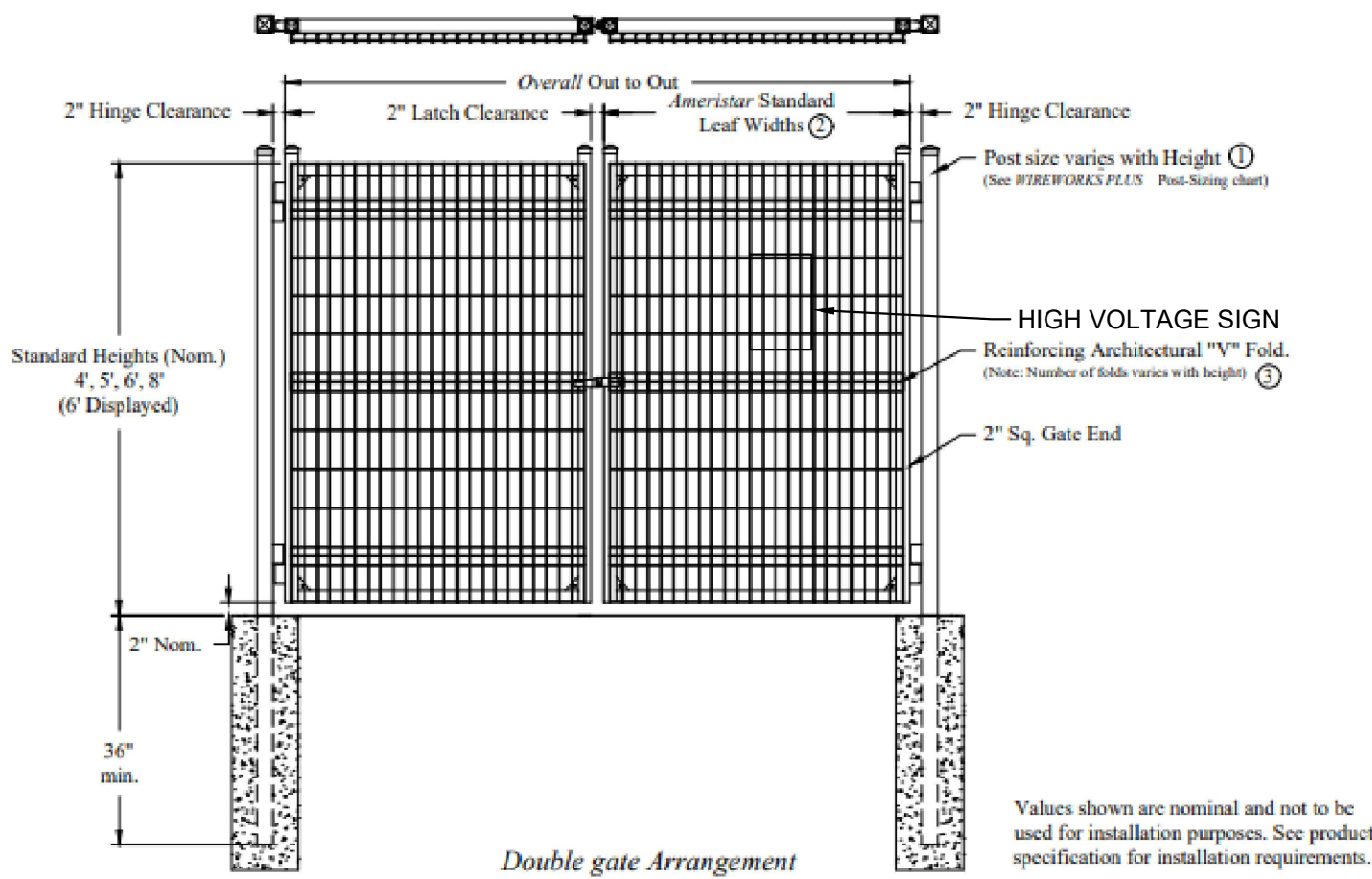
DEER FENCE
LINE & END POST DETAILS



DEER FENCE
CORNER & LINE BRACE POST DETAILS



DEER FENCE
WIRE FABRIC FENCE DETAIL



DEER FENCE
FENCING GATE DETAIL

- NOTES:
- THE CONTRACTOR IS TO INSTALL "HIGH VOLTAGE SIGNS" EVERY 50FT ON THE PERIMETER OF THE SITE.
 - DO NOT SCALE DRAWINGS.
 - AT EACH LOCATION WHERE AN ELECTRIC TRANSMISSION, DISTRIBUTION OR SECONDARY LINE CROSSES FENCE, THE CONTRACTOR SHALL FURNISH AND INSTALL A GROUND CONFORMING TO SECTION 9 OF THE NATIONAL ELECTRIC SAFETY CODE (NBS HANDBOOK 81).
 - END POST, CORNER POST, AND LINE BRACE POST SHALL BE ASSEMBLED BY THE UNIT AND PAID FOR AS SUCH. ALL WORK AND MATERIAL ASSOCIATED WITH EACH ASSEMBLY SHALL BE INCLUDED IN THE UNIT PRICE FOR THAT ASSEMBLY.
 - LINE BRACE POSTS SHALL BE SPACED AT 400 FT INTERVALS, WHERE FENCING IS CONTINUOUS AND WHERE END, CORNER & LINE BRACE POSTS ARE NOT SPECIFIED.
 - ALL LINE POSTS SHALL BE 5" MIN. AND 12' LONG. ALL END, CORNER, AND LINE BRACE POSTS SHALL BE 6" MIN. AND 12' LONG. ALL POSTS AND BRACES SHALL BE TREATED PER 710.07.
 - WOODEN STAYS SHALL BE UNTREATED NATIVE TIMBER. BOTTOM ENDS OF STAYS SHALL REST ON THE NATURAL GROUND AND SHALL BE WIRED AND STAPLED AS INDICATED.
 - WOVEN WIRE SHALL BE SINGLE WRAPPED AND TIED OFF. FENCE TO BE CONTINUED, SHALL BE RESTARTED IN LIKE MANNER.
 - FENCE MAY BE PLACED ON EITHER THE ROAD SIDE OR FIELD SIDE OF POSTS, DEPENDING ON LOCAL CONDITIONS; I.E., ON CURVES, THE WIRE SHOULD BE PLACED ON THE SIDE WHICH WOULD RESULT IN THE LEAST AMOUNT OF TENSION ON THE STAPLES. THIS WILL ALSO APPLY WHERE WIND DRIFT OR OTHER CONDITIONS WOULD EXERT UNUSUAL PRESSURE AGAINST THE WIRE.
 - WHERE CONCRETE STRUCTURES ARE USED AS A DEER PASS, THE FENCE SHALL END AT EYEBOLTS IN WINGS OF THE STRUCTURE. EYEBOLTS IN FRESH CONCRETE SHALL BE MADE OF 1/2" ROUND BARS AND EMBEDDED A MIN OF 6" WITH A HOOKED OR BENT END. IN EXISTING CONCRETE, THE 1/2" ROUND BARS SHALL BE DEFORMED AND INSTALLED INTO DRILLED HOLES. EYEBOLTS SHALL HAVE A MINIMUM OF 1" INSIDE EYE DIA AND SHALL BE FURNISHED AND GROUTED BY THE CONTRACTOR. COST OF EYEBOLTS SHALL BE INCLUDED IN THE CONTRACT PRICE FOR FENCING.
 - WOVEN WIRE FENCE FABRIC SHALL CONFORM TO AASHTO M 279 (ASTM A 116) DESIGN NO. 1047-6-11 WITH CLASS 1 COATING.
 - STEEL BARBED WIRE SHALL CONFORM TO AASHTO M 280 (ASTM A 121) 12 1/2 GA. WITH CLASS 1 COATING.
 - ALL FENCE WIRE TIES, BRACE WIRES, STAPLES AND OTHER WIRE APPURTENANCES SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M 232.
 - 6" DOUBLE ACTING SPRING DOOR HINGE WITH FLAT BUTTON TIPS CUT IN TWO SHALL BE USED AS A SINGLE SWING HINGE AND BE PROVIDED WITH A GREASING NIPPLE AND WELDED TO SUPPORT PLATE.
 - TINES SHALL BE MOLDED IN ONE PIECE OF STEEL (AASHTO M 169, GRADE 1050), WITH NO WELDS ALLOWED.
 - DEER GATE AND TOP BRACES SHALL BE PAINTED WITH GREEN PAINT CONFORMING TO 708.03 AND COLOR NO. 14109 OF FEDERAL STANDARD 5958.
 - GAP CLOSURE: EXCEPT FOR DEER GATES, CONSTRUCT FENCE WITHOUT OPENINGS OR GAPS, ESPECIALLY AT STRUCTURES, CLIFFS, AND IRREGULAR GROUND. WHEN A 6" OR LARGER GAP EXISTS BELOW THE NORMAL BOTTOM FENCE WIRE, THE GAP SHALL BE CLOSED ACCORDING TO THE CLOSURE DETAIL. ALL EXTRA MATERIAL USED FOR GAP CLOSURES OR ANY TYPE OR LOCATION SHALL BE INCLUDED IN THE WORK.

DEER FENCE
NOTES

CASE NUMBER: _____

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(811) 480-922-1067
UTILITY NOTIFICATION CENTER OF COLORADO (UNCC)
WWW.UNCC.ORG

NO.	DATE	DR	TN	CHK	RH	APVD	RH
DSGN	PIVOT						

ENERTIA
CONSULTING GROUP LLC
1515 MARKET STREET, SUITE 100
DENVER, COLORADO 80202

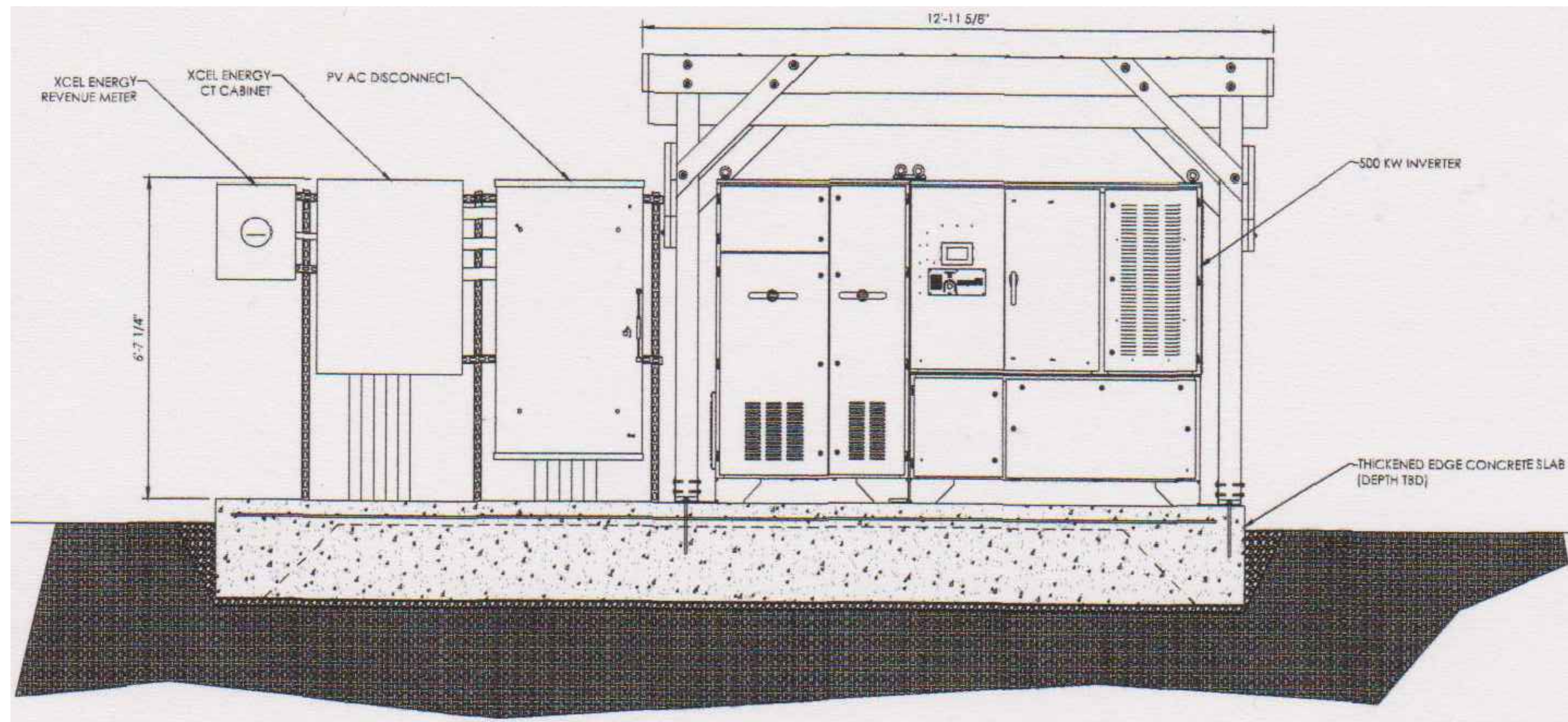
Pivot Energy
1601 WEWATTA ST., #700
DENVER, CO 80202

PIVOT ENERGY SOLAR FACILITY ON
DEWIRE PARCEL PS48
SPECIAL USE PERMIT PLAN
BOULDER COUNTY, COLORADO

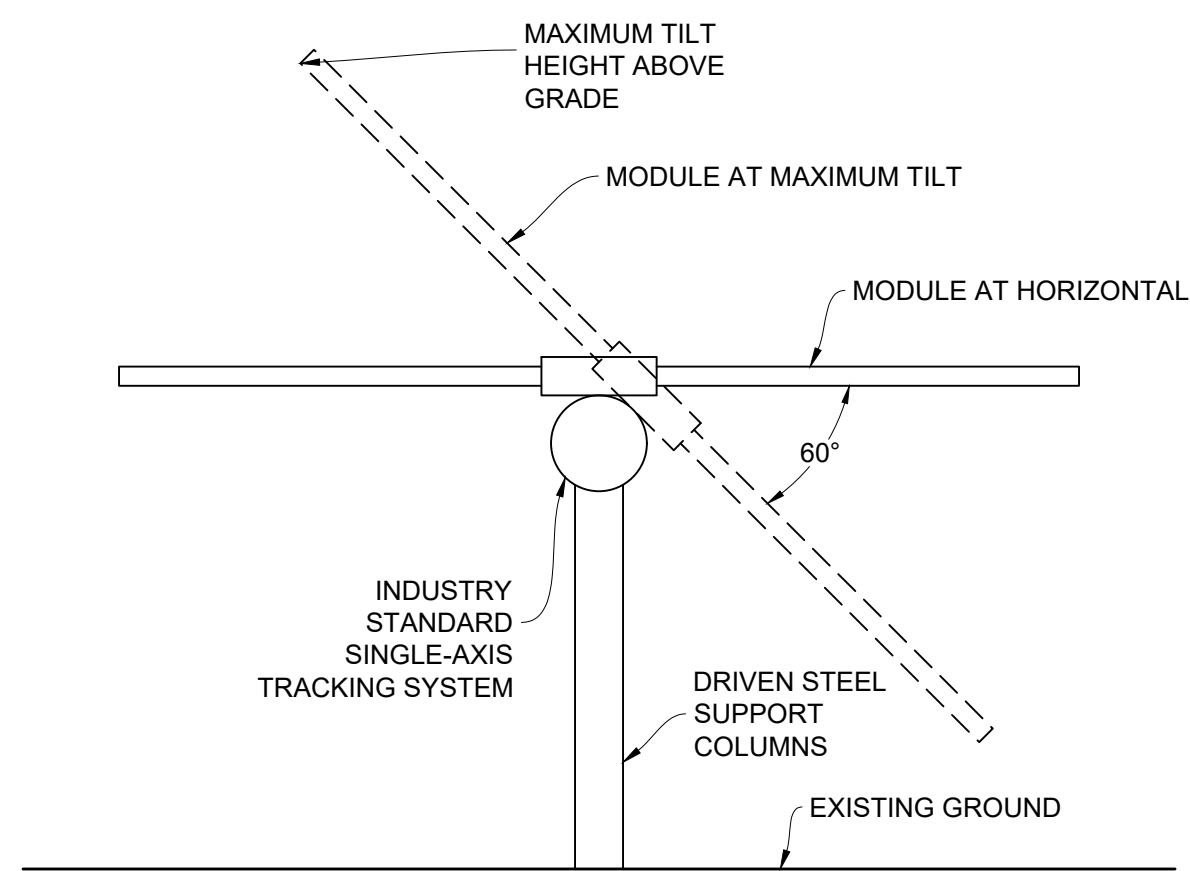
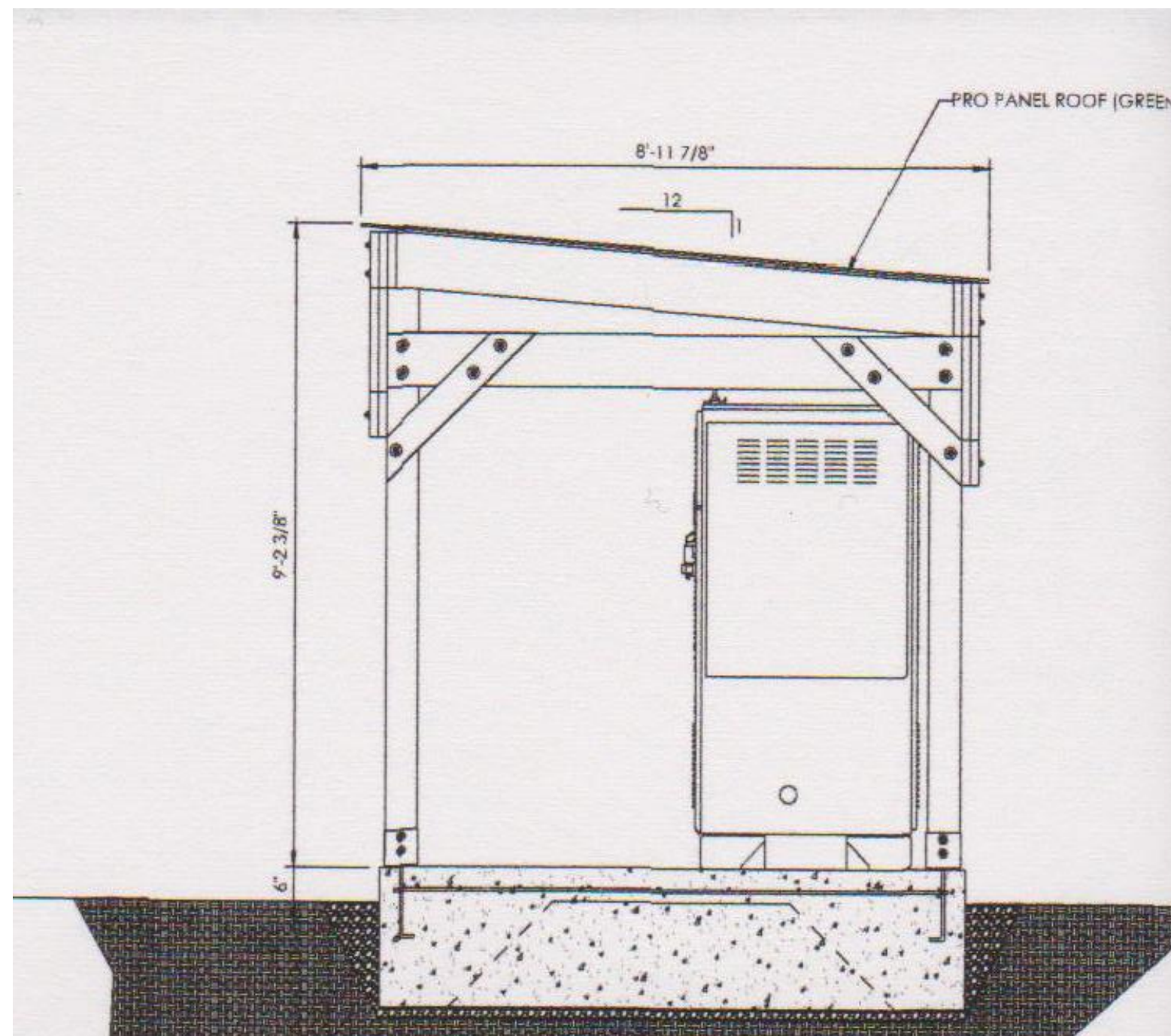
SITE DETAILS (1 OF 3)

VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. SCALE	DATE MAR 28, 2024
FILE	
DWG	
SHEET	5 OF 7

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INVERTER MOUNTED ON CONCRETE PAD (TYP)
NOT TO SCALE



PV ARRAY RACKING SYSTEM
NOT TO SCALE

CASE NUMBER: _____

NO.	DATE	DR	TN	CHK	REVISION

ENERTIA
CONSULTING GROUP, LLC
1515 MARKET STREET, SUITE 100
DENVER, COLORADO 80202

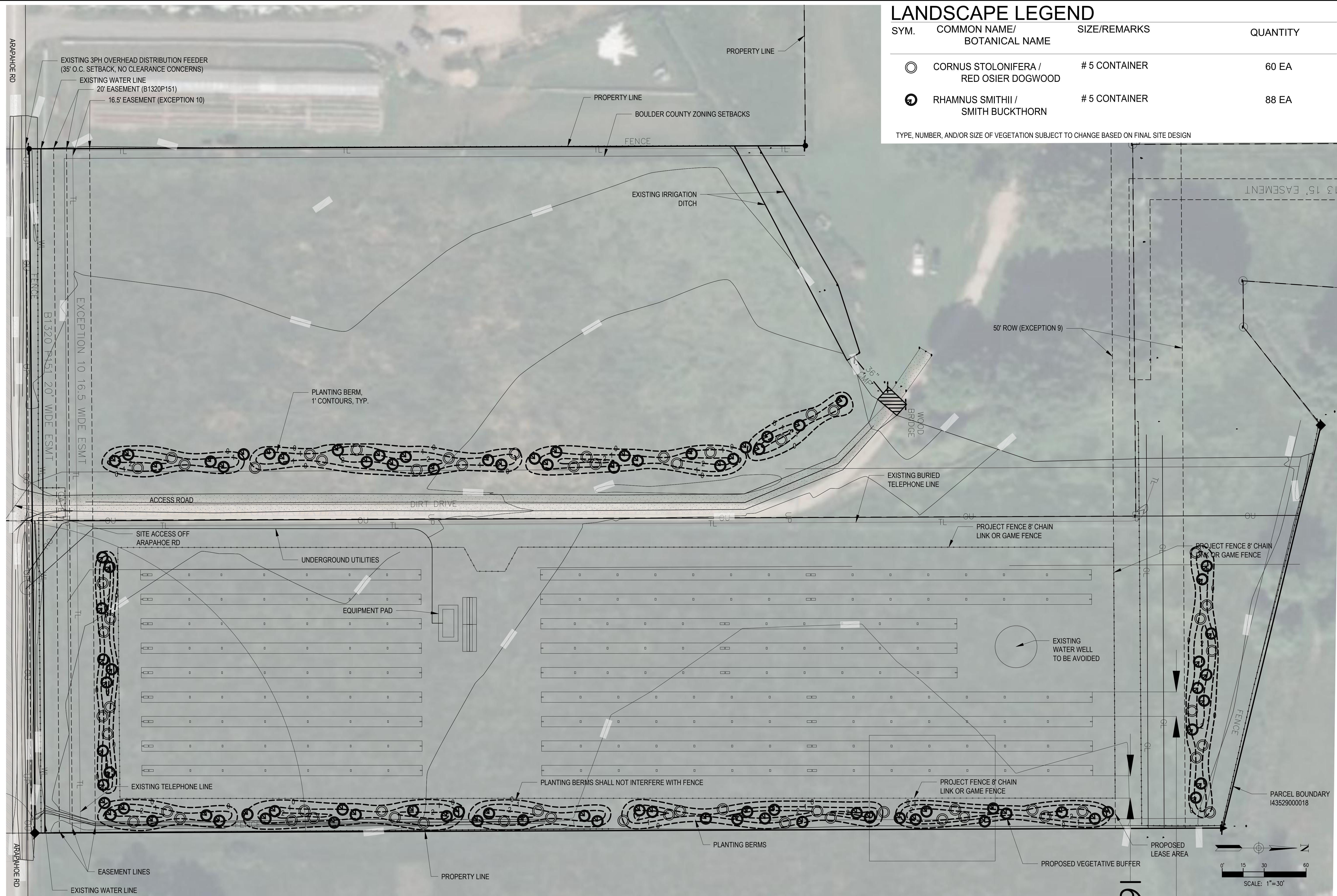
Pivot Energy
1601 WEWATTA ST., #700
DENVER, CO 80202

PIVOT ENERGY SOLAR FACILITY ON
DEWIRE PARCEL PS48
SPECIAL USE PERMIT PLAN
BOULDER COUNTY, COLORADO

SITE DETAILS (2 OF 3)

DATE	MAR 28, 2024
FILE	
DWG	
SHEET	6 OF 7

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LANDSCAPE LEGEND

SYM.	COMMON NAME/ BOTANICAL NAME	SIZE/REMARKS	QUANTITY
⊙	CORNUS STOLONIFERA / RED OSIER DOGWOOD	# 5 CONTAINER	60 EA
⊙	RHAMNUS SMITHII / SMITH BUCKTHORN	# 5 CONTAINER	88 EA

TYPE, NUMBER, AND/OR SIZE OF VEGETATION SUBJECT TO CHANGE BASED ON FINAL SITE DESIGN

ST EVEN E. LOHIDE
LA1082
08/19/2014
Original Date of Licensure
STATE OF COLORADO
LICENSED LANDSCAPE ARCHITECT

NO.	DATE	REVISION
DJG	JP/SL	DR
		JP
		CHK
		SL
		APVD
		SL

AZTEC TYP SA
501 N 44TH STREET, SUITE 300
PHOENIX, AZ 85008

PIVOT ENERGY
1750 15TH ST, SUITE 400
DENVER, CO 80202

PIVOT ENERGY SOLAR FARM ON
N 97TH ST
SPECIAL USE REVIEW
BOULDER COUNTY, COLORADO
LANDSCAPE PLAN

DATE	MARCH 29, 2024
FILE	
DWG	
SHEET	1 OF 2

PLANTING PLAN

1" = 30'
CASE NUMBER: _____

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Pivot Solar 48: Solar Energy Development Report

Section A: Installation Plan – BMPs for Reducing Site Disturbance

This section of the development report outlines Pivot Energy's Best Management Practices (BMPs) for minimizing impact to existing site conditions including soil and native vegetation, and how Pivot minimizes ground disturbance during construction.

Please see Appendix A, attached to this development report, for a detailed installation schedule showing the various stages and durations of construction. Appendix B, also attached, contains a site plan showing the proposed disturbed area.

1. Solar Site Due Diligence through Engineering

At the beginning of a project's design phase, Pivot Energy retains a Civil Engineer of Record to perform tasks associated with the civil activities of the project. This includes analysis of the existing site conditions, implementation of necessary erosion control measures, grading (if any), and development of best practices to maintain the existing stormwater management and retention of a site. Though company practices may vary in the solar industry, Pivot Energy very rarely performs grading on its sites (5% or fewer of our projects).

Pivot has partnered with numerous racking companies to determine solutions that allow minimal grading (if any at all), even for sites with more challenging topography. Based on the proposed site's flat topography, it is not expected that grading will need to take place at Pivot Solar 48. Further, the simple and low-impact nature of solar construction relative to other uses results in minimal ground disturbance and added imperviousness. The only portions of the solar facility that touch the ground are the racking posts, fenceposts, and a small equipment pad.

2. Post-Engineering and Early Construction Activities

The Civil Engineer of Record for the proposed project will also be the entity responsible for specifying site-specific material and construction activities that adhere to the requirements set forth by Boulder County, such as seeding, fencing, road placement, and access.

A. Seeding

Before construction begins, Pivot pre-seeds a locally appropriate, soil-stabilizing mixture which prepares the site to minimize disturbance during construction and prevents the emergence of weeds. When construction nears completion, a permanent seed mixture will be planted and will serve as the vegetation of choice for the long term. Pivot's seeding practice utilizes equipment designed to not disturb soils by specifically placing seeds at the required depth (as seen in figure 1 below).

Through our construction partners and maintenance team, a seed mixture is specified to ensure not only that appropriate plants are used, but also that the ground's previous use is improved upon with incorporation of native wildflowers and other species where possible. This further beautifies the area and provides variety to our trustworthy vegetation management workers (grazing sheep).



Figure 1: Seeding between rows of a solar farm.



Figure 2: Established vegetation at a site



B. Fencing

Fencing is installed according to minimum required height and screening requirements where applicable. For the proposed project, Pivot plans to use 8-foot game fencing. Fence installation involves temporarily moving small quantities of topsoil out of the way and replacing it once fencing is complete (roughly 1-2 weeks). The quantity of soil disturbance is limited to a narrow area around the fence posts and is kept to a minimum.

C. Trenching and Electrical Equipment Pad

Pivot Solar 48 has been designed to have limited underground wire runs to return the electricity produced by the solar panels to the utility grid. Installation of electrical wiring and the equipment pad (which contains the inverters and transformer), requires temporarily moving dirt out of the way so that conduit can be placed underground. After trenching is complete (roughly 2 weeks), soil is returned and re-stabilized.

D. Access Road

The proposed project has a pre-existing access road, which will also be utilized for access to the proposed solar facility. The civil engineer has specified minor improvements to this existing access road in order for it to be able to withstand the loads necessary for construction and material delivery. The majority of the overall site disturbance occurs as a result of road placement and improvement, though since access at the proposed site is pre-existing, disturbance beyond the existing road's footprint will be minimal. Equipment will be used to scrape the existing road surface to ensure it is flat and uniform for a new specification of road base to be placed. The final road specification will vary based on final engineered designs but is typically made up of 4-8 inches of Class VI base gravel. The improved road will minimize opportunity for erosion at the site for the system's lifespan.

Section B: Management Plan

As the long-term owner and operator of its projects, Pivot Energy manages all operation and maintenance teams in-house. The ongoing management of the proposed site will depend upon whether it is determined that crop production operations will be feasible onsite. In either case, all Pivot Energy projects utilize holistic land management practices, as described below.

1. Seeding:

In areas not being actively farmed, Pivot Energy will plant a low-growth, locally appropriate seed mix with deep-rooted varieties that help to improve soil moisture content and improve soil quality over time. This seed mixture is discussed in more detail in #2 below.

2. Sheep Grazing

In areas not being actively farmed, Pivot plans to utilize sheep grazing as a means of vegetation management. A mix of forbs, fescues, and clovers will be planted on site. Pivot works with professional ecologists and civil firms to specify the seed mixes in order to ensure that the chosen plants will provide the right balance of biodiversity and high forage content to support the herd and improve soil quality over time. Pivot also aims to include a mixture of some nitrogen fixing and some nitrogen feeding varieties, which eliminates the need for using chemical fertilizers onsite. Sheep grazing helps to further establish plants via animal hooves integrating seeds into the soil, and their waste acts as a natural and low-odor fertilizer to enrich the soil, improving the land's agricultural integrity.

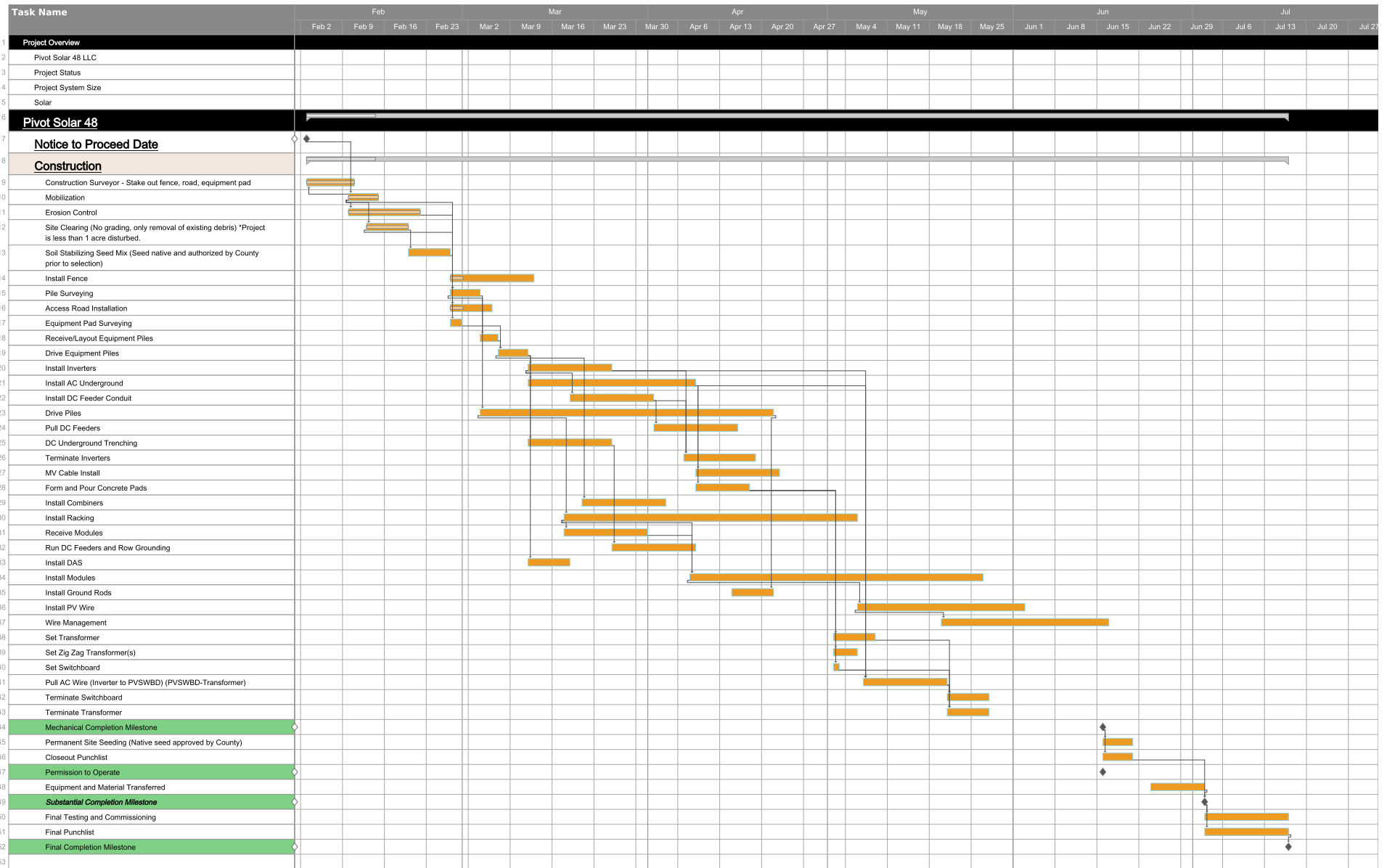
3. Crop Production

Pivot Solar 48 is being evaluated as a part of a new and innovative "agrivoltaics" (agriculture + photovoltaics) initiative at Pivot Energy, going above and beyond both industry standard practices and the requirements of Boulder County to improve the agricultural integrity of the land. If it is determined to be feasible, low-growth vegetables and herbs will be selected to be planted in the areas between and underneath the rows of solar panels. Pivot will work with a local farming partner to identify the best crops to be planted on the parcel and to ensure low- or no-till farming and natural fertilizer use. The site will also be registered on DriftWatch.org to ensure aerial pesticides used anywhere nearby will not have any drift potential to affect the parcel.

4. Topsoil Conservation

Based on the site's flat topography, it is not anticipated that significant grading or topsoil movement will be required to construct the project (see Earthwork and Grading worksheet for more details). Any topsoil moved during the construction period will be stockpiled and put back into place when construction is complete. Keeping the topsoil onsite creates a strong baseline of soil health. Over the lifetime of the project, topsoil conservation, along with our seeding practices and use of sheep grazing, will improve overall soil health and mitigate erosion.

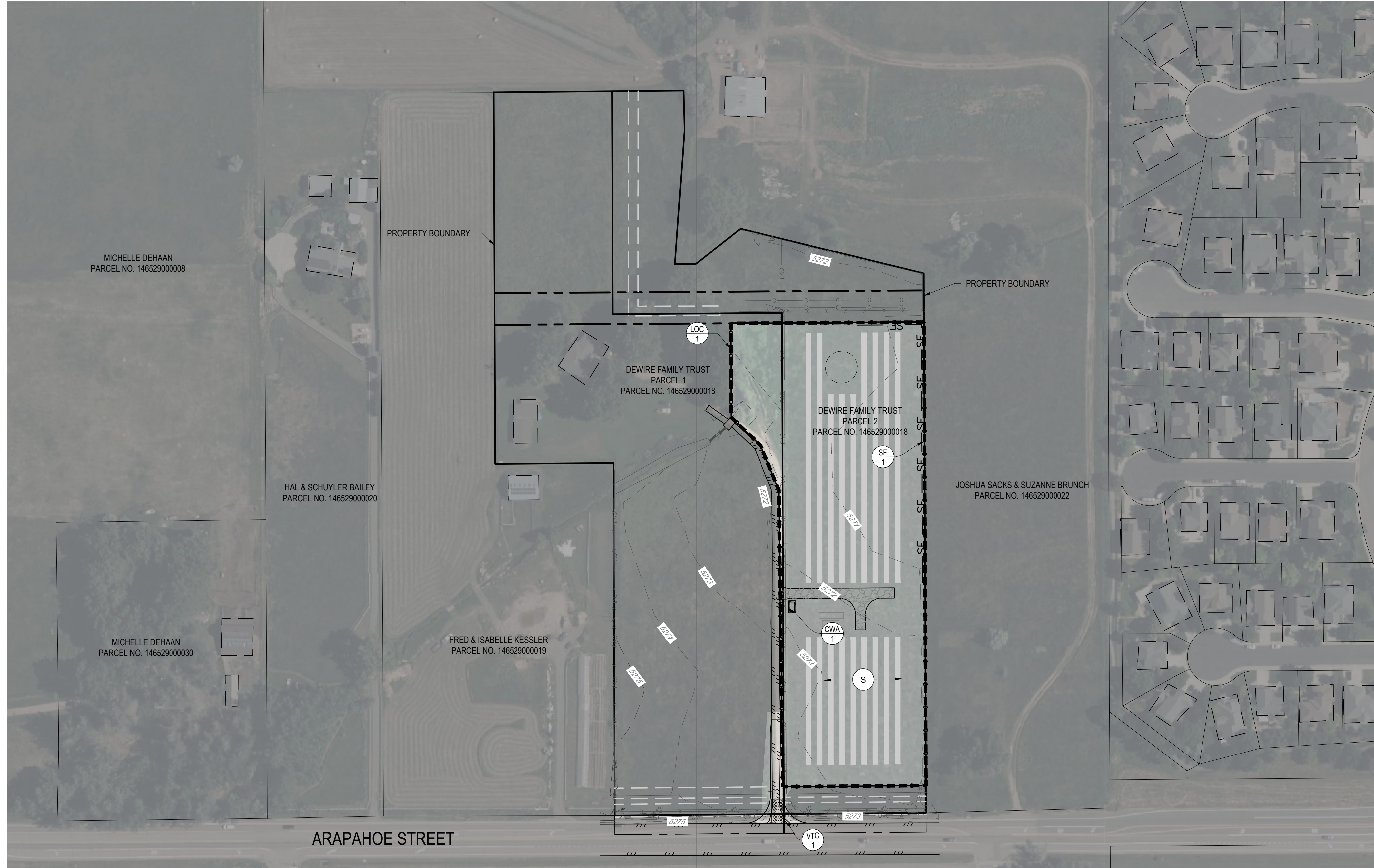
Appendix A: Pivot Solar 48 Installation Schedule



APPENDIX B: PIVOT ENERGY SOLAR FACILITY ON DEWIRE PARCEL SPECIAL USE PERMIT PLAN

CASE NUMBER: _____

LOCATED IN SECTION 29, TOWNSHIP 1 NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF BOULDER, STATE OF COLORADO



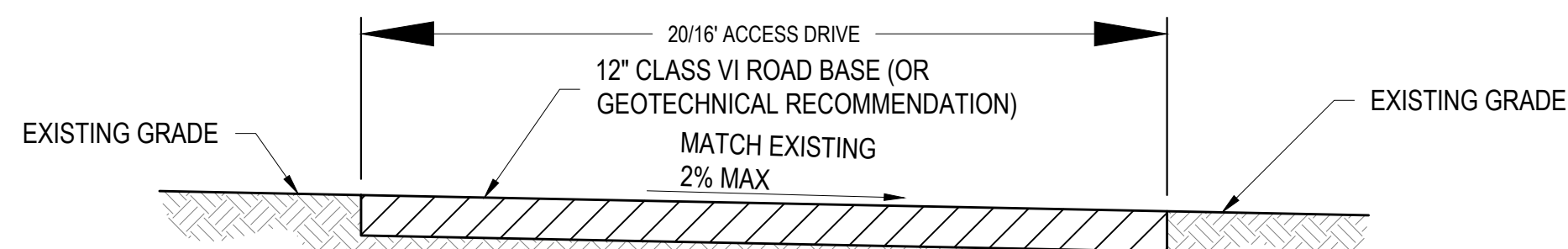
LEGEND

- PROPERTY BOUNDARY (±13.08 ACRES)
- PARCEL BOUNDARIES
- RIGHT-OF-WAY
- SECTION LINE
- EASEMENT
- EXISTING FENCE
- EXISTING TELEPHONE
- EXISTING WATER LINE
- EXISTING OVERHEAD UTILITY W/ POLES
- EXISTING GAS LINE
-
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PV ARRAY
- EDGE OF ASPHALT/ROAD
- GRAVEL FIRE LANE & ACCESS ROAD
- 8' GAME FENCE (±4.15 ACRES)
- ELECTRICAL EQUIPMENT PADS
- EXISTING WATER WELL (25' SETBACK)
- LIMITS OF CONSTRUCTION
- SILT FENCE
- VEHICLE TRACKING CONTROL
- CONCRETE WASHOUT
- SEEDING

NOTES

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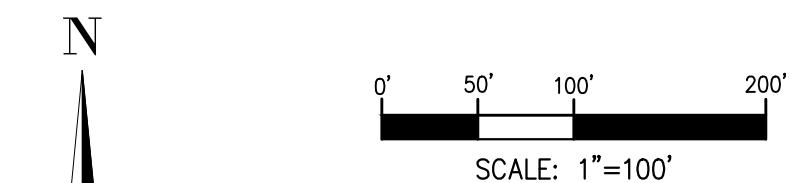
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TOTAL DISTURBANCE: 0.18-ACRES



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DSGN	PIVOT									

1515 MARKET STREET, SUITE 100
DENVER, COLORADO 80202

1601 WEWATTA ST. #700
DENVER, CO 80202

PIVOT ENERGY SOLAR FACILITY ON DEWIRE PARCEL PS48 SPECIAL USE PERMIT PLAN BOULDER COUNTY, COLORADO

GRADING AND EROSION CONTROL (GEC) PLAN AND INSTALLATION PLAN

VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING.	
DATE	MAR 28, 2024
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SHEET	4 OF 7

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1515 Market Street
Denver, CO 80202
(609) 234-5502
rick.hagmayer@enertiag.com

March 28, 2024

Boulder County Planning and Permitting Department
2045 13th St
Boulder, CO 80302

RE: Drainage Narrative
Pivot Solar Energy Solar Facility on the Dewire Parcel
9215 Arapahoe Rd, Boulder County

To whom it may concern:

This drainage narrative is intended to provide Boulder County with drainage and land disturbance information related to a proposed 4.148 acre solar facility identified as Pivot Energy Solar Facility on the Dewire Parcel (Project). The Project will be designed and will be constructed and maintained in a manner that minimizes storm water related impacts, in accordance with 2016 Boulder County Storm Drainage Criteria Manual criteria.

Project Specific Information

Project Name, Property Address and Boulder County Parcel No.

Pivot Energy Solar Facility on the Dewire Parcel,
Parcel No. 146529000018

Developer/Owner

Pivot Energy, 1601 Wewatta St, #700, Denver, CO 80202

Site/Civil Engineer

Enertia Consulting Group, LLC, 1515 Market Street, Denver, CO 80202

Project Location and Description

The Project will consist of up to an approximately 1 MW solar facility located on approximately 4.148 acres of undeveloped land within an approximately 13.08 acre parcel; and within Section 29, Township 1 North, Range 66 West of the 6th P.M., Boulder County, Colorado. The Project site is bounded by Arapahoe Rd to the south, and Rural Residential to the west, north, and east.

Project components include: up to a 1 MW solar facility with approximately 2000 solar panels mounted on steel H-piles; concrete equipment pads; 20' gravel access driveway with emergency turn-around; and perimeter fence with access gate. With the exception of a gravel driveway and concrete pads for transformers and inverters, the remainder of the solar facility will not require clearing/grubbing of existing vegetation and grading unless required to prevent shading of the solar array.

Land Disturbance and Drainage Information

Existing Ground Surface Conditions, Drainage Patterns and Imperviousness

The 4.148 acre solar facility project area may be characterized as residential and undeveloped agricultural land. The applicable FIRM Map (No. 0813C0419J), included in Appendix A, indicates that the Project site is located in a Zone X floodplain which is an area of minimal flood hazard. Based on NRCS soils data (also included in Appendix A), the site soils are identified as Clay Loam classified as Hydrologic Soil Group C. As shown on Figure 1 in Appendix A, the site ground surface generally slopes at an average of ~1 percent from west to east of the Project site. In general, storm water is conveyed across the Project area toward the eastern property boundary.

Land Disturbance Activities

The site improvements considered as land disturbance activities include installation of: (i) all-weather gravel surface driveway, (ii) concrete equipment pads, and (iii) Class VI equipment pads:

- (i) Gravel Access Drive – One all-weather gravel surface access drives will extend from existing Arapahoe Rd. Given the site soils, a 12-inch-thick gravel Class VI base surface (consistent with similar solar facility access drives within Weld County) is proposed. This depth of gravel over compacted subgrade is sufficient to provide routine and emergency access to the
- (ii) Concrete Equipment Pads – Concrete equipment pads will be installed beneath inverters and transformers and other electrical equipment as required with the development. The pads will be at least 8-inches thick with reinforcing steel.
- (iii) Class VI Equipment Pads – Class VI road base equipment pads will be installed beneath other electrical equipment as required with the development. The pads will be at least 12-inches thick over compacted subgrade.

Lastly, components of the 4.148 acre solar facility will include up to 2000 solar panels placed on steel H-piles driven into the ground. Since the solar panels will be tracking panels (rotate through the day to track the path of the sun), the ground surface vegetation beneath the panels will continue to grow. Some minimal grubbing may be necessary to prepare the site with planned native seed mixes. Onsite conditions at the time of seeding will dictate necessity of such methods. The purpose of the seeding is to increase the density of native vegetation; therefore, the grubbing is not considered land disturbance (if it is necessary).

The imperviousness values included herein are based on the current layout at the time of this report. These values are subject to change as design progresses through the natural engineering process.

Land Disturbance Area

A total of approximately 4798 sf or 0.11 acres of the Project area is anticipated to be disturbed. The total disturbance numbers are summed in the following table.

Disturbance Surface Type	Disturbance Area (sf)	Disturbance Area (ac)
Gravel Access Drive	4,053	0.093
Concrete Equipment Pads	365	0.008
Class VI Equipment Pads	380	0.009
Total	4,798	0.110

Hydrologic Design Criteria

The following table includes hydrologic design criteria used in this analysis.

Parameter	Value	Unit	Reference
Time of Concentration, T _c	-	min.	MHFD Peak Runoff Prediction by the Rational Method (Appendix A)
Runoff Coefficient, C	-	-	MHFD Criteria Manual, Chapter 6, Table 6-4
1-hr Point Rainfall, P ₁ (100-Year)	2.74	inches	NOAA Rainfall Data (Appendix A)
Storm Runoff, Q (100-YR)	-	cfs	Q = CIA

Basin Conditions

The footprint of the solar facility and access drive along with the areas delineated by oil setbacks is considered to be the subject drainage area under both existing and proposed conditions.

The existing condition basin (identified as basin X1 on Figure 1) was analyzed to calculate the peak runoff for the design storm using an imperviousness percentage of 2%. This percentage is based on the soil type and existing conditions of the site.

The proposed condition basin (identified as basin A1 on Figure 1) was analyzed to calculate the peak runoff for the design storm using an impervious percentage of 3.13%. This percentage is based on the majority of the site remaining as 2% impervious, 0.09 acres changing to 40% impervious (access drive area), 0.01 acres changing to 100% impervious (concrete pad area), and 0.01 acres changing to 40% impervious (Class VI pad area). It should be noted that the tracking solar panels are not classified as ground surface because precipitation falling on the solar panels will shed onto the undisturbed vegetated surface below.

Stormwater Runoff

The stormwater runoff for existing and proposed conditions is calculated based on the Rational Method. The 100-year, 1-hour storm event was analyzed for basins A1 and X1. The flow path for the basins is generally from west to east on the Project site. The average ground surface slope along the flow path is 1%. The time of concentration to this point was calculated using MHFD equations are summarized below and can be found on the MHFD Peak Runoff Prediction by the Rational Method form in Appendix A. The Runoff Coefficients are also included in the MHFD Peak Runoff Prediction by the Rational Method and are summarized below.

Basin	Time of Concentration (min)	Runoff Coefficients (C ₁₀₀)
X1	27.10	0.49
A1	26.88	0.50

The precipitation data used for the 100-year, 1-hour storm event is based on NOAA rainfall data from the Project site and is included in Appendix A. Per the Basin Runoff Calculation (MHFD Peak Runoff Prediction by the Rational Method) included in Appendix A the 100-year runoff flows are as follows:

Basin	Q ₁₀₀ (cfs)
X1	8.26
A1	8.38
Net	0.12

Under developed conditions, runoff will follow existing drainage patterns and will not significantly increase peak flows (increase from 8.26 cfs to 8.38 cfs).

Detention Exemption

It is understood that facilities are exempt from detention requirements if it can be demonstrated that the peak flows from the development will not increase the peak flows from the watershed for storm events up to the 100-year flood. This solar project proposes a net increase of 0.12 cfs of peak flow in the 100-year event, which is not considered to be a significant enough increase in the peak flow of the watershed to warrant detention. Therefore the Site is exempt from the detention requirements. Additionally, the site proposed disturbances of less than 1-acre, so water quality is not required.

Summary

The following list summarizes key components of the Project and findings related to land disturbance and storm water impacts.

1. Installation of the solar facility will temporarily disturb the ground surface within the 4.148 acre project area but won't require clearing and grubbing of vegetation or grading, except for concrete equipment pad and gravel access drive installation.
2. Grubbing may be required to provide appropriate conditions for seeding. It is intended for the vegetation throughout the site to be improved as a result, therefore is not considered land disturbance.
3. The areas considered impervious (365 SF of 100% impervious concrete pads) or semi-impervious (4053 SF of 40% impervious gravel access drive and 380 sf of 40 sf Class VI pads) total 0.11 acres, or 2.65% of the 4.148 acre solar facility area.
4. Under existing conditions, the peak flow originating from the solar facility area for the 100 yr – 1hr storm event is 8.26 cfs.
5. Under developed conditions, the peak flow originating from the solar facility area for the 100 yr - 1 hr storm event is 8.38 cfs.
6. The solar facility does not significantly increase the peak flow of the watershed, and is therefore exempt from the detention requirements.
7. Since the land disturbance is less than 1 acre, a CDPS storm water certificate issued by CDPHE is not required for this Project.
8. Installation and operation of the solar facility is not expected to impact existing drainage patterns or flow rates on or around the Project site. Runoff water quality will not be impacted by the solar facility components.
9. The Project design will adequately protect public health, safety and general welfare and have no adverse effects on offsite properties.

Boulder County Planning and Permitting Department
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We trust that the information provided is acceptable and complete. Please let me know if you have any questions or require additional information. Please contact me at rick.hagmayer@enertiag.com or (609) 234-5502 should you require additional information.

Sincerely,
ENERTIA CONSULTING GROUP, LLC



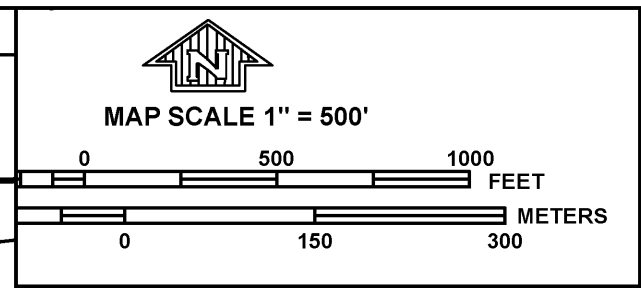
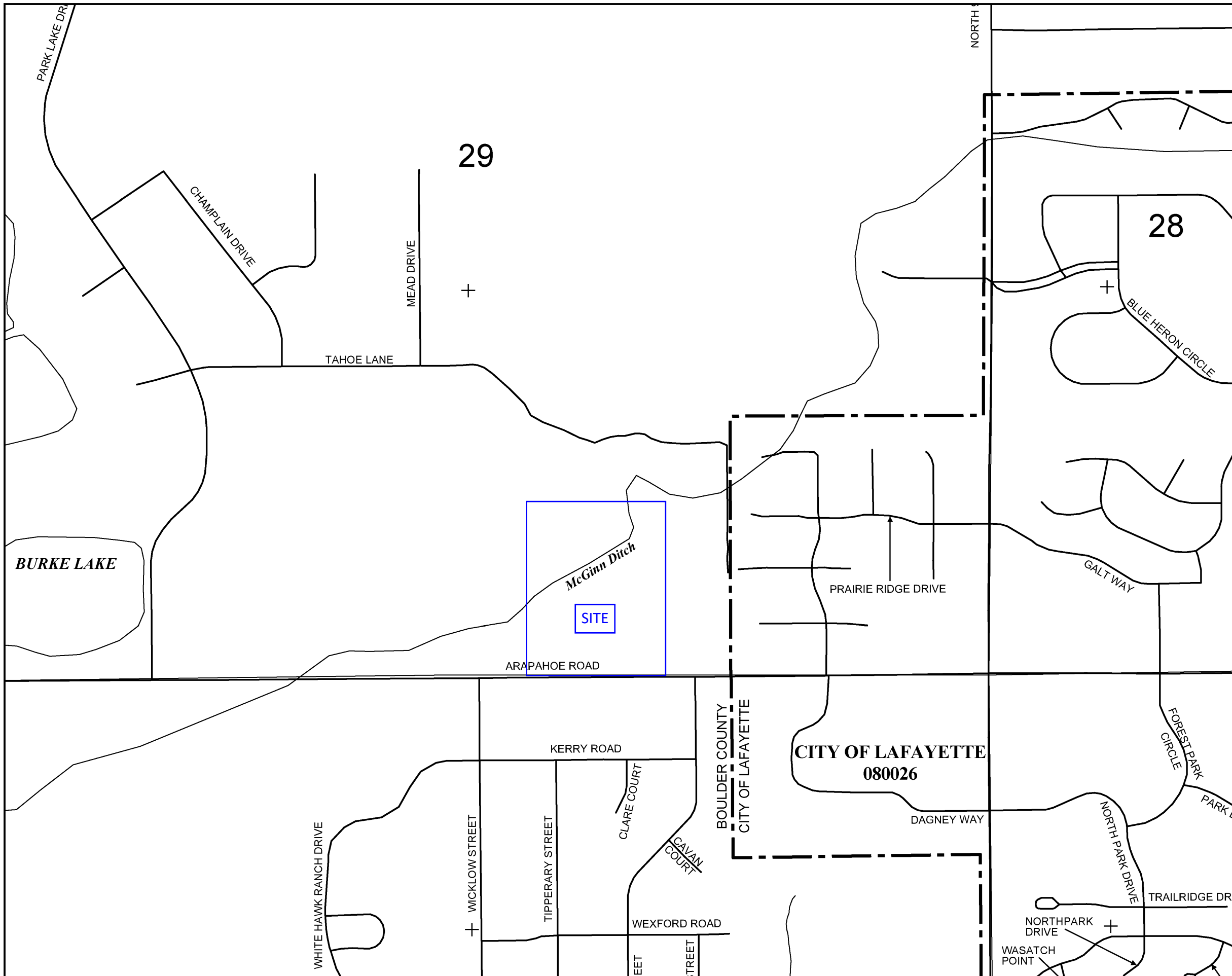
Rick Hagmayer, PE
Senior Project Manager

attachment

Appendix A

Reference Documents

- FIRM Map
- USDA Soils Report
- Project Drainage Map
- Basin Runoff Calculations
- Project Vicinity Map



NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0419J

FIRM
FLOOD INSURANCE RATE MAP
BOULDER COUNTY,
COLORADO
AND INCORPORATED AREAS

PANEL 419 OF 615
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BOULDER COUNTY	080023	0419	J
LAFAYETTE, CITY OF	080026	0419	J

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.



MAP NUMBER
 08013C0419J

MAP REVISED
 DECEMBER 18, 2012

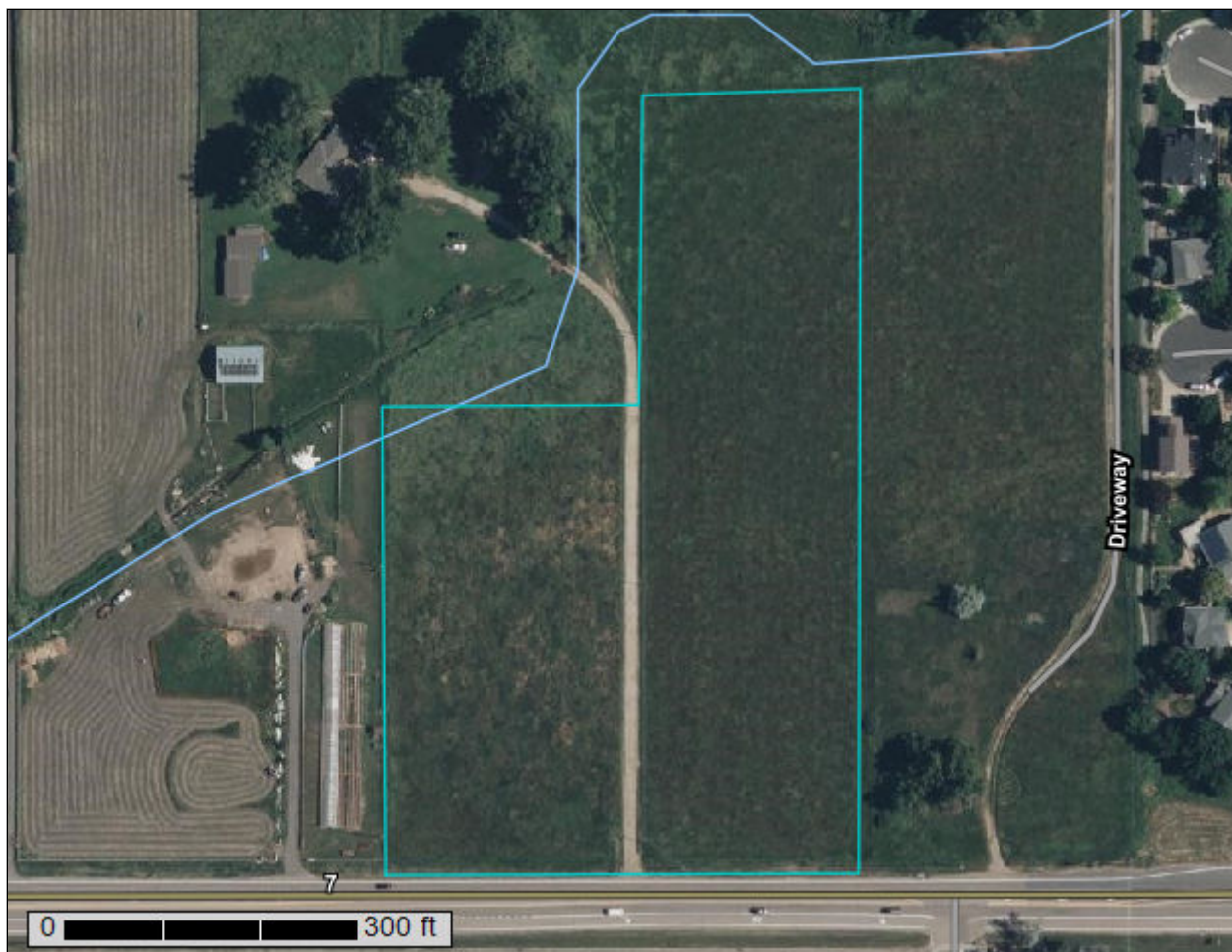
Federal Emergency Management Agency

This is an official FIRMette showing a portion of the above-referenced flood map created from the MSC FIRMette Web tool. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For additional information about how to make sure the map is current, please see the Flood Hazard Mapping Updates Overview Fact Sheet available on the FEMA Flood Map Service Center home page at <https://msc.fema.gov>.



A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Boulder County Area, Colorado



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

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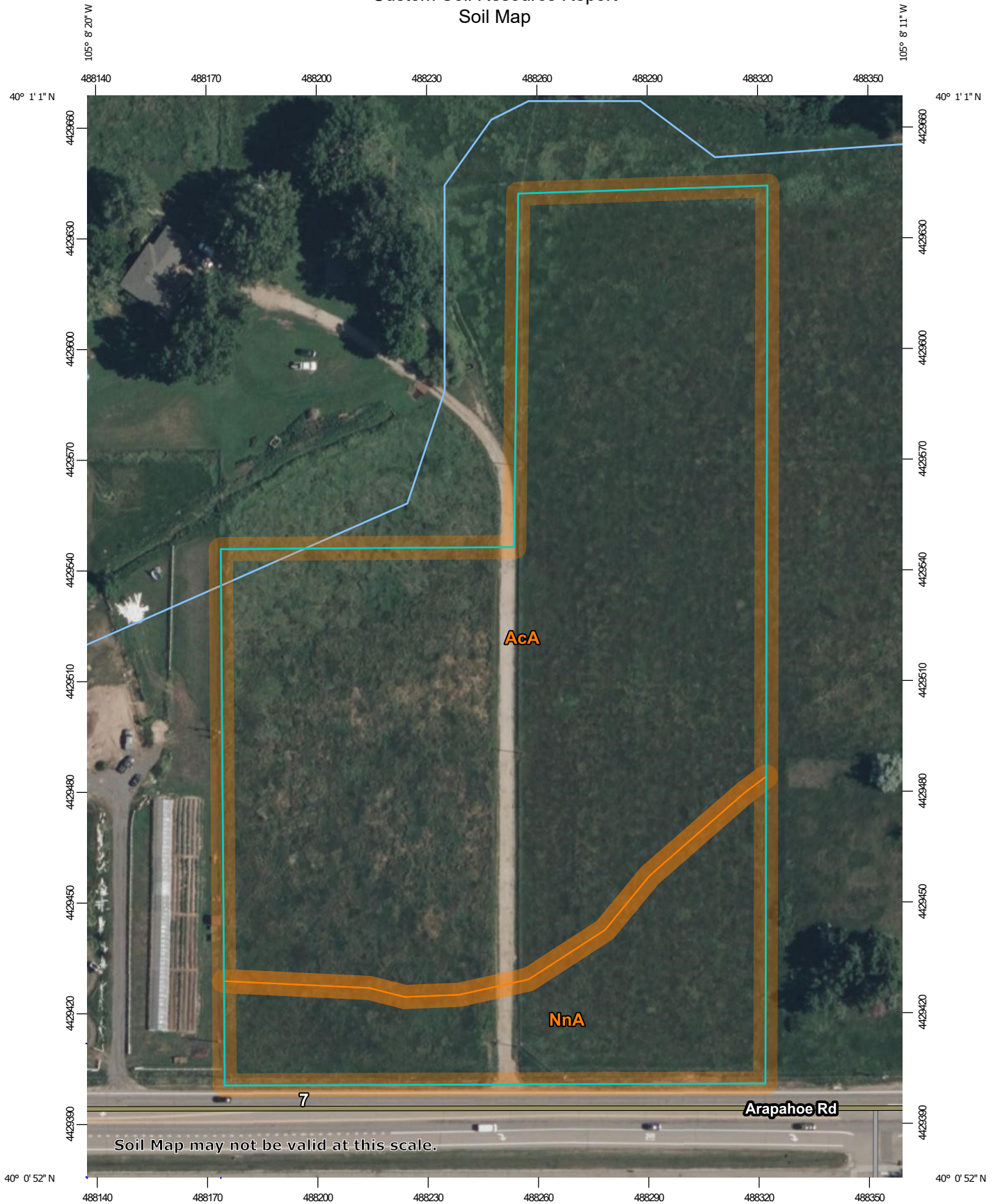
Contents

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Map Unit Descriptions.....	8
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Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



Soil Map may not be valid at this scale.

Map Scale: 1:1,430 if printed on A portrait (8.5" x 11") sheet.

0 20 40 80 120 Meters


0 50 100 200 300 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)


Soils


 Soil Map Unit Polygons


 Soil Map Unit Lines


 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit


 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water


 Perennial Water

 Rock Outcrop


 Saline Spot

 Sandy Spot

 Severely Eroded Spot


 Sinkhole

 Slide or Slip


 Sodic Spot

 Spoil Area

 Stony Spot


 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals


Transportation

 Rails


 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Boulder County Area, Colorado
 Survey Area Data: Version 20, Aug 24, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 1, 2020—Aug 25, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

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Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AcA	Ascalon sandy loam, 0 to 3 percent slopes	5.6	79.7%
NnA	Nunn sandy clay loam, 0 to 1 percent slopes	1.4	20.3%
Totals for Area of Interest		7.0	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

Custom Soil Resource Report

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Custom Soil Resource Report

Boulder County Area, Colorado**AcA—Ascalon sandy loam, 0 to 3 percent slopes****Map Unit Setting***National map unit symbol:* 2swl3*Elevation:* 3,870 to 5,960 feet*Mean annual precipitation:* 12 to 16 inches*Mean annual air temperature:* 46 to 57 degrees F*Frost-free period:* 135 to 160 days*Farmland classification:* Prime farmland if irrigated**Map Unit Composition***Ascalon and similar soils:* 85 percent*Minor components:* 15 percent*Estimates are based on observations, descriptions, and transects of the mapunit.***Description of Ascalon****Setting***Landform:* Interfluves*Landform position (two-dimensional):* Summit*Down-slope shape:* Linear*Across-slope shape:* Linear*Parent material:* Wind-reworked alluvium and/or calcareous sandy eolian deposits**Typical profile***Ap - 0 to 6 inches:* sandy loam*Bt1 - 6 to 12 inches:* sandy clay loam*Bt2 - 12 to 19 inches:* sandy clay loam*Bk - 19 to 35 inches:* sandy clay loam*C - 35 to 80 inches:* sandy loam**Properties and qualities***Slope:* 0 to 3 percent*Depth to restrictive feature:* More than 80 inches*Drainage class:* Well drained*Runoff class:* Low*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high
(0.60 to 2.00 in/hr)*Depth to water table:* More than 80 inches*Frequency of flooding:* None*Frequency of ponding:* None*Calcium carbonate, maximum content:* 10 percent*Maximum salinity:* Nonsaline to very slightly saline (0.1 to 2.0 mmhos/cm)*Sodium adsorption ratio, maximum:* 1.0*Available water supply, 0 to 60 inches:* Moderate (about 7.7 inches)**Interpretive groups***Land capability classification (irrigated):* 3e*Land capability classification (nonirrigated):* 4c*Hydrologic Soil Group:* B*Ecological site:* R067BY024CO - Sandy Plains*Hydric soil rating:* No

Custom Soil Resource Report

Minor Components**Olnest**

Percent of map unit: 10 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R067BY024CO - Sandy Plains
Hydric soil rating: No

Vona

Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R067BY024CO - Sandy Plains
Hydric soil rating: No

NnA—Nunn sandy clay loam, 0 to 1 percent slopes**Map Unit Setting**

National map unit symbol: jps9
Elevation: 4,900 to 5,500 feet
Mean annual precipitation: 12 to 18 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 140 to 155 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Nunn and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nunn**Setting**

Landform: Valley sides, terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium

Typical profile

H1 - 0 to 10 inches: sandy clay loam
H2 - 10 to 16 inches: clay
H3 - 16 to 60 inches: clay loam

Custom Soil Resource Report

Properties and qualities

Slope: 0 to 1 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Available water supply, 0 to 60 inches: High (about 10.8 inches)

Interpretive groups

Land capability classification (irrigated): 2s

Land capability classification (nonirrigated): 3s

Hydrologic Soil Group: C

Ecological site: R067BY042CO - Clayey Plains

Hydric soil rating: No

Minor Components

Ascalon

Percent of map unit: 5 percent

Ecological site: R067BY002CO - Loamy Plains

Hydric soil rating: No

Kim

Percent of map unit: 5 percent

Ecological site: R067BY002CO - Loamy Plains

Hydric soil rating: No

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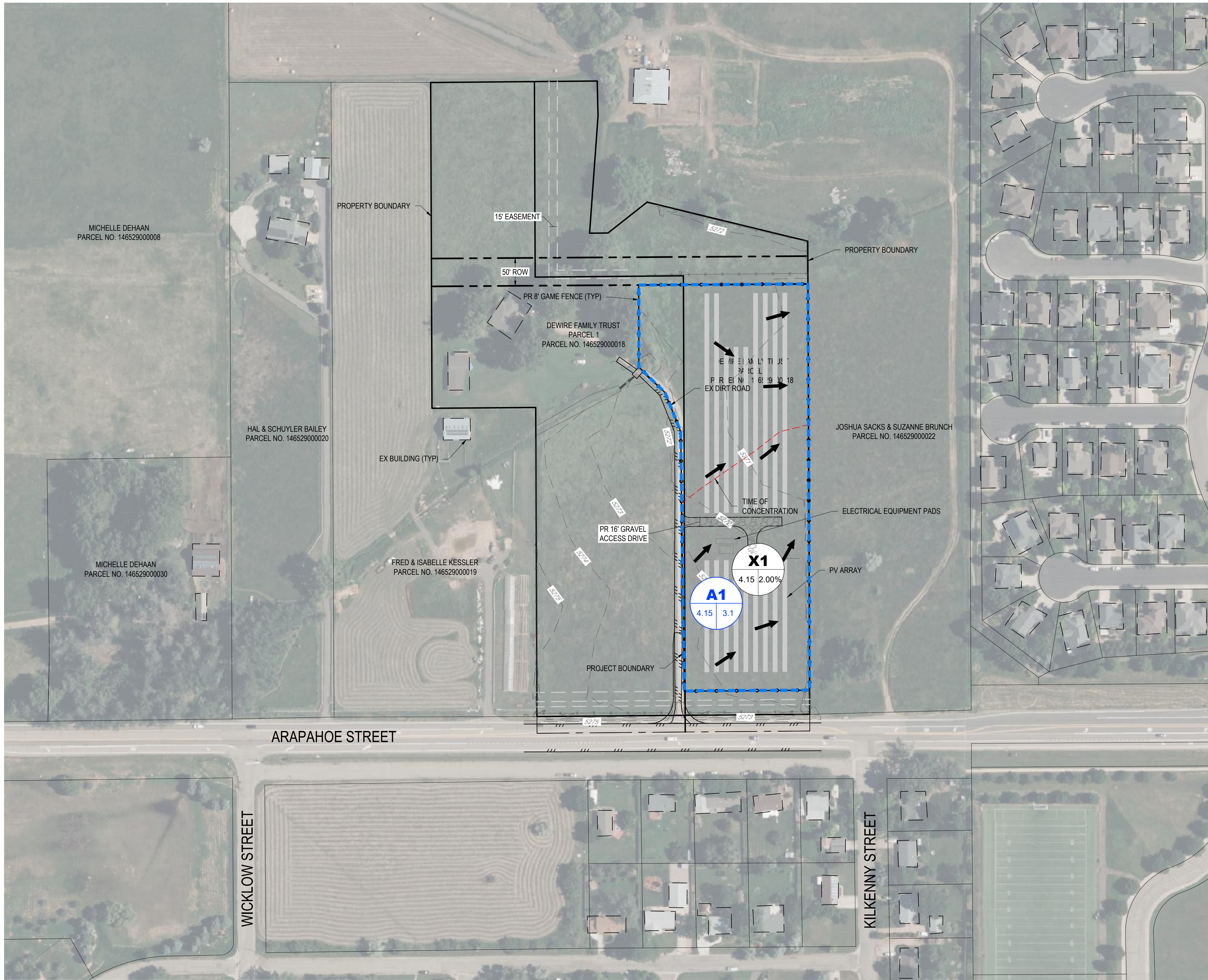
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LEGAL DESCRIPTION:

PARCEL 1

A PART OF THE SOUTHWEST 1/4 OF THE SOUTHEAST 1/4 OF SECTION 29, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF BOULDER, STATE OF COLORADO, DESCRIBED AS FOLLOWS: BEGINNING AT THE SOUTHEAST CORNER OF THAT PARCEL DESCRIBED IN DEED RECORDED NOVEMBER 26, 1971 ON FILM 753, UNDER RECEPTION NO. 998535, BOULDER COUNTY RECORDS, A POINT ON THE SOUTH LINE OF THE SAID SOUTHWEST 1/4 OF THE SOUTHEAST 1/4, FROM WHENCE THE SOUTH 1/4 CORNER OF SAID SECTION 29 BEARS SOUTH 89°47'40" WEST 824.38 FEET; THENCE ALONG THE EXTERIOR BOUNDARY OF SAID PARCEL RECORDED UNDER RECEPTION NO. 998535 AS FOLLOWS: NORTH 00°02'32" EAST, 819.00 FEET PARALLEL WITH THE NORTH-SOUTH CENTERLINE OF SAID SECTION 29, SOUTH 89°47'40" WEST, 265.93 FEET, PARALLEL WITH THE SOUTH LINE OF THE SAID SOUTHWEST 1/4 OF THE SOUTHEAST 1/4 AND NORTH 00°02'52" EAST, 351.00 FEET; PARALLEL WITH THE NORTH-SOUTH CENTERLINE OF SAID SECTION 29 TO THE NORTHEAST CORNER ON THE NORTH LINE OF SAID PARCEL RECORDED UNDER RECEPTION NO. 998535; THENCE NORTH 89°47'40" EAST, PARALLEL WITH THE SOUTH LINE OF THE SAID SOUTHWEST 1/4 OF THE SOUTHEAST 1/4, 112.63 FEET; THENCE SOUTH 01°05'07" EAST 62.24 FEET; THENCE SOUTH 04°22'33" EAST, 33.07 FEET; THENCE NORTH 52°25'07" EAST, 90.47 FEET; THENCE SOUTH 75°59'10" EAST, 295.55 FEET; THENCE SOUTH 00°02'52" WEST, PARALLEL WITH THE NORTH-SOUTH CENTERLINE OF SAID SECTION 29, 879.45 FEET TO A POINT ON THE SOUTH LINE OF THE SAID SOUTHWEST 1/4 OF THE SOUTHEAST 1/4, FROM WHENCE THE POINT OF BEGINNING BEARS SOUTH 89°47'40" WEST, 223.52 FEET; THENCE SOUTH 89°47'40" WEST ALONG THE SOUTH LINE OF SAID SOUTHWEST 1/4 OF THE SOUTHEAST 1/4, 223.52 FEET TO THE POINT OF BEGINNING.

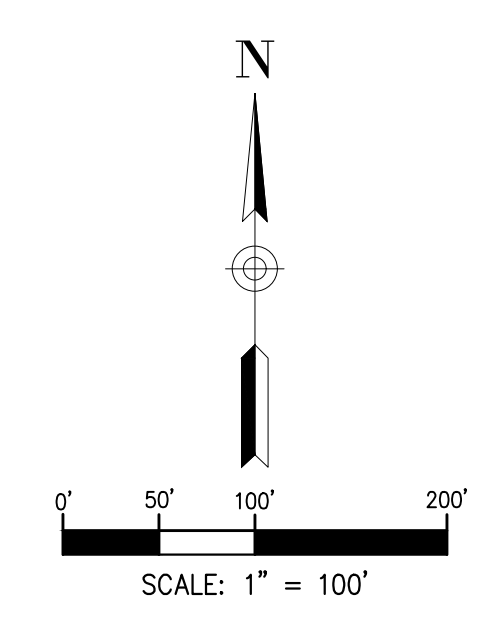
AND

PARCEL 2

A PART OF THE SOUTHWEST 1/4 OF THE SOUTHEAST 1/4 OF SECTION 29, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF BOULDER, STATE OF COLORADO, DESCRIBED AS FOLLOWS: BEGINNING AT THE SOUTHWEST CORNER OF THAT PARCEL DESCRIBED IN DEED RECORDED ON NOVEMBER 26, 1971 ON FILM 753, UNDER RECEPTION NO. 998535, BOULDER COUNTY RECORDS, A POINT ON THE SOUTH LINE OF SAID SOUTHWEST 1/4 OF THE SOUTHEAST 1/4, FROM WHENCE THE SOUTH 1/4 CORNER OF SAID SECTION 29 BEARS SOUTH 89°47'40" W, 558.45 FEET; THENCE ALONG THE EXTERIOR BOUNDARY OF SAID PARCEL RECORDED UNDER RECEPTION NO. 998535 AS FOLLOWS: NORTH 00°02'52" EAST, PARALLEL WITH THE NORTH-SOUTH CENTERLINE OF SAID SECTION 29, 585.00 FEET; SOUTH 89°47'40" WEST, PARALLEL WITH THE SOUTH LINE OF THE SAID SOUTHWEST 1/4 OF THE SOUTHEAST 1/4, 186.15 FEET; NORTH 00°02'52" EAST, PARALLEL WITH THE NORTH-SOUTH CENTERLINE OF SAID SECTION 29, 585.00 FEET TO THE NORTHWEST CORNER OF SAID PARCEL RECORDED UNDER RECEPTION NO. 998535; AND NORTH 89°47'40" EAST, PARALLEL WITH THE SOUTH LINE OF THE SAID SOUTHWEST 1/4 OF THE SOUTHEAST 1/4, 186.15 FEET TO THE NORTHEAST CORNER ON THE NORTH LINE OF SAID PARCEL RECORDED UNDER RECEPTION NO. 998535; THENCE CONTINUING NORTH 89°47'40" EAST, 112.63 FEET; THENCE SOUTH 01°05'07" EAST, 62.24 FEET; THENCE SOUTH 04°22'33" WEST, 211.37 FEET; THENCE NORTH 89°41'33" EAST, 33.07 FEET; THENCE NORTH 52°25'07" EAST, 90.47 FEET; THENCE SOUTH 75°59'10" EAST, 295.55 FEET; THENCE SOUTH 00°02'52" WEST, PARALLEL WITH THE NORTH-SOUTH CENTERLINE OF SAID SECTION 29, 879.45 FEET TO A POINT ON THE SOUTH LINE OF THE SAID SOUTHWEST 1/4 OF THE SOUTHEAST 1/4, FROM WHENCE THE POINT OF BEGINNING BEARS SOUTH 89°47'40" WEST, 489.45 FEET; THENCE SOUTH 89°47'40" WEST, ALONG THE SOUTH LINE OF THE SAID SOUTHWEST 1/4 OF THE SOUTHEAST 1/4, 489.45 FEET TO THE POINT OF BEGINNING.

LEGEND

- PROPOSED CONDITION DRAINAGE BASIN BOUNDARY
- PROPOSED CONDITION DP BASIN BOUNDARY
- EXISTING CONTOUR
- PROPOSED BASIN IDENTIFICATION
- IMPERVIOUSNESS
- AREA (ACRES)
- PROPOSED SLOPE ARROW
- EXISTING BASIN IDENTIFICATION
- IMPERVIOUSNESS
- AREA (ACRES)
- PROPOSED FENCE



CASE NUMBER: _____

NO.	DATE	DSGN	PIVOT	DR	TN	CHK	RH	APVD	RH

ENERTIA
CONSULTING GROUP, LLC
1515 MARKET STREET
DENVER, COLORADO 80202

Pivot Energy
1601 WEWATTA ST., #700
DENVER, CO 80202

PIVOT ENERGY SOLAR FACILITY 48
ON DEWIRE PARCEL
BOULDER COUNTY, COLORADO
OVERALL
DRAINAGE AREA MAP

VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. SCALE

DATE	MARCH 28, 2024
FILE	
DWG	
SHEET	1 OF 1

REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF ENERTIA CONSULTING GROUP AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF ENERTIA CONSULTING GROUP.

Calculation of Peak Runoff using Rational Method

Designer: Tom Nichols
 Company: Enerlia Consulting Group
 Date: 3/28/2024
 Project: Pwct Solar 48
 Location: Dewire Parcel

Version 2.00 released May 2017

Cells of this color are for required user input
 Cells of this color are for optional override values
 Cells of this color are for calculated results based on overrides

$$t_t = \frac{0.395(1.1 - C_2)\sqrt{L_t}}{S^{0.33}}$$

$$t_t = \frac{L_t}{60K\sqrt{S}} = \frac{L_t}{60V_t}$$

Computed $t_c = t_t + t_r$

$t_{\text{minimum}} = 5$ (urban)
 $t_{\text{minimum}} = 10$ (not-urban)

Regional $t_c = (26 - 17t) + \frac{L_t}{60(1.41 + 9)\sqrt{S_t}}$

Selected $t_c = \max\{t_{\text{minimum}}, \min(\text{Computed } t_c, \text{Regional } t_c)\}$

Select UDPCD location for NOAA Atlas 14 Rainfall Depths from the pull-down list OR enter your own depths obtained from the NOAA website (click this link)

2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	500-yr
0.77	1.04	1.29	1.69	2.04	2.43	3.48

1-hour rainfall depth, P1 (in) = $\frac{a}{b + t_c^c}$

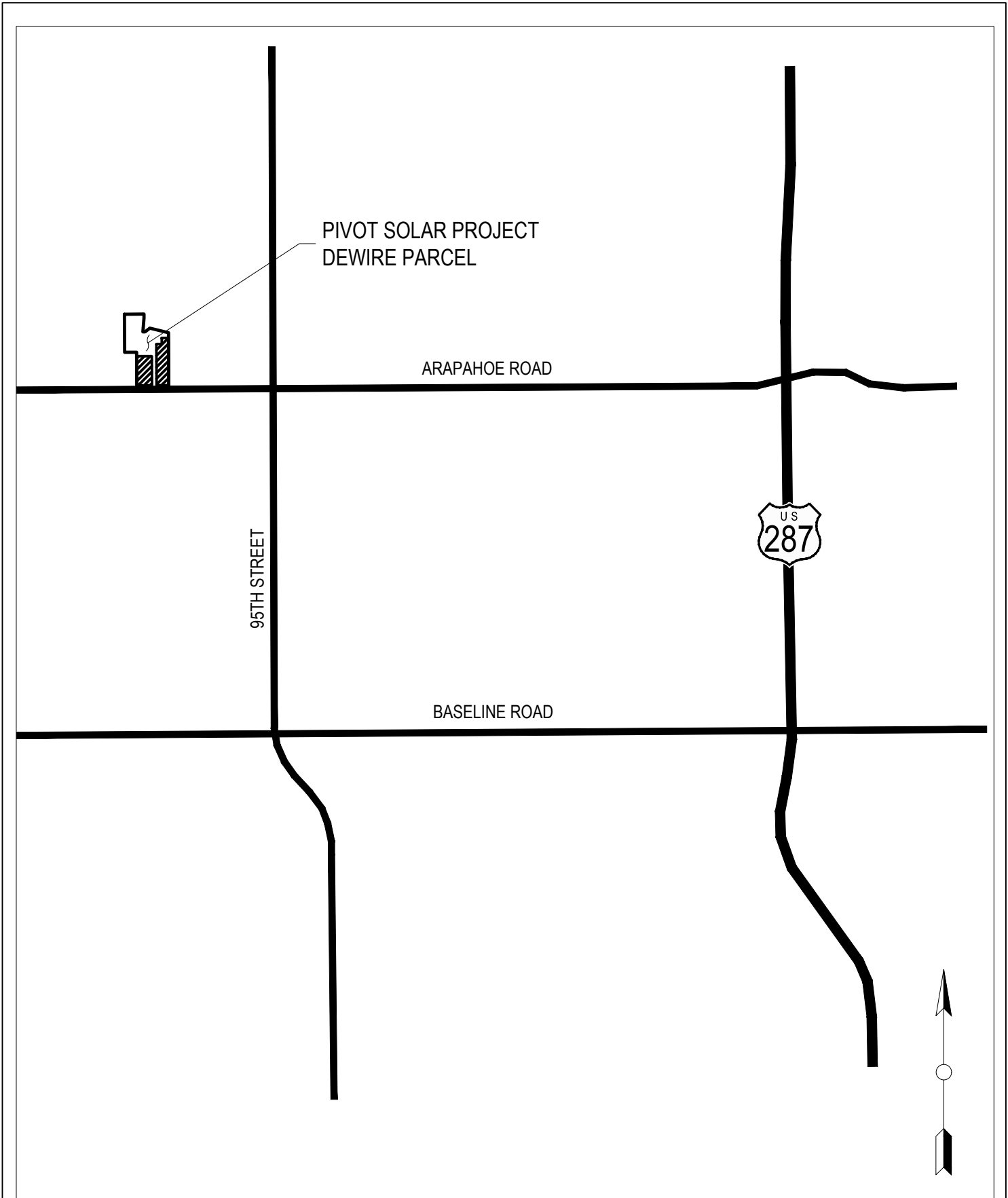
a	b	c
29.50	10.00	0.786


Rainfall Intensity Equation Coefficients =

$I(n/hr) = \frac{a + P_1}{(b + t_c)^c}$

$Q(cfs) = CIA$

Subcatchment Name	Area (ac)	NRCS Hydrologic Soil Group	Percent Imperviousness	Runoff Coefficient, C							Overland (Initial) Flow Time				Channelized (Travel) Flow Time						Time of Concentration			Rainfall Intensity, I (in/hr)							Peak Flow, Q (cfs)								
				2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	500-yr	Overland Flow Length L _t (ft)	U/S Elevation (ft) (Optional)	D/S Elevation (ft) (Optional)	Overland Flow Slope S _t (ft/ft)	Overland Flow Time t _t (min)	Channelized Flow Length L _t (ft)	U/S Elevation (ft) (Optional)	D/S Elevation (ft) (Optional)	Channelized Flow Slope S _t (ft/ft)	NRCS Conveyance Factor K	Channelized Flow Velocity V _t (ft/sec)	Channelized Flow Time t _t (min)	Computed t _c (min)	Regional t _c (min)	Selected t _c (min)	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	500-yr	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	500-yr
				X1	4.15	C	2.0	0.01	0.05	0.15	0.33	0.40	0.49	0.59	300.00			0.010	32.80	80.00			0.010	5	0.50	2.67	35.46	27.10	27.10	1.29	1.73	2.15	2.81	3.40	4.05	5.79	0.06	0.37	1.31
A1	4.15	C	3.1	0.02	0.06	0.16	0.34	0.41	0.50	0.60	300.00			0.010	32.51	80.00			0.010	5	0.50	2.67	35.17	26.88	26.88	1.29	1.74	2.16	2.83	3.41	4.06	5.82	0.09	0.44	1.39	3.95	5.78	8.38	14.44



 <p>1515 MARKET STREET DENVER, CO 80202 (720) 250-8305</p>	<p>FIGURE 1 - VICINITY MAP PIVOT ENERGY SOLAR FARM ON DEWIRE PARCEL BOULDER COUNTY, COLORADO</p>	<p>DATE: 10/26/2023</p>
		<p>SCALE: 1" = 5,000'</p>
		<p>BY: TN</p>



Pivot Solar 48: Responses to Staff Questions

June 20, 2024

1. Irrigation Water Source

Pivot Solar 48 LLC will be sourcing water from the 10 available shares of the Agitator Ditch onsite, which generally runs water from late May to mid July. Generally, each ditch share is able to supply between 0.03-0.06 acre-feet of water per day for roughly 50 days, or a total of 15-30 acre-feet of water each irrigation season. The landowner owns water rights on the property. The well permit allows for livestock use, and would only be used if necessary for any sheep grazing onsite.

2. Sheep Grazing

As stated in the original application, agrivoltaics is a priority for Pivot's portfolio of projects. Pivot Solar 48 LLC plans to grow crops under the panels if there is enough water for it to be feasible. From Pivot's initial diligence, it will likely be possible to produce herbs such as sage, thyme, oregano, or lavender underneath the panels with the water that is available.

However, more diligence is required before it will be possible to commit to this with certainty, so sheep grazing is offered as a secondary option to improve the agricultural integrity of the land in the case that crop production is not feasible. As sheep grazing was a historic use on this property, Pivot views the use of this alternative option as a return to the historic use of the property and a use that improves its overall agricultural integrity over the current non-agricultural use of the land, as further discussed in the Solar Energy Development Report.

3. Berms for Vegetation

Please see the updated landscaping plan attached to this resubmittal. Berms for vegetative screening have been removed from the plan due to drainage considerations. Upon further analysis by our civil engineers, it has been determined that the landscaping berms would change the drainage patterns of the area, and the site would be unable to accept existing drainage conditions from neighboring properties if berms are used. Therefore, we have elected to forego the berms to avoid creating drainage issues on and adjacent to the site. The plantings selected will maintain adequate height to screen the facility without the need for berms.

4. CDOT/Access Expansion

Pivot is in the early stages of working with CDOT on the proposed access expansion, and will ensure that the access meets all applicable codes prior to building permit.



5. Northwest Section of Project Area

This section was included in the plans as a potential staging area, which has been clarified on the updated SUR plans. This area's size has also been reduced to reflect the 50' setback from the irrigation ditch onsite.

6. Drainage Comments

Pivot is currently working to revise the drainage report to address the comments from Wright Water Engineers. This will be complete prior to building permit application, along with the Stormwater Quality Permit.

7. Area of Disturbance

The area of disturbance has been updated in the attached revised plan set.

8. Maximum Height

The final maximum height of the system is reliant on final electrical, structural, and civil engineering. This engineering cannot be done until after the land use permit is approved. However, recognizing the max height of 15 feet is more conservative than necessary, Pivot Solar 48 can commit to being less than 12 feet above grade at maximum tilt. Acknowledging that increased panel height is a direct (and significant) increase in cost to the project, it is highly likely that the panels will still be a few feet lower, but this cannot be determined with certainty without final engineering completed. Pivot's strong preference is to keep the panels as low as possible.

9. Noise

Please reference Table 1 in below for common sound levels defined by the US FHA for context. Inverter and Racking sound information has been attached here as Appendix A.

Table 1. Common Outdoor and Indoor Sound Levels

Outdoor Sound Levels	Sound Pressure (μPa)*		Sound Level dB(A)**	Indoor Sound Levels
	6,324,555	-	110	Rock Band at 5 m
Jet Over Flight at 300 m		-	105	
	2,000,000	-	100	Inside New York Subway Train
Gas Lawn Mower at 1 m		-	95	
	632,456	-	90	Food Blender at 1 m
Diesel Truck at 15 m		-	85	
Noisy Urban Area—Daytime	200,000	-	80	Garbage Disposal at 1 m
		-	75	Shouting at 1 m
Gas Lawn Mower at 30 m	63,246	-	70	Vacuum Cleaner at 3 m
Suburban Commercial Area		-	65	Normal Speech at 1 m
	20,000	-	60	
Quiet Urban Area—Daytime		-	55	Quiet Conversation at 1 m
	6,325	-	50	Dishwasher Next Room
Quiet Urban Area—Nighttime		-	45	
	2,000	-	40	Empty Theater or Library
Quiet Suburb—Nighttime		-	35	
	632	-	30	Quiet Bedroom at Night
Quiet Rural Area—Nighttime		-	25	Empty Concert Hall
Rustling Leaves	200	-	20	
		-	15	Broadcast and Recording Studios
	63	-	10	
		-	5	
Reference Pressure Level	20	-	0	Threshold of Hearing

Source: Highway Noise Fundamentals. Federal Highway Administration, September 1980.

* μPa – MicroPascals, which describe pressure. The pressure level is what sound level monitors measure.

** dB(A) – A weighted decibels, which describe sound pressure logarithmically with respect to 20 mPa (the reference pressure level).



Boulder County Ordinance 92-28 defines rules for noise at the subject property, which are summarized below:

- 1.01.040 (A): Sound from a non-vehicular source shall be measured at a distance of ten feet from the property line of the property where such sound is radiating.
- 1.01.050 (C): Sound from a non-vehicular source located in a residential area, shall not exceed the following limits:
 - 7:00AM-7:00PM of the same day: 55dB(A)
 - 7:00PM-7:00AM of the following day: 50dB(A)

Some noise is generated in a couple locations at the solar site – these are the following:

- A. **Inverters:** The proposed inverters at Pivot Solar 48, the Chint Power Systems SCH100KTL-DO/US-480, are rated for <65dBA at a distance of 1m per their datasheet, and are located approximately 150' from the nearest property boundary. At the property boundary, the worst case scenario of 65dBA drops to approximately 31dB, which is equivalent to somewhere between a “Quiet Bedroom at Night” (30dB) and a “Quiet Suburb at Nighttime” (35dB). Notably, the nearest residence to the inverters is approximately 450 feet from the inverter location, at which distance the sound level is approximately 21dB, which is somewhere between “Rustling Leaves” (20dB) and an “Empty Concert Hall” or “Quiet Rural Area – Nighttime” (25dB). Furthermore, this noise is only produced during the sunny hours of the day.
- B. **Transformers:** Xcel Energy will install a 1000kVA transformer for the site adjacent to the inverters, which will be running at a maximum of 55% of its total capacity (the solar facility has a maximum output of 550kVA). 1000kVA transformers running at full capacity generally make similar amounts of noise to inverters, and thus would have similar results to the paragraph above in the worst case scenario, though since it will be running at a reduced capacity, it will likely be quieter. A mid-day tour of a similar, operating site with neighbors of Pivot Solar 48 revealed that the transformer was inaudible unless we were a few feet away. Again, the transformer will be located next to the inverters and will be roughly 150' from the property boundary and 450' from the nearest house.
- C. **Racking:** Single-axis tracker racking, which slowly rotates the solar panels from east to west during the day, creates some noise as it moves. Per the attached noise letter provided by NexTracker, the proposed racking system produces 69.6dBA at 3.3 feet from the tracking motor at full load (*again, this is the worst case scenario*). Notably, the site that neighbors of proposed Pivot Solar 48 visited uses racking provided by a different manufacturer.

The nearest tracking motor is approximately 37 feet from the property line. At the property line, this sound level drops to approximately 47dB, which is approximately equivalent to a “Quiet Urban Area – Nighttime” (45dB). Notably, the closest residence to the racking is approximately 350 feet across Arapahoe Road, at which distance the noise level is approximately 29dB, which is slightly quieter than a “Quiet Bedroom at Night” (30dB). Again, this noise is only produced during the sunny hours of the day.



Based on the above information, in the worst case scenario, sound measured 10 feet from the property line should never exceed 46.5dBA, which is roughly equivalent to the ambient noise of a quiet urban neighborhood at nighttime, and comfortably within the limits of Boulder County Ordinance 92-28.

10. Glare

Pivot has conducted a glare study for this project, which is attached here as Appendix B. ForgeSolar, the industry standard glare study software has predicted no glare issues for any nearby residences or roadways. Pivot also uses panels with antireflective coatings on all projects.



Appendix A: **Solar Component Noise Information**

100kW, 1500Vdc/480Vac String Inverters for North America



CPS SCH100KTL-DO/US-480

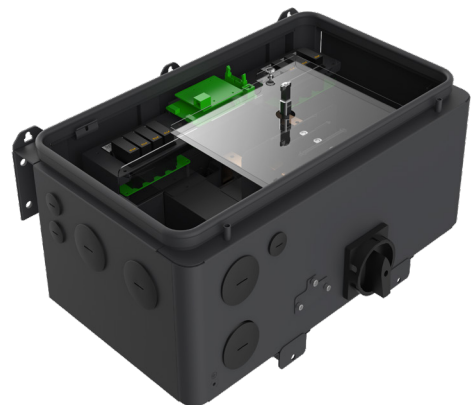
The 100kW high power CPS three phase string inverters are designed for ground mount applications with 480Vac service voltage. The units are high performance, advanced and reliable inverters designed specifically for the North American environment and grid. High efficiencies, wide operating voltages, broad temperature ranges and a NEMA Type 4X enclosure enable this inverter platform to operate at high performance across many applications. The CPS 100kW products ship with the Standard or Centralized Wire-box, each fully integrated and separable with AC and DC disconnect switches. The Standard Wire-box includes touch safe fusing for up to 20 strings. The CPS FlexOM solution enables communication, controls and remote product upgrades.

Key Features

- NFPA 70, NEC 2017 compliant
- Touch safe DC Fuse holders adds convenience and safety
- CPS FlexOM Gateway enables remote FW upgrades
- Integrated AC & DC disconnect switches
- 1 MPPT with 20 fused inputs for maximum flexibility
- Copper and Aluminum compatible AC connections
- NEMA Type 4X outdoor rated, tough tested enclosure
- Advanced Smart-Grid features
- Full power capacity up to 45°C
- Generous DC/AC Inverter Load Ratios
- Separable wire-box design for fast service
- Standard 5 year warranty with extensions to 20 years



100KTL Standard Wire-box



100KTL Centralized Wire-box





Model Name	CPS SCH100KTL-DO/US-480
DC Input	
Max. DC Input Voltage	1500Vdc
Operating DC Input Voltage Range	700-1450Vdc
Start-up DC Input Voltage / Power	100W
Number of MPP Trackers	1
MPPT Voltage Range @ PF>0.99 ¹	870-1300Vdc
Max. PV Input Current (Isc x1.25)	275A
Number of DC Inputs	20 PV source circuits, pos. & neg. fused (Standard Wire-box) 1 PV output circuit, 1-2 terminations per pole, non-fused (Centralized Wire-box)
DC Disconnection Type	Load-rated DC switch
DC Surge Protection	Type II MOV (with indicator/remote signaling), up=2.5kV, In=20kA (8/20uS)
AC Output	
Rated AC Output Power @ PF>0.99	100kW
Max. AC Apparent Power ²	100kVA (105.3kVA @ PF>0.95)
Rated Output Voltage	480Vac
Output Voltage Range ³	423-528Vac
Grid Connection Type ⁴	3-Phase / PE / N (Neutral Optional)
Max. AC Output Current @480Vac	120.3A/126.7A
Rated Output Frequency	60Hz
Output Frequency Range ³	57 - 63Hz
Power Factor	>0.99 (±0.8 adjustable)
Current THD @ Rated Load	<3%
Max. Fault Current Contribution (1 Cycle RMS)	41.47A
Max. OCPD Rating	150A
AC Disconnection Type	Load-rated AC switch
AC Surge Protection	Type II MOV (with indicator/remote signaling), up=2.5kV, In=20kA (8/20uS)
System and Performance	
Topology	Transformerless
Max. Efficiency	98.7%
CEC Efficiency	98.0%
Stand-by / Night Consumption	<4W
Environment	
Enclosure Protection Degree	NEMA Type 4X
Cooling Method	Variable speed cooling fans
Operating Temperature Range	-22°F to +140°F / -30°C to +60°C (derating from +113°F / +45°C)
Non-Operating Temperature Range ⁵	No low temp minimum to +158°F / +70°C maximum
Operating Humidity	0 to 100%
Operating Altitude	8202ft / 2500m (no derating)
Audible Noise	<65dBA @ 1m and 25°C
Display and Communication	
User Interface and Display	LED indicators, WiFi + APP
Inverter Monitoring	Modbus RS485
Site Level Monitoring	CPS FlexOM (1 per 32 inverters)
Modbus Data Mapping	SunSpec / CPS
Remote Diagnostics / FW Upgrade Functions	Standard / (with FlexOM Gateway)
Mechanical	
Dimensions (WxHxD)	45.28x24.25x9.84in (1150x616x250mm) with Standard Wire-box 39.37x24.25x9.84in (1000x616x250mm) with Centralized Wire-box
Weight	Inverter: 121lbs / 55kg; Wire-box: 55lbs / 25kg (Standard Wire-box) 33lbs / 15kg (Centralized Wire-box)
Mounting / Installation Angle	15 - 90 degrees from horizontal (vertical or angled)
AC Termination	M10 Stud Type Terminal [3Ø] (Wire range: 1/0AWG – 500kcmil CU/AL, Lugs not supplied) Screw Clamp Terminal Block [N] (#12 – 1/0AWG CU/AL)
DC Termination	Screw Clamp Fuse Holder (Wire range: #12 - #6AWG CU) - Standard Wire-box Busbar (Wire range: #1AWG - 250kcmil CU/AL, Lugs not supplied) - Centralized Wire-box
Fused String Inputs	20A fuses provided (Fuse values of 15A or 20A acceptable)
Safety	
Certifications and Standards	UL1741-SA-2016, CSA-22.2 NO.107.1-01, IEEE1547a-2014, FCC PART15
Selectable Grid Standard	IEEE 1547a-2014, CA Rule 21, ISO-NE, HECO Rule 14H
Smart-Grid Features	Volt-RideThru, Freq-RideThru, Ramp-Rate, Specified-PF, Volt-Var, Freq-Watt, Volt-Watt
Warranty	
Standard	5 Years
Extended Terms	10, 15, and 20 Years

1) See user manual for further information regarding MPPT Voltage Range when operating at non-unity PF

2) "Max. AC Apparent Power" rating valid within MPPT voltage range and temperature range of -30°C to +40°C (-22°F to +104°F) for 100kW @ PF >0.95

3) The "Output Voltage Range" and "Output Frequency Range" may differ according to the specific grid standard.

4) Wye neutral-grounded, Delta may not be corner-grounded.

5) See user manual for further requirements regarding non-operating conditions.



Nextracker, Inc.
 6200 Paseo Padre Parkway
 Fremont, CA 94555
 U.S.A

September 23rd, 2020
 Regarding: Tracker Noise Levels
 Attention: To Whom it May Concern,

The below information is in regard to NEXTracker's Horizon Single Axis Tracker motor noise levels. Each of the Horizon tracker rows are independently powered by a 24V 1.5A brushless DV motor. The motors are essentially inaudible relative to the background noise.

The motor noise will be ~40db @ 10ft, or ~20db @ 100ft when the motor is running. The motor runs for 5-10 seconds every 1-2 minutes.

	Test condition	Motor speed	Distance	Noise level
Test 1	No load	5.2RPM	0.3 meter	59.7dB
Test 2	No load	5.2RPM	1 meter	55.5dB
Test 3	Full load (120Nm)	4.2RPM	0.3 meter	74.5dB
Test 4	Full load (120Nm)	4.2RPM	1 meter	69.6dB

Kind Regards,

Bill Elwell

Director, Sales
 m +1 415.328.7143
 belwell@NEXTracker.com

.....
NEXTracker.com



Appendix B: **Glare Study**

FORGESOLAR GLARE ANALYSIS

Project: **PS48**

Site configuration: **Pivot Solar 48**

Created 18 Jun, 2024

Updated 20 Jun, 2024

Time-step 1 minute

Timezone offset UTC-7

Minimum sun altitude 0.0 deg

DNI peaks at 1,000.0 W/m²

Category 500 kW to 1 MW

(1,000 kW / 8 acre limit)

Site ID 121920.19809

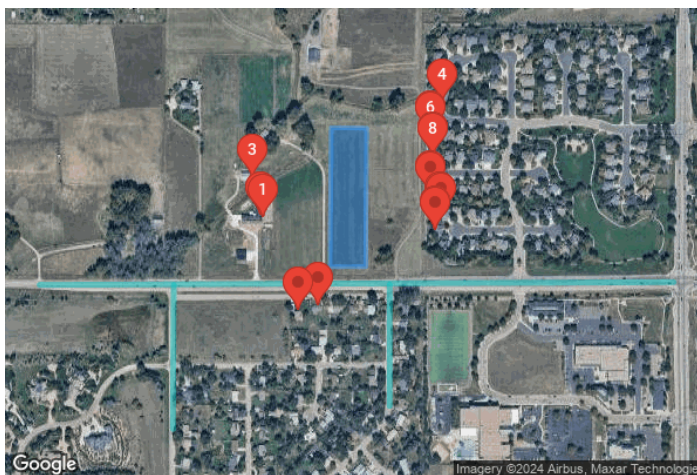
Ocular transmission coefficient 0.5

Pupil diameter 0.002 m

Eye focal length 0.017 m

Sun subtended angle 9.3 mrad

PV analysis methodology V2



Summary of Results No glare predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy kWh
			min	hr	min	hr	
Array 1	SA tracking	SA tracking	0	0.0	0	0.0	-

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Arapahoe Rd	0	0.0	0	0.0
Kilkenny	0	0.0	0	0.0
Wicklow	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0

Component Data

PV Arrays

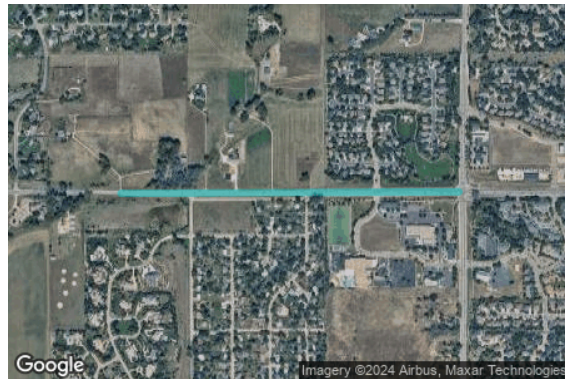
Name: Array 1
Axis tracking: Single-axis rotation
Backtracking: None
Tracking axis orientation: 180.0°
Tracking axis tilt: 0.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 60.0°
Rated power: -
Panel material: Light textured glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	40.016846	-105.137553	5267.74	5.00	5272.74
2	40.016838	-105.136904	5268.32	5.00	5273.32
3	40.014901	-105.136920	5268.39	5.00	5273.39
4	40.014899	-105.137575	5270.53	5.00	5275.53

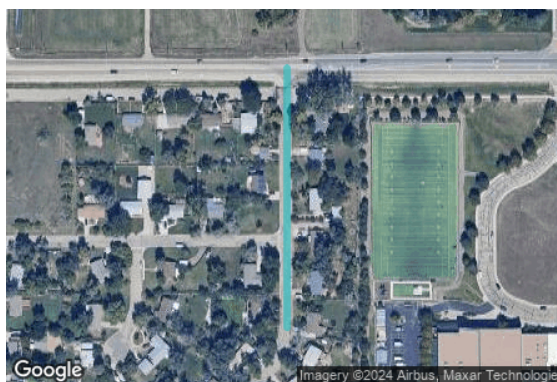
Route Receptors

Name: Arapahoe Rd
Path type: Two-way
Observer view angle: 50.0°



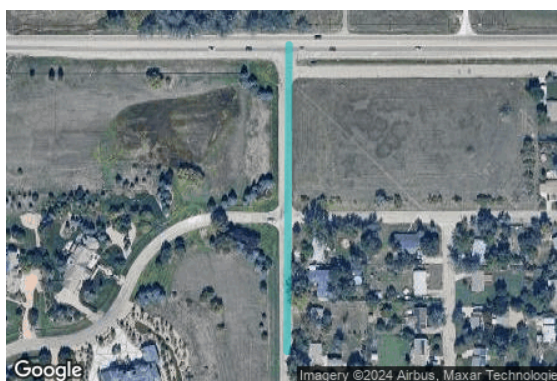
Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	40.014687	-105.131283	5267.29	4.50	5271.79
2	40.014646	-105.142892	5277.76	4.50	5282.26

Name: Kilkenny
Path type: Two-way
Observer view angle: 50.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	40.014653	-105.136482	5269.38	4.50	5273.88
2	40.012952	-105.136482	5285.58	4.50	5290.08

Name: Wicklow
Path type: Two-way
Observer view angle: 50.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	40.014646	-105.140435	5274.06	4.50	5278.56
2	40.012632	-105.140451	5282.06	4.50	5286.56

Discrete Observation Point Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
OP 1	1	40.015590	-105.138792	5278.85	5.00
OP 2	2	40.015614	-105.138828	5279.88	15.00
OP 3	3	40.016149	-105.138999	5275.48	5.00
OP 4	4	40.017200	-105.135504	5281.19	5.00
OP 5	5	40.016746	-105.135721	5267.42	5.00
OP 6	6	40.016742	-105.135718	5267.85	15.00
OP 7	7	40.016450	-105.135687	5276.41	5.00
OP 8	8	40.016440	-105.135682	5276.67	15.00
OP 9	9	40.015910	-105.135735	5272.12	5.00
OP 10	10	40.015906	-105.135730	5272.51	15.00
OP 11	11	40.015612	-105.135563	5275.59	5.00
OP 12	12	40.015607	-105.135542	5275.96	15.00
OP 13	13	40.015425	-105.135644	5272.68	5.00
OP 14	14	40.015410	-105.135639	5272.76	15.00
OP 15	15	40.014356	-105.137783	5275.19	5.00
OP 16	16	40.014286	-105.138148	5276.41	5.00

Glare Analysis Results

Summary of Results No glare predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
Array 1	SA tracking	SA tracking	0	0.0	0	0.0	-

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Arapahoe Rd	0	0.0	0	0.0
Kilkenny	0	0.0	0	0.0
Wicklow	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0

PV: Array 1 no glare found*Receptor results ordered by category of glare*

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Arapahoe Rd	0	0.0	0	0.0
Kilkenny	0	0.0	0	0.0
Wicklow	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0

Array 1 and Route: Arapahoe Rd

No glare found

Array 1 and Route: Kilkenny

No glare found

Array 1 and Route: Wicklow

No glare found

Array 1 and OP 1

No glare found

Array 1 and OP 2

No glare found

Array 1 and OP 3

No glare found

Array 1 and OP 4

No glare found

Array 1 and OP 5

No glare found

Array 1 and OP 6

No glare found

Array 1 and OP 7

No glare found

Array 1 and OP 8

No glare found

Array 1 and OP 9

No glare found

Array 1 and OP 10

No glare found

Array 1 and OP 11

No glare found

Array 1 and OP 12

No glare found

Array 1 and OP 13

No glare found

Array 1 and OP 14

No glare found

Array 1 and OP 15

No glare found

Array 1 and OP 16

No glare found

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.

"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.

Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.

The algorithm does not rigorously represent the detailed geometry of a system; detailed features such as gaps between modules, variable height of the PV array, and support structures may impact actual glare results. However, we have validated our models against several systems, including a PV array causing glare to the air-traffic control tower at Manchester-Boston Regional Airport and several sites in Albuquerque, and the tool accurately predicted the occurrence and intensity of glare at different times and days of the year.

Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare. This primarily affects V1 analyses of path receptors.

Random number computations are utilized by various steps of the annual hazard analysis algorithm. Predicted minutes of glare can vary between runs as a result. This limitation primarily affects analyses of Observation Point receptors, including ATCTs. Note that the SGHAT/ ForgeSolar methodology has always relied on an analytical, qualitative approach to accurately determine the overall hazard (i.e. green vs. yellow) of expected glare on an annual basis.

The analysis does not automatically consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, hills, buildings, etc.

The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)

The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalized time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors.

The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results. The speed of SGHAT allows expedited sensitivity and parametric analyses.

The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.

Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.

Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.

Refer to the Help page at www.forgesolar.com/help/ for assumptions and limitations not listed here.

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

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PIVOT ENERGY SOLAR FACILITY ON DEWIRE PARCEL SPECIAL USE PERMIT PLAN

CASE NUMBER: _____

LOCATED IN SECTION 29, TOWNSHIP 1 NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF BOULDER, STATE OF COLORADO

LEGAL DESCRIPTION:

PARCEL 1

A PART OF THE SOUTHWEST 1/4 OF THE SOUTHEAST 1/4 OF SECTION 29, TOWNSHIP 1 NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF BOULDER, STATE OF COLORADO, DESCRIBED AS FOLLOWS: BEGINNING AT THE SOUTHWEST CORNER OF THAT PARCEL DESCRIBED IN DEED RECORDED NOVEMBER 26, 1971 ON FILM 753, UNDER RECEPTION NO. 998535, BOULDER COUNTY RECORDS, A POINT ON THE SOUTH LINE OF THE SAID SOUTHWEST 1/4 OF THE SOUTHEAST 1/4, FROM WHENCE THE SOUTH 1/4 CORNER OF SAID SECTION 29 BEARS SOUTH 89°47'40" WEST 824.38 FEET, THENCE ALONG THE EXTERIOR BOUNDARY OF SAID PARCEL RECORDED UNDER RECEPTION NO. 998535 AS FOLLOWS:
NORTH 00°02'32" EAST, 819.00 FEET PARALLEL WITH THE NORTH-SOUTH CENTERLINE OF SAID SECTION 29, SOUTH 89°47'40" WEST 265.93 FEET, PARALLEL WITH THE SOUTH LINE OF THE SAID SOUTHWEST 1/4 OF THE SOUTHEAST 1/4 AND NORTH 00°02'52" EAST, 351.00 FEET, PARALLEL WITH THE NORTH-SOUTH CENTERLINE OF SAID SECTION 29 TO THE NORTHEAST CORNER ON THE NORTH LINE OF SAID PARCEL RECORDED UNDER RECEPTION NO. 998535;
THENCE NORTH 89°47'40" EAST, PARALLEL WITH THE SOUTH LINE OF THE SAID SOUTHWEST 1/4 OF THE SOUTHEAST 1/4, 112.63 FEET, THENCE SOUTH 01°05'07" EAST 62.24 FEET, THENCE SOUTH 04°22'33" EAST, 33.07 FEET, THENCE NORTH 52°25'07" EAST, 90.47 FEET, THENCE SOUTH 75°59'10" EAST, 293.55 FEET; THENCE SOUTH 00°02'52" WEST, PARALLEL WITH THE NORTH-SOUTH CENTERLINE OF SAID SECTION 29, 879.45 FEET TO A POINT ON THE SOUTH LINE OF THE SAID SOUTHWEST 1/4 OF THE SOUTHEAST 1/4, FROM WHENCE THE POINT OF BEGINNING BEARS SOUTH 89°47'40" WEST, 223.52 FEET;
THENCE SOUTH 89°47'40" WEST ALONG THE SOUTH LINE OF SAID SOUTHWEST 1/4 OF THE SOUTHEAST 1/4, 223.52 FEET TO THE OF BEGINNING.

AND

PARCEL 2

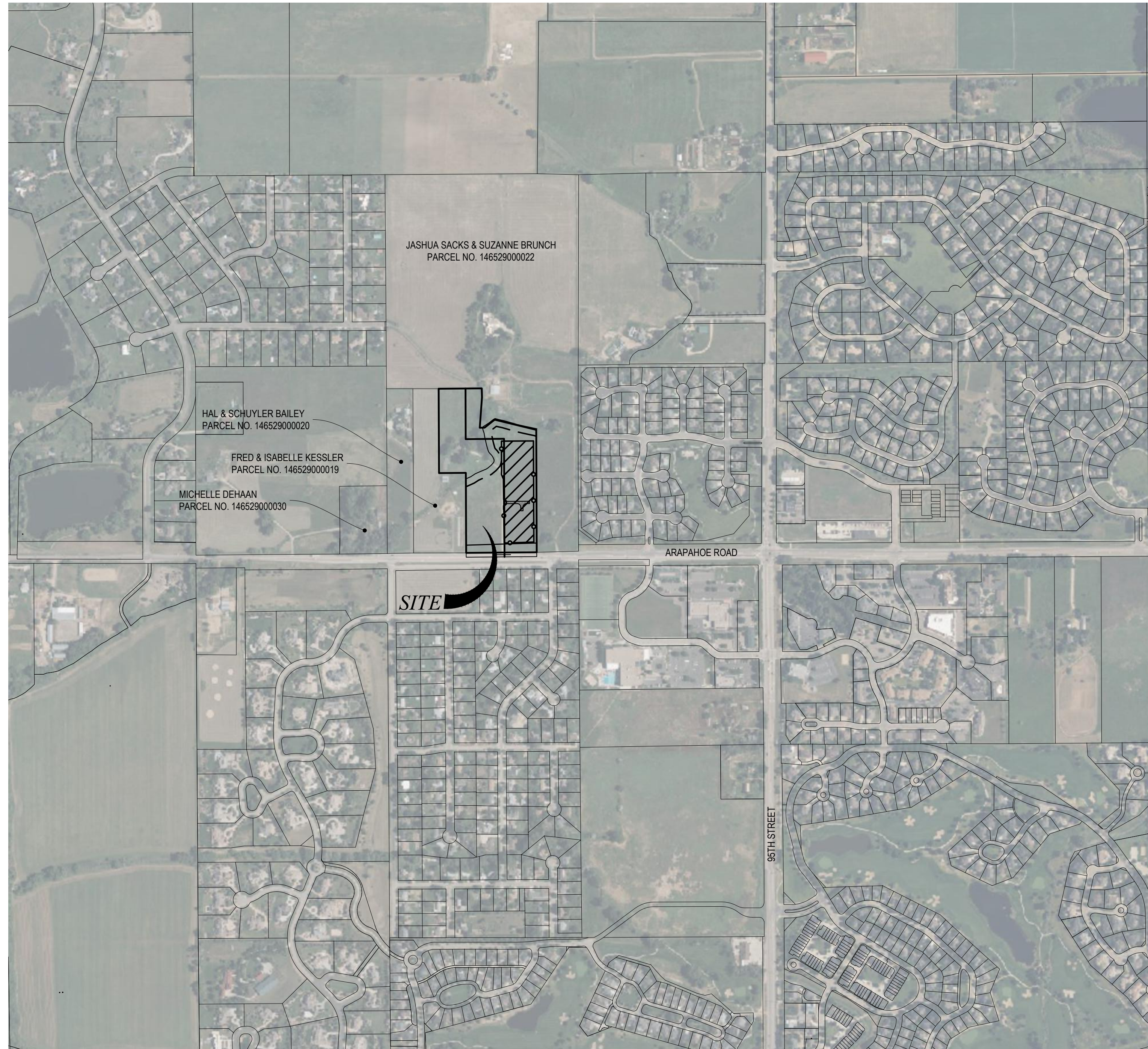
A PART OF THE SOUTHWEST 1/4 OF THE SOUTHEAST 1/4 OF SECTION 29, TOWNSHIP 1 NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF BOULDER, STATE OF COLORADO, DESCRIBED AS FOLLOWS: BEGINNING AT THE SOUTHWEST CORNER OF THAT PARCEL DESCRIBED IN DEED RECORDED ON NOVEMBER 26, 1971 ON FILM 753, UNDER RECEPTION NO. 998535, BOULDER COUNTY RECORDS, A POINT ON THE SOUTH LINE OF SAID SOUTHWEST 1/4 OF THE SOUTHEAST 1/4, FROM WHENCE THE SOUTH 1/4 CORNER OF SAID SECTION 29 BEARS SOUTH 89°47'40" WEST, 558.45 FEET, THENCE ALONG THE EXTERIOR BOUNDARY OF SAID PARCEL RECORDED UNDER RECEPTION NO. 998535 AS FOLLOWS:
NORTH 00°02'52" EAST, PARALLEL WITH THE NORTH-SOUTH CENTERLINE OF SAID SECTION 29, 585.00 FEET; SOUTH 89°47'40" WEST, PARALLEL WITH THE SOUTH LINE OF THE SAID SOUTHWEST 1/4 OF THE SOUTHEAST 1/4, 186.15 FEET; NORTH 00°02'52" EAST, PARALLEL WITH THE NORTH-SOUTH CENTERLINE OF SAID SECTION 29, 585.00 FEET TO THE NORTHWEST CORNER OF SAID PARCEL RECORDED UNDER RECEPTION NO. 998535; AND NORTH 89°47'40" EAST, PARALLEL WITH THE SOUTH LINE OF THE SAID SOUTHWEST 1/4 OF THE SOUTHEAST 1/4, 186.15 FEET TO THE NORTHEAST CORNER ON THE NORTH LINE OF SAID PARCEL RECORDED UNDER RECEPTION NO. 998535;
THENCE CONTINUING NORTH 89°47'40" EAST, 112.63 FEET;
THENCE SOUTH 01°05'07" EAST, 62.24 FEET;
THENCE SOUTH 04°22'33" WEST, 211.37 FEET;
THENCE NORTH 89°41'37" EAST, 33.07 FEET;
THENCE NORTH 52°25'07" EAST, 90.47 FEET;
THENCE SOUTH 75°59'10" EAST, 295.55 FEET;
THENCE SOUTH 00°02'52" WEST, PARALLEL WITH THE NORTH-SOUTH CENTERLINE OF SAID SECTION 29, 879.45 FEET TO A POINT ON THE SOUTH LINE OF THE SAID SOUTHWEST 1/4 OF THE SOUTHEAST 1/4, FROM WHENCE THE THE POINT OF BEGINNING BEARS SOUTH 89°47'40" WEST, 489.45 FEET; THENCE SOUTH 89°47'40" WEST, ALONG THE SOUTH LINE OF THE SAID SOUTHWEST 1/4 OF THE SOUTHEAST 1/4, 489.45 FEET TO THE POINT OF BEGINNING.

SITE DATA

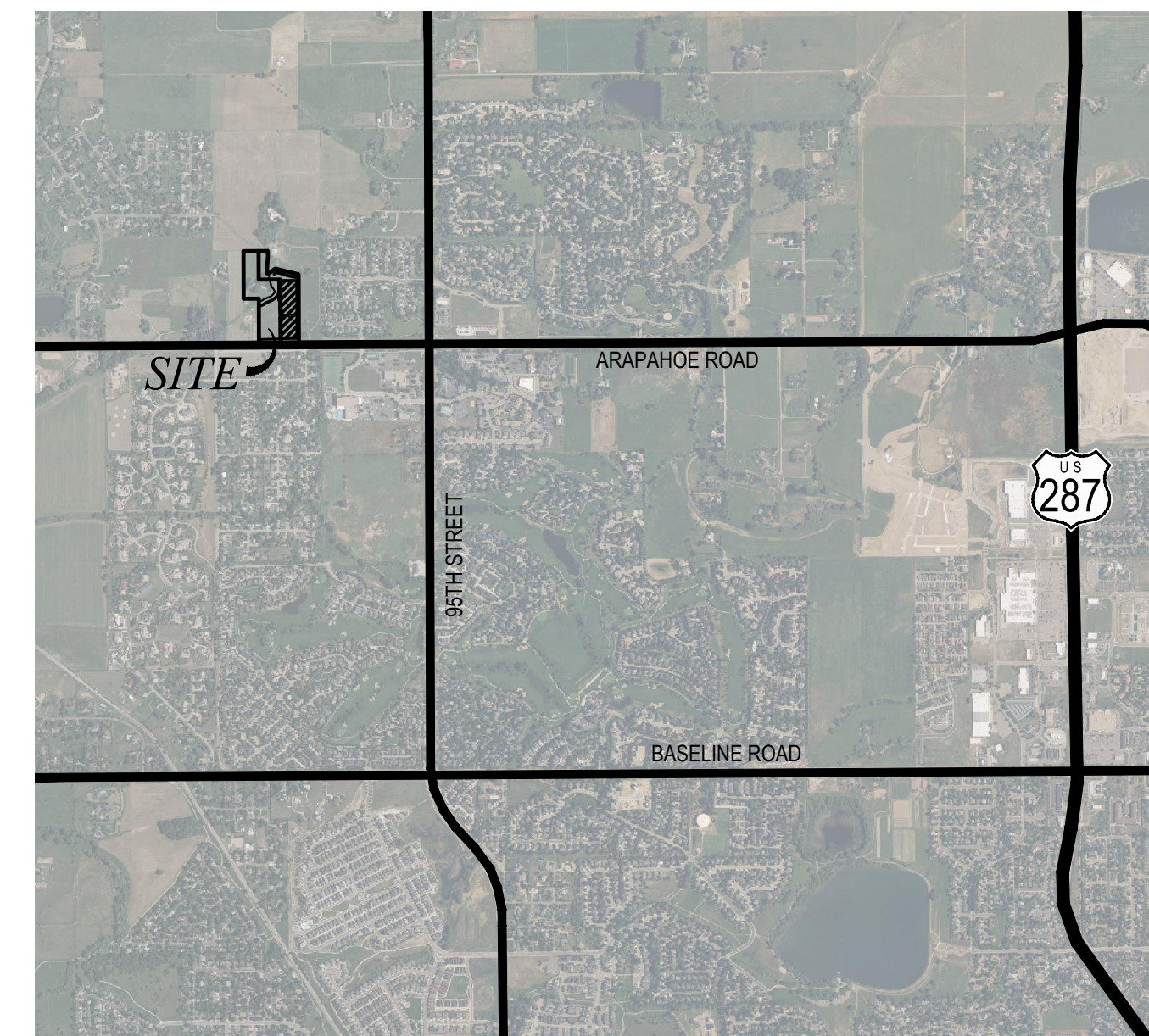
- PARCEL AREA: ±13.08 ACRES
- PROJECT AREA: ± 3.42 ACRES
- INDUSTRY STANDARD PV MODULES
- INDUSTRY STANDARD CENTRAL INVERTERS
- INDUSTRY STANDARD SINGLE-AXIS TRACKING SYSTEM

SOIL TYPES:

- ASCALON SANDY LOAM, 0 TO 3% SLOPES (79.7%)
 - NUNN SANDY CLAY LOAM, 0 TO 3% SLOPES (20.3%)
- (FROM USDA NATURAL RESOURCES CONSERVATION SERVICE)

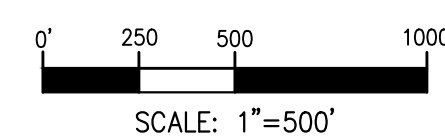


SHEET INDEX	
SHEET #	DESCRIPTION
1	COVER SHEET
2	EXISTING CONDITIONS
3	SITE PLAN
4	GRADING AND EROSION CONTROL PLAN
5	DETAILS (1 OF 3)
6	DETAILS (2 OF 3)
7	DETAILS (3 OF 3)



REGIONAL AREA MAP
SCALE: 1" = 2000'

VICINITY MAP



APPLICANT
PIVOT SOLAR 48 LLC
PIVOT ENERGY INC
1601 WEWATTA ST, SUITE 700
DENVER, CO 80202
CONTACT: KYLE SUNDMAN
(888) 734-3033

ENGINEER
ENERTIA CONSULTING GROUP, LLC
1515 MARKET STREET
DENVER, COLORADO 80202
CONTACT: RICK HAGMAYER, PE
(609) 234-5502

LAND OWNER
DEWIRE FAMILY TRUST
9215 ARAPAHOE RD
BOULDER, COLORADO 80303

CASE NUMBER: _____

NO.	DATE	DSGN	PIVOT	DR	TN	CHK	RH	APVD	RH

ENERTIA
CONSULTING GROUP, LLC
1515 MARKET STREET, SUITE 100
DENVER, COLORADO 80202

Pivot Energy
1601 WEWATTA ST, #700
DENVER, CO 80202

PIVOT ENERGY SOLAR FACILITY ON
DEWIRE PARCEL PS48
SPECIAL USE PERMIT PLAN
BOULDER COUNTY, COLORADO

COVER SHEET

VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. SCALE	
DATE	JUN 18, 2024
FILE	
DWG	
SHEET	1 OF 7

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PIVOT ENERGY SOLAR FACILITY ON DEWIRE PARCEL SPECIAL USE PERMIT PLAN

CASE NUMBER: _____

LOCATED IN SECTION 29, TOWNSHIP 1 NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF BOULDER, STATE OF COLORADO

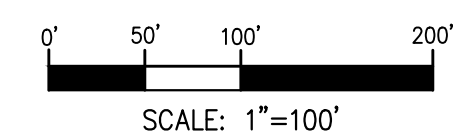
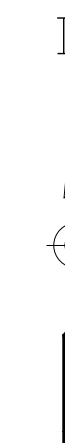


LEGEND

- PROPERTY BOUNDARY (±13.08 ACRES)
- PARCEL BOUNDARIES
- RIGHT-OF-WAY
- SECTION LINE
- EASEMENT
- EXISTING FENCE
- EXISTING TELEPHONE
- EXISTING WATER LINE
- EXISTING OVERHEAD UTILITY W/ POLES
- EXISTING GAS LINE
- EXISTING 36" CMP
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- EDGE OF ASPHALT/ACCESS
- PV ARRAY FOOTPRINT
- EXISTING WATER WELL (25' SETBACK)
- FLOW ARROW

NOTES

1. A LAYOUT OF THE SOLAR FACILITY IS NOT YET CONCEPTUALIZED. FINAL LOCATIONS FOR EQUIPMENT AND ALL OTHER FACILITY COMPONENTS MAY BE ANYWHERE WITHIN THE SOLAR SITING ENVELOPE SHOWN ON THESE PLANS.
2. TREES WERE NOT OBSERVED WITHIN THE MAJORITY OF PROPOSED SOLAR ARRAY AREAS. IF NECESSARY, TREES AND SHRUBS ARE TO BE REMOVED TO ALLOW FOR THE INSTALLATION OF THE ARRAYS AND TO ELIMINATE SHADING.
3. ENERTIA CONSULTING GROUP, LLC ASSUMES NO RESPONSIBILITY FOR UTILITY LOCATIONS. UTILITIES SHOWN ON THIS DRAWING HAVE BEEN LOCATED VIA FIELD SURVEY. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO MOBILIZATION.
4. AN 8 FT. GAME FENCE WILL BE INSTALLED TO SURROUND THE SOLAR ARRAYS. GATES WILL BE PROVIDED FOR ACCESS.
5. THE PROPERTY OWNER OR OPERATOR SHALL BE RESPONSIBLE FOR CONTROLLING NOXIOUS WEEDS ON THE SITE.
6. THE ACCESS TO THE SITE SHALL BE MAINTAINED TO MITIGATE ANY IMPACTS TO THE PUBLIC ROAD, INCLUDING DAMAGES AND/OR OFF-SITE TRACKING.
7. THE HISTORICAL FLOW PATTERS AND RUNOFF AMOUNTS ON THE SITE WILL BE MAINTAINED.
8. ACCESS TO THE SITE IS PROVIDED FROM ARAPAHOE ROAD RIGHT-OF-WAY.



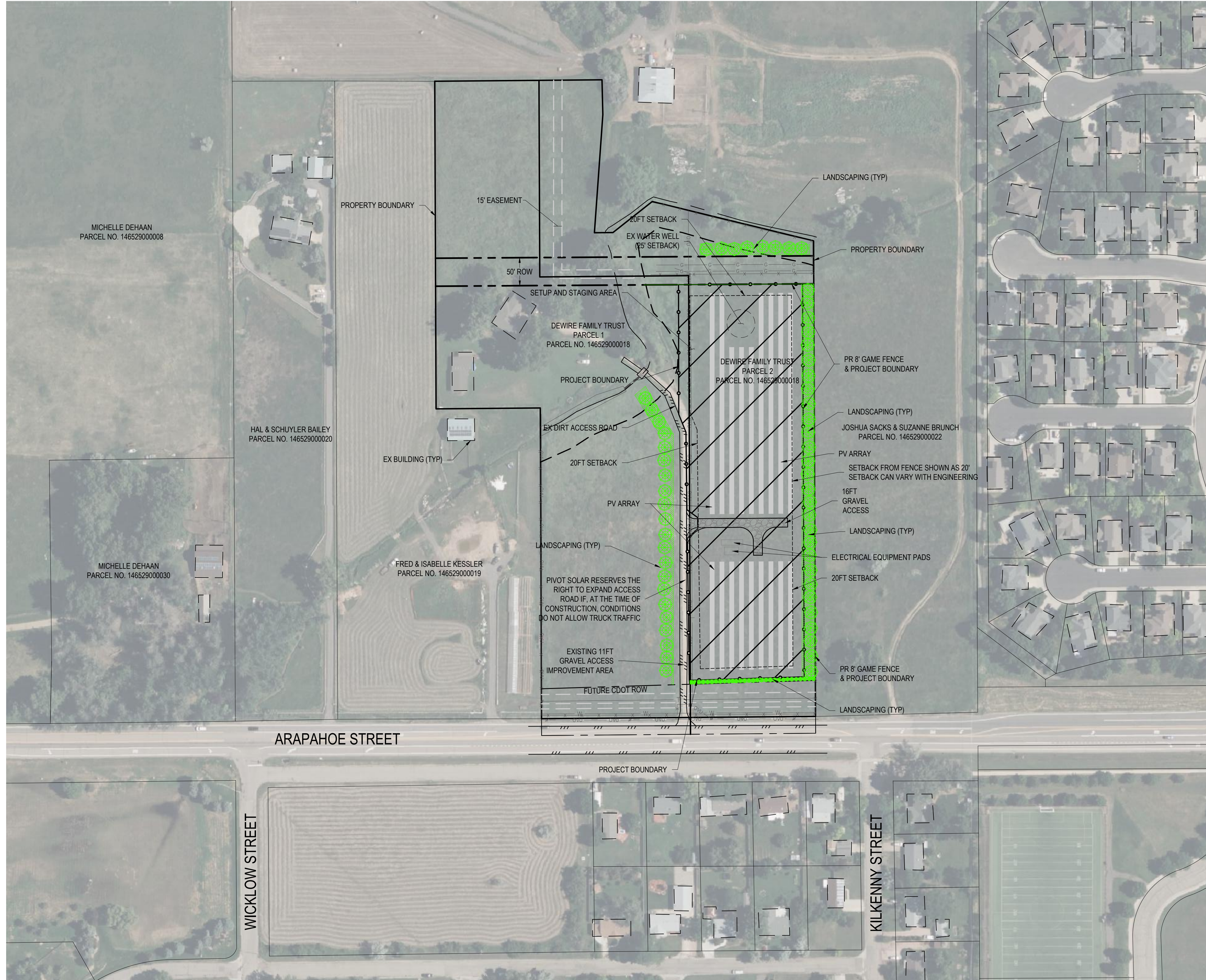
CASE NUMBER: _____

	REVISION NO. DATE DSGN PIVOT DR TN CHK RH APVD RH
 1515 MARKET STREET, SUITE 100 DENVER, COLORADO 80202	 1601 WEWATTA ST., #700 DENVER, CO 80202
PIVOT ENERGY SOLAR FACILITY ON DEWIRE PARCEL PS48 SPECIAL USE PERMIT PLAN BOULDER COUNTY, COLORADO	EXISTING CONDITIONS
VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. SCALE	
DATE	JUN 18, 2024
FILE	
DWG	
SHEET	2 OF 7

PIVOT ENERGY SOLAR FACILITY ON DEWIRE PARCEL SPECIAL USE PERMIT PLAN

CASE NUMBER: _____

LOCATED IN SECTION 29, TOWNSHIP 1 NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF BOULDER, STATE OF COLORADO

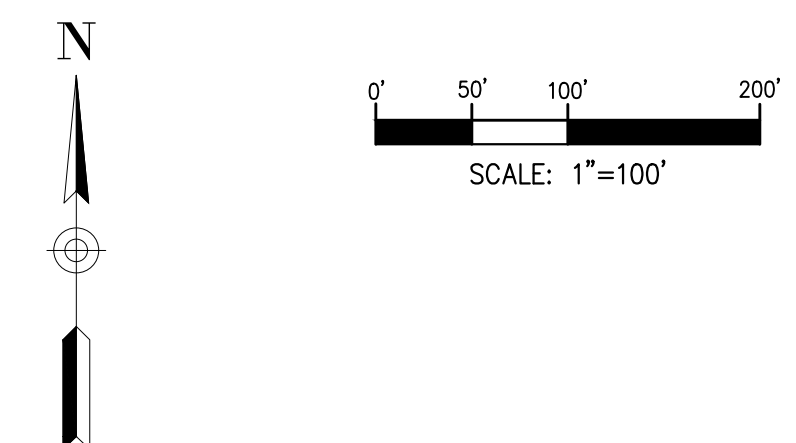


LEGEND

- PROPERTY BOUNDARY (±13.08 ACRES)
- PARCEL BOUNDARIES
- RIGHT-OF-WAY
- SECTION LINE
- EASEMENT
- EXISTING FENCE
- EXISTING TELEPHONE
- EXISTING WATER LINE
- EXISTING OVERHEAD UTILITY W/ POLES
- EXISTING GAS LINE
- EXISTING 36" CMP
- PV ARRAY
- EDGE OF ASPHALT/ROAD
- GRAVEL FIRE LANE & ACCESS ROAD
- 8' GAME FENCE (±3.42 ACRES)
- PV ARRAY OFFSET
- ELECTRICAL EQUIPMENT PADS
- EXISTING WATER WELL (25' SETBACK)

NOTES

1. A LAYOUT OF THE SOLAR FACILITY IS NOT YET CONCEPTUALIZED. FINAL LOCATIONS FOR EQUIPMENT AND ALL OTHER FACILITY COMPONENTS MAY BE ANYWHERE WITHIN THE SOLAR SITING ENVELOPE SHOWN ON THESE PLANS.
2. TREES WERE NOT OBSERVED WITHIN THE MAJORITY OF PROPOSED SOLAR ARRAY AREAS. IF NECESSARY, TREES AND SHRUBS ARE TO BE REMOVED TO ALLOW FOR THE INSTALLATION OF THE ARRAYS AND TO ELIMINATE SHADING.
3. ENERTIA CONSULTING GROUP, LLC ASSUMES NO RESPONSIBILITY FOR UTILITY LOCATIONS. UTILITIES SHOWN ON THIS DRAWING HAVE BEEN LOCATED VIA FIELD SURVEY. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO MOBILIZATION.
4. AN 8 FT. GAME FENCE WILL BE INSTALLED TO SURROUND THE SOLAR ARRAYS. GATES WILL BE PROVIDED FOR ACCESS.
5. THE PROPERTY OWNER OR OPERATOR SHALL BE RESPONSIBLE FOR CONTROLLING NOXIOUS WEEDS ON THE SITE.
6. THE ACCESS TO THE SITE SHALL BE MAINTAINED TO MITIGATE ANY IMPACTS TO THE PUBLIC ROAD, INCLUDING DAMAGES AND/OR OFF-SITE TRACKING. THE HISTORICAL FLOW PATTERS AND RUNOFF AMOUNTS ON THE SITE WILL BE MAINTAINED.
7. ACCESS TO THE SITE IS PROVIDED FROM ARAPAHOE ROAD RIGHT-OF-WAY.



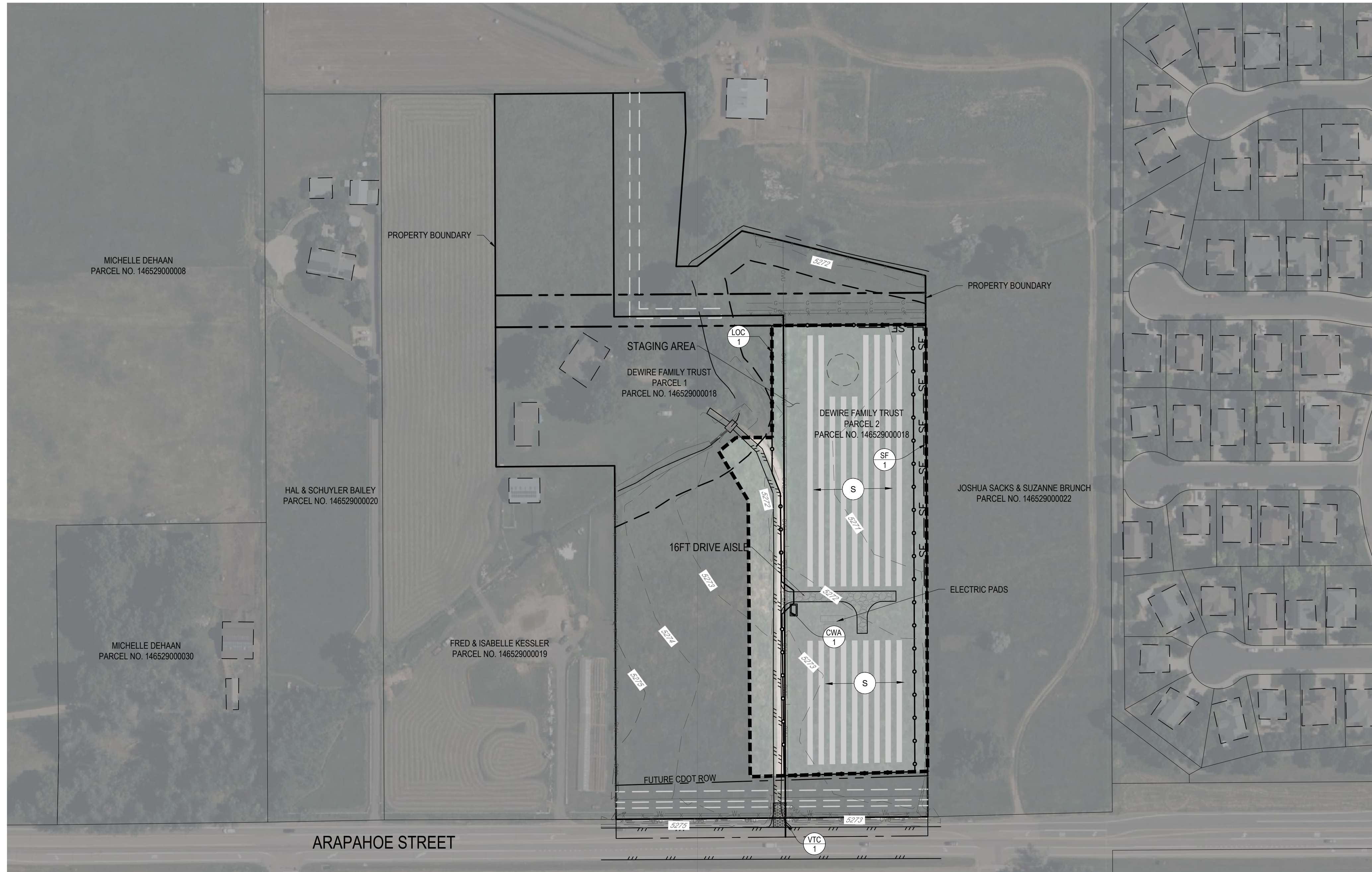
CASE NUMBER: _____

ENERTIA CONSULTING GROUP, LLC 1515 MARKET STREET, SUITE 100 DENVER, COLORADO 80202			
Pivot Energy 1601 MEWATTA ST., #700 DENVER, CO 80202			
PIVOT ENERGY SOLAR FACILITY ON DEWIRE PARCEL PS48 SPECIAL USE PERMIT PLAN BOULDER COUNTY, COLORADO		SITE PLAN	
VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. SCALE			
DATE	JUN 18, 2024		
FILE			
DWG			
SHEET	3 OF 7		

PIVOT ENERGY SOLAR FACILITY ON DEWIRE PARCEL SPECIAL USE PERMIT PLAN

CASE NUMBER: _____

LOCATED IN SECTION 29, TOWNSHIP 1 NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF BOULDER, STATE OF COLORADO



LEGEND

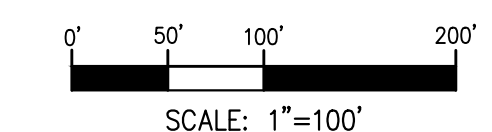
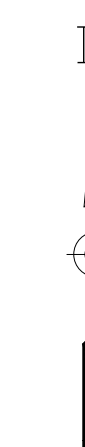
- PROPERTY BOUNDARY (±13.08 ACRES)
- PARCEL BOUNDARIES
- RIGHT-OF-WAY
- SECTION LINE
- EASEMENT
- EXISTING FENCE
- EXISTING TELEPHONE
- EXISTING WATER LINE
- EXISTING OVERHEAD UTILITY W/ POLES
- EXISTING GAS LINE
- EXISTING 36" CMP
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PV ARRAY
- EDGE OF ASPHALT/ROAD
- GRAVEL FIRE LANE & ACCESS ROAD
- 8' GAME FENCE (±3.42 ACRES)
- ELECTRICAL EQUIPMENT PADS
- EXISTING WATER WELL (25' SETBACK)
- LIMITS OF CONSTRUCTION
- SILT FENCE
- VEHICLE TRACKING CONTROL
- CONCRETE WASHOUT
- SEEDING

NOTES

1. A LAYOUT OF THE SOLAR FACILITY IS NOT YET CONCEPTUALIZED. FINAL LOCATIONS FOR EQUIPMENT AND ALL OTHER FACILITY COMPONENTS MAY BE ANYWHERE WITHIN THE SOLAR SITING ENVELOPE SHOWN ON THESE PLANS.
2. TREES WERE NOT OBSERVED WITHIN THE MAJORITY OF PROPOSED SOLAR ARRAY AREAS. IF NECESSARY, TREES AND SHRUBS ARE TO BE REMOVED TO ALLOW FOR THE INSTALLATION OF THE ARRAYS AND TO ELIMINATE SHADING.
3. ENERTIA CONSULTING GROUP, LLC ASSUMES NO RESPONSIBILITY FOR UTILITY LOCATIONS. UTILITIES SHOWN ON THIS DRAWING HAVE BEEN LOCATED VIA FIELD SURVEY. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO MOBILIZATION.
4. AN 8 FT. GAME FENCE WILL BE INSTALLED TO SURROUND THE SOLAR ARRAYS. GATES WILL BE PROVIDED FOR ACCESS.
5. THE PROPERTY OWNER OR OPERATOR SHALL BE RESPONSIBLE FOR CONTROLLING NOXIOUS WEEDS ON THE SITE.
6. THE ACCESS TO THE SITE SHALL BE MAINTAINED TO MITIGATE ANY IMPACTS TO THE PUBLIC ROAD, INCLUDING DAMAGES AND/OR OFF-SITE TRACKING.
7. THE HISTORICAL FLOW PATTERS AND RUNOFF AMOUNTS ON THE SITE WILL BE MAINTAINED.
8. ACCESS TO THE SITE IS PROVIDED FROM ARAPAHOE ROAD RIGHT-OF-WAY.

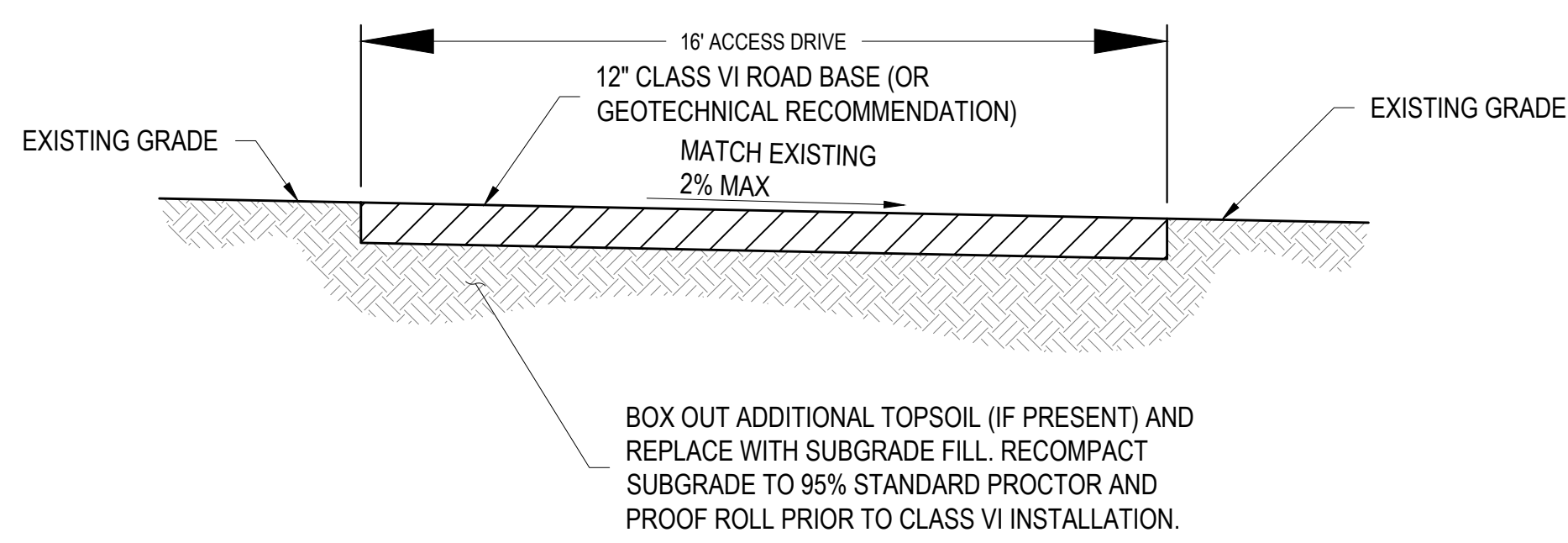
LIMITS OF CONSTRUCTION: ± 3.42-ACRES
TOTAL DISTURBANCE: >1-ACRE *

* PER COUNTY DEFINITION, DISTURBANCE INCLUDES VEHICULAR TRAFFIC AND PLANTING ACTIVITIES. THE VEHICULAR TRACKS ARE CURRENTLY UNKNOWN, SO IT IS ESTIMATED THAT 50% OF THE THE SITE WILL BE DISTURBED. A SWOP WILL BE COMPLETED ON SITE AT TIME OF BUILDING PERMIT ONCE CONSTRUCTION EQUIPMENT IS KNOWN.



SEED MIX (BELOW ELEVATION 5,500FT)

Common Name	Species Name	Variety	% of Mix	#PLS/ Acre
Side Oats Grama	<i>Bouteloua curtipendula</i>	Vaughn	15%	2.74
Blue Grama	<i>Bouteloua gracilis</i>	Native, Alma, or Hachita	20%	0.84
Buffalograss	<i>Buchloe dactyloides</i>	Native	15%	9.33
Western Wheatgrass	<i>Pascopyrum smithii</i>	Arriba	12.5%	3.96
Western Wheatgrass	<i>Pascopyrum smithii</i>	Native	12.5%	3.96
Little Bluestem	<i>Schizachyrium scoparium</i>	Cimarron or Pastura	13%	1.74
Green Needlegrass	<i>Stipa viridula</i>	Lodorm or Native	12%	2.31
Totals:			100%	24.88



CASE NUMBER: _____

NO.	DATE	DR	TN	CHK	RH	APVD	RH

ENERTIA
CONSULTING GROUP, LLC
1515 MARKET STREET, SUITE 100
DENVER, COLORADO 80202

Pivot Energy
1601 WEWATTA ST. #700
DENVER, CO 80202

PIVOT ENERGY SOLAR FACILITY ON DEWIRE PARCEL PS48 SPECIAL USE PERMIT PLAN BOULDER COUNTY, COLORADO

GRADING AND EROSION CONTROL (GEC) PLAN AND INSTALLATION PLAN

VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. SCALE

DATE	JUN 18, 2024
FILE	
DWG	
SHEET	4 OF 7

REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF ENERTIA CONSULTING GROUP AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF ENERTIA CONSULTING GROUP.

PLANTING NOTES

Section 1: General Guidelines

A. Submittals

- Product Data: Submit manufacturer product data and literature describing all products required by this section to the Owner for approval.
- Plant Growers Certificates: Submit Plant Growers certificates for all plants indicating that each plant meets the requirements, including the requirements for root system quality, to the Owner for approval.

B. Quality Assurance

- Plant Acceptance
 - The Owner will inspect all work for Plant Acceptance upon written request of the Contractor.
 - Plant Acceptance by the Owner shall be for general conformance to specified size, character and quality and not relieve the Contractor of responsibility for full conformance to the contract documents, including correct species.
 - Any plant that is deemed defective as defined under the warranty provisions below shall not be accepted.
 - The Contractor is responsible for the condition and quality of work and materials during construction, and until Plant Acceptance. Contractor shall bear the total cost of replacing any and all plants until this time.

C. Selection and inspection of plants

- Purchasing shrubs from the growing nursery is preferred over re-wholesale suppliers. When re-wholesale suppliers are utilized, the contractor shall submit the name and location of the growing nursery from where the trees were obtained by the re-wholesale seller. The re-wholesale nursery shall be responsible for any required plant quality certifications.
- The contractor shall require the grower or re-wholesale supplier to permit the Owner to inspect the root system of all plants including random removal of soil around the base of the plant. Inspections may be as frequent and as extensive as needed to verify that plants conform to the grower's root quality certifications. For field grown plants, viewing of plants by the Owner may be at the growing nursery prior to the harvesting of the plant.
- The Owner may choose to attach their seal to each plant, or a representative sample. Viewing and/or sealing of plants by the Owner at the nursery does not preclude the Owner's right to reject material while on site.
- Unless approved by the landscape architect, plants shall have been grown at a latitude not more than 200 miles north or south of the latitude of the project unless the provenance of the plant can be documented to be compatible with the latitude and cold hardness zone of the planting location. Many tree species are sensitive to the photoperiod of their native provenance. For example, red maple stock from native southern stock will not harden off in time for northern winters.

D. Substitutions for plants not available

- Submit all requests for substitutions of plant species, or size to the Owner, for approval, prior to purchasing the proposed substitution.

E. Site conditions

- It is the responsibility of the Contractor to be aware of all surface and sub-surface conditions, and to notify the Owner, in writing, of any circumstances that would negatively impact the health of plantings. Do not proceed with work until unsatisfactory conditions have been corrected.
- Do not install plants into saturated or frozen soils. Do not install plants during inclement weather, such as heavy rain or snow or during extremely hot, cold or windy conditions.

F. Planting around utilities

- Contractor shall carefully examine the civil, record, and survey drawings to become familiar with the existing underground conditions before digging.
- Determine location of underground utilities and perform work in a manner that will avoid possible damage. Hand excavate, as required. Maintain grade stakes set by others until parties concerned mutually agree upon removal.
- Notification of Local Utility Locator Service, is required 72 hours prior to digging. The Contractor is responsible for knowing the location of and avoiding utilities that are not covered by the Local Utility Locator Service.

Section 2: Product Guidelines

A. Standards and measurement

- Provide plants of quantity, size, genus, species, and variety or Cultivars as shown and scheduled in contract documents.
- Shrub stock shall conform to ANSI Z60.1, American Standard for Nursery Stock, and all state requirements for nursery stock except where they are modified by this specification. Where there is a conflict between this specification and the above specifications, this specification will apply.
- Plants larger than specified may be used if acceptable to the Owner. Use of such plants shall not increase the contract price. If larger plants are accepted the root ball size shall be increased in proportion to the size of the plant. Larger plants may not be acceptable if the resulting root ball cannot be fit into the required planting space.

B. Plant Quality

- General

- Provide healthy, vigorous stock, grown in a recognized nursery and reasonably free of disease, insects, eggs, bores, and larvae. At the time of planting all plants shall have root system, stem, and branch form that will not restrict normal growth, stability and vigor for the expected life of the plant.
- Plant quality above the soil line
 - Plants shall be of exceptional quality with the color, shape, size and distribution of trunk, stems, branches, buds and leaves normal to the plant type specified.
 - There should be one dominant leader to the top of the tree with the largest branches spaced at least 6 inches apart. All trees are assumed to be single leader plants unless a different form is specified in the plant list or drawings.
 - Tree shall have no significant branch unions with included bark between stems.
 - Tree trunks shall be reasonably straight with lateral limbs reasonably symmetrical, free of large voids, and evenly distributed along the trunk. Clear trunk should be no more than 40 percent of tree height unless otherwise specified in the planting specifications.
 - Branches should be less than 1/2 the trunk diameter at the attachment point unless otherwise approved by Project Landscape Architect or Arborist.
 - Trees greater than 1.5 inches caliper should be able to stand erect without a supporting stake.
 - The trunk and branches shall be reasonably free of knots, scrapes, broken or split wood, fresh limb cuts, sunscald, injuries, and abrasions. All graft unions, where applicable, shall be completely healed without visible sign of graft rejection. All grafts shall be visible above the soil line.
 - Open trunk and branch wounds shall be less than 10 percent of the circumference at the wound and no more than 2 inches tall. Pruning shall not encroach on the branch collar. Properly made pruning cuts are not considered open trunk wounds. Pruning cuts in accordance with ANSI standards are considered properly made pruning cuts.
- Plant quality at or below the soil line
 - The roots shall be reasonably free of scrapes, broken or split wood.
 - A minimum of three structural roots reasonably distributed around the trunk shall be found in each plant.
 - Plants with structural roots on only one side of the trunk (J roots) shall be rejected.
 - The root crown must not be more than 2 inches below the soil line.
 - The root system shall be reasonably free of stem girdling roots above the root collar, vertical roots and or kinked roots from nursery production practices. Stem girdling roots, vertical and kinked roots include roots on the interior of the root ball. There shall be no roots greater than 1/10 the diameter of the trunk circling more than one-third the way around in the top half of the root ball. Roots larger than this may be cut provided they are smaller than one-third the trunk diameter. There shall be no kinked roots greater than 1/5 the trunk diameter. Roots larger than this can be cut provided they are less than one-third the trunk diameter.
 - Shrubs may be rejected if the extent of root cutting required to remedy girdling, kinked, and vertical roots renders the tree unlikely to thrive by the end of the warranty period.
 - The final plant grower shall be responsible for determining that the plants have been root pruned at each step in the plant production process to remove stem girdling roots and kinked roots, or practices that produce a root system throughout the root ball that meets these requirements. Regardless of the work of previous growers, the plant's root system shall be modified at the final production stage to produce the required plant root quality. The final grower shall certify in writing that all plants are reasonably free of stem girdling and kinked roots.
 - All shrubs should be rooted into the root ball so that soil or media remains intact and trunk and root ball move as one when lifted, but not root bound. The trunk should bend when gently pushed and should not be loose so it pivots at or below the soil line.
- Submittals
 - Submit for approval the required seed and plant quality certifications from the grower where plants are to be purchased, for each plant type. The grower's certification of plant quality does not prohibit the Owner from inspecting any plant or rejecting the plant if it is found to not meet the requirements.

C. Anti-desiccant

- Anti-Desiccant shall be emulsion type, film-forming agent similar to Dowax by Dow Chemical Company, or Wilt-Pruf by Nursery Specialty Products, Inc., Croton Falls, New York, designed to permit transpiration but retard excessive loss of moisture from plants. Deliver in manufacturer's fully identified containers and use in accordance with manufacturer's instructions.
- Submit manufacturer's product data for approval.

Section 3: Execution Guidelines

A. Site examination

- Examine the surface grades and soil conditions to confirm that the soil and drainage modifications indicated on the Plans and Details have been completed. Notify the Owner in writing of any unsatisfactory conditions.

B. Delivery, storage and handling

- Protect materials from deterioration during delivery and storage. Adequately protect plants from drying out, exposure of roots to sun, wind,

and extremes of heat and cold temperatures.

- If planting is delayed more than 24 hours after delivery, set plants in a location protected from sun and wind.
- Provide adequate water to the root ball during the shipping and storage period. Using a soil moisture meter, periodically check the soil moisture in the root balls of all plants to assure that the plants are being adequately watered.
- Do not deliver more plants to the site than can be adequately stored. Provide a suitable remote staging area for plants and other supplies.
- The Owner shall approve the duration, method and location of storage of plants.
- Protective covering is required over all plants during delivery.

C. Planting season

- Planting shall only be performed when weather and soil conditions are suitable for planting the specified materials in accordance with locally accepted practices. Install plants during the planting time as described below unless otherwise approved in writing by the Owner. In the event that the Contractor requests planting outside the dates of the planting season, approval of the request does not change the requirements of the warranty.
- Planting shall be completed within the following dates:
 - Between April 15 and July 15, or between September 1 and November 14

D. Coordination with project work

- Coordinate the relocation of any underground obstructions, utility lines, etc. that are in conflict with tree locations. Root balls shall not be altered to fit around lines. Notify the Owner of any conflicts encountered.

E. Soil protection during plant delivery and installation

- Protect soil from compaction during the delivery of plants to the planting locations, digging of planting holes and installing plants.
 - Where possible deliver and plant trees requiring the use of heavy mechanized equipment prior to final soil preparation and tilling.
 - Till and restore grades to all soil that has been driven over or compacted during the installation of plants.

F. General installation of plants

- Inspect each plant after delivery and prior to installation for damage or other characteristics that may cause rejection of the plant. Notify the Owner of any such conditions.
- The root system of each plant, regardless of root ball package type, shall be inspected by the Contractor at the time of planting to confirm that the roots meet the requirements for tree quality. The Contractor shall undertake, at the time of planting, all modifications to the root system required by the Owner to meet these quality standards.
- Exposed Stem Tissue after Modification: The required root ball modifications may result in stem tissue that has not formed trunk bark being exposed above the soil line. If such condition occurs, wrap the exposed portion of the stem in a protective wrapping such as Dewitt Tree Wrap fabric. Secure the fabric with biodegradable tape such as 3M Scotch 234 or 232 masking tape or approved equal. DO NOT USE string, twine or any other material that may girdle the trunk if not removed.
- Using hand tools, back hoe or mini-excavator, excavate the planting hole into the planting soil to the depth of the root ball, as measured after any root ball modification to correct root problems, and wide enough for working room around the root ball or to the size indicated on the drawing.
 - The measuring point for root ball depth shall be the average height of the outer edge of the root ball after any required root ball modification.
 - Scarify sides and bottom of planting hole.
- Set top outer edge of the root ball 1 to 3 inches above the average elevation of the proposed finish. Set the plant plumb. The tree graft, if applicable, shall be visible above the grade. Do not place soil on top of the root ball.
- Brace root ball by tamping planting soil around the lower portion of the root ball. Place additional planting soil around base and sides of ball in six-inch (6 inch) lifts. Lightly tamp each lift using hand tools to settle backfill and eliminate voids.
- Where indicated on the drawings, build a 3 inch high, level saucer of planting soil around the outside of the root ball to retain water. Tamp the saucer to reduce erosion of the saucer.
- Thoroughly water the planting soil and root ball immediately after planting.

G. Installation of fertilizer and other chemical additives

- Do not apply any fertilizer to plantings during the first year after transplanting unless soil testing demonstrates that fertilizer or other chemical additives is required. Apply chemical additives only upon the approval of the Owner.
- Fertilizers shall be applied according to the manufacturer's instructions and standard horticultural practices.

H. Pruning of trees and shrubs

- Shrubs need as many leaves as possible to recover from transplant shock, so prune as little as possible at the time of planting. Prune only broken or dead branches.

- In general, preserve the natural character of the plant and follow recommendations in An Illustrated Guide to Pruning, Third Edition (Gilman 2011).
- All pruning shall be performed by a person experienced in landscape pruning.
- Wherever possible and appropriate to the species, preserve or create a central leader.
- Remove and replace excessively pruned or malformed stock resulting from improper pruning.
- Pruning shall be done with clean, sharp tools.

I. Watering

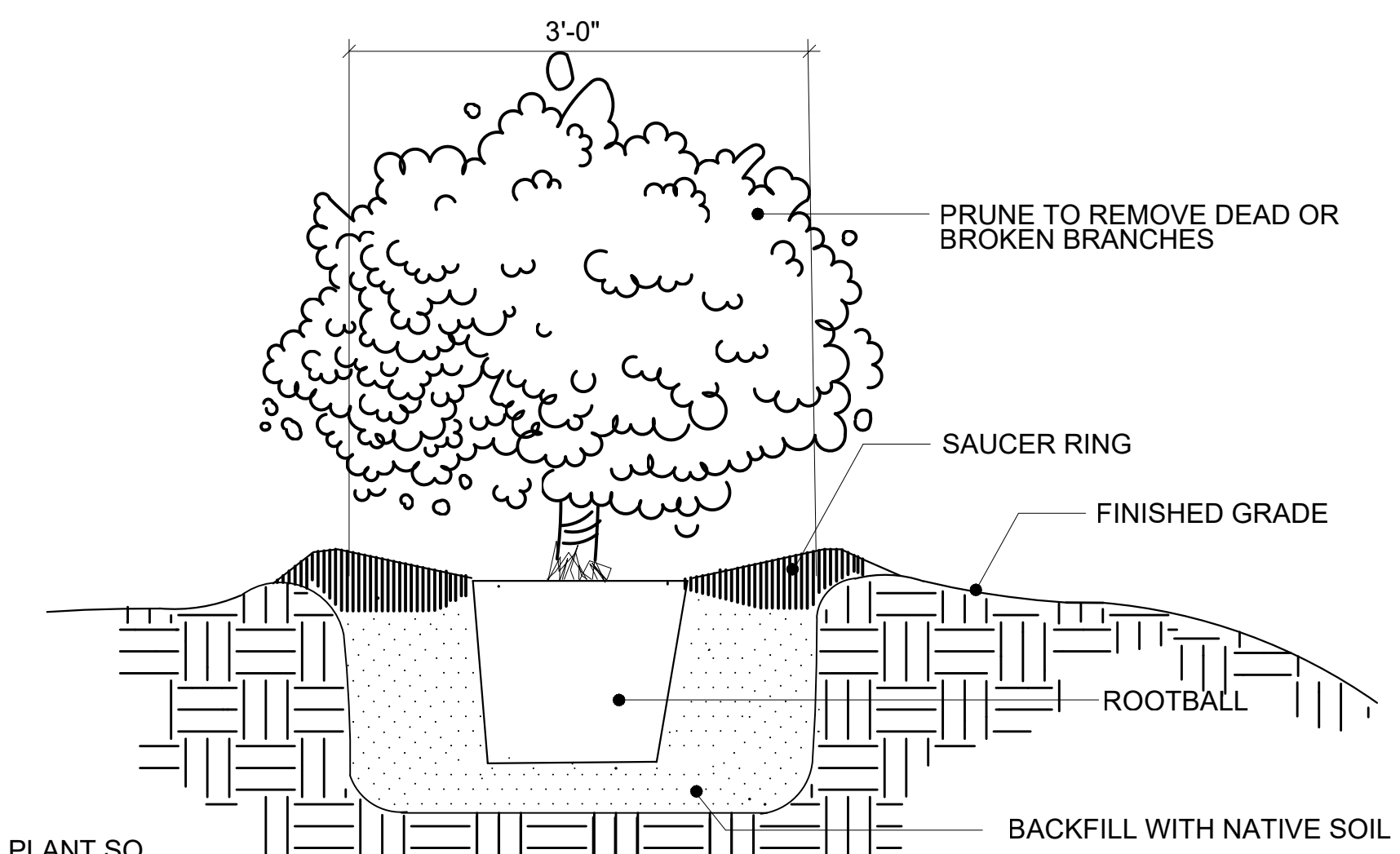
- The Contractor shall be fully responsible to ensure that adequate water is provided to all plants from the point of installation until the date of Plant Acceptance.
- Hand water root balls of all plants to assure that the root balls have adequate moisture. Test the moisture content in each root ball and the soil outside the root ball to determine the water content.

K. Cleanup

- During installation, keep the site free of trash and the work area in an orderly condition at the end of each day.
- Once installation is complete, wash all soil from pavements and other structures. Ensure that all tags and flagging tape are removed from the site. The Owner seals are to remain on the trees and removed at the end of the warranty period.

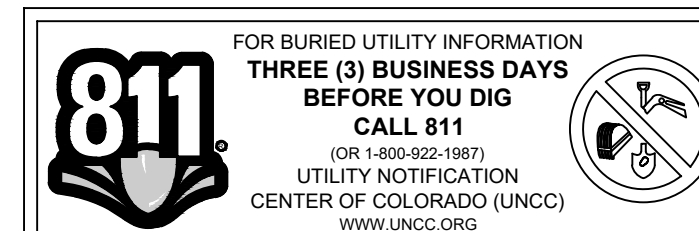
L. Protection during construction

- The Contractor shall protect landscape work and materials from damage due to planting operations or operations by other Contractors or trespassers. Maintain protection during installation until Plant Acceptance. Treat, repair or replace damaged planting work immediately.
- Damage done by the Contractor, or any of their sub-contractors, to plants or any other parts of the work shall be replaced by the Contractor at no expense to the Owner.



1 CONTAINER PLANTING

CASE NUMBER: _____



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NO.	DATE	DR	JP	CHK	SL	APVD	SL

AZTEC **ITPSA**

501 N 44TH STREET, SUITE 300
PHOENIX, AZ 85008

PIVOT ENERGY

1760 15TH ST., SUITE 400
DENVER, CO 80202

PIVOT ENERGY SOLAR FARM
PS48
SPECIAL USE REVIEW
BOULDER COUNTY, COLORADO

LANDSCAPE NOTES / DETAIL

VERIFY SCALE
BAR IS ONE INCH ON
ORIGINAL DRAWING.

DATE	JUNE 14, 2024
FILE	
DWG	
SHEET	2 OF 2



Community Planning & Permitting

Courthouse Annex • 2045 13th Street • Boulder, Colorado 80302 • Tel: 303.441.3930 • Fax: 303.441.4856
 Mailing Address: P.O. Box 471 • Boulder, Colorado 80306 • www.bouldercounty.gov

Building Safety & Inspection Services Team

MEMO

TO: Pete L'Orange, Planner II
 FROM: Michelle Huebner, Plans Examiner Supervisor
 DATE: April 23, 2024

RE: Referral Response, SU-24-0002: Pivot Solar Energy Facility. Special Use Review for an approximately 4-acre solar energy facility on a 13-acre parcel.

Location: 9215 Arapahoe Road

Thank you for the referral. We have the following comments for the applicants:

1. **Building Permit.** A building permit, plan review and inspection approvals are required for the construction of the solar energy (garden) and the associated electrical equipment. The construction documents must be stamped, signed and sealed by a Colorado design professional, electrical engineer, for the solar system and structural for the foundation and frame. A separate building permit is required for the fencing over 6'-0."

Boulder County's adopted codes are based upon the 2023 editions of the International Codes, along with other amendments, and the latest National Electrical Code ("NEC") as adopted by the State Electrical Board (currently the 2023 edition). Our adopted building codes and code amendments can be found via the internet at:

Please refer to the county's [adopted 2015 editions of the International Codes and code amendments](#), which can be found via the internet under the link:

2015 Building Code Adoption & Amendments, at the following URL:
[Amendments to Boulder County Building Code effective June 6, 2022](#)

2. **Design Wind and Snow Loads.** The design wind and ground snow loads for the property are 145 mph (Vult) and 40 psf, respectively.
3. **Plan Review.** The items listed above are a general summary of some of the county's building code requirements. A much more detailed plan review will be performed at the time of building permit application, when full details are available for review, to assure that all applicable minimum building codes requirements are to be met. Our [Solar Photovoltaic Systems Checklist](#) and other Building Safety publications can be found at: [Building Publications, Applications and Forms - Boulder County](#)

Please also refer to our Solar Photovoltaic Systems Checklist, which is available at:
[B46 Solar Photovoltaic Systems Checklist \(bouldercounty.gov\)](#)

If the applicants should have questions or need additional information, we'd be happy to work with them toward solutions that meet minimum building code requirements. Please call (720) 564-2640 or contact us via e-mail at building@bouldercounty.org



Community Planning & Permitting

Courthouse Annex • 2045 13th Street • Boulder, Colorado 80302
 Mailing Address: P.O. Box 471 • Boulder, Colorado 80306
 303-441-3930 • www.BoulderCounty.gov

May 22, 2024

TO: Pete L'Orange", Planner II; Community Planning & Permitting, Development Review Team – Zoning

FROM: Brian P. Kelly, Planner II; Community Planning & Permitting, Development Review Team – Access & Engineering

SUBJECT: Docket # SU-24-0002: Pivot Solar Energy Facility - 9215 Arapahoe Road

The Development Review Team – Access & Engineering staff has reviewed the above referenced docket and has the following comments:

1. The subject property is accessed from Arapahoe Road, also known as State Highway 7, a Colorado Department of Transportation (CDOT) owned and maintained right-of-way (ROW). Legal access has been demonstrated via adjacency to the public ROW.
2. The existing access is 11-feet in width; however, the site plan describes expanding the road to 20 feet, and more if necessary. The [Boulder County Multimodal Transportation Standards \(Standards\)](#) allows for an access width increase up to 26-feet for non-residential use. However, as the driveway intersects with a CDOT ROW, the applicant must ensure that the width, and all other geometric design of the approach meets the CDOT Access Code. Additionally, if the proposed use increases the traffic volume by 20% or more, the access permit must be revised. Contact CDOT for more information at Timothy Bilobran (timothy.bilobran@state.co.us), 970-350-2163.

At building permit, submit plans that demonstrate a Boulder County Multimodal Transportation Standards compliant access.

Prior to issuance of a Certificate of Occupancy/At final inspection, the Community Planning & Permitting Department must verify that the access and driveway has been constructed to comply with the Standards.

3. The assumption that solar field will not change imperviousness is not consistent with research and recent Mile High Flood District (MHFD) evaluations. Solar panels will concentrate runoff, and "rain shadow" areas beneath panels will not be fully utilized for infiltration. The solar panel orientation plays a large role in how well the runoff infiltrates. Pending MHFD criteria for solar fields use imperviousness of 5% when panels are parallel to contours, 20% when diagonal, and 40% when perpendicular. Panels that are placed parallel to the contours have the greatest runoff reduction by having a higher infiltration capacity by using all available pervious area.

At building permit, provide revised runoff calculations and detention requirements in light of this information. Post-development runoff numbers must account for the change in runoff from the solar panels.

4. The proposed development will result in approximately 4.15 acres of site disturbance, triggering the need for a stormwater quality permit (SWQP). As a part of Boulder County's water quality protection and Municipal Separate Storm Sewer System (MS4) Construction Program, a Stormwater Quality Permit (SWQP) is required for this project based on the disturbance illustrated in the submitted materials.

At building permit, provide a complete SWQP submittal to stormwater@bouldercounty.gov.

5. Note that, during construction, all vehicles, materials, machinery, dumpsters, and other items associated with the project should be staged within the facility boundaries.
6. An addendum to this response will be provided when drainage report comments are received.

This concludes our comments at this time.



March 28, 2024

Boulder County Planning and Permitting Department
2045 13th St
Boulder, CO 80302

RE: Drainage Narrative
Pivot Solar Energy Solar Facility on the Dewire Parcel
9215 Arapahoe Rd, Boulder County

To whom it may concern:

This drainage narrative is intended to provide Boulder County with drainage and land disturbance information related to a proposed 4.148 acre solar facility identified as Pivot Energy Solar Facility on the Dewire Parcel (Project). The Project will be designed and will be constructed and maintained in a manner that minimizes storm water related impacts, in accordance with 2016 Boulder County Storm Drainage Criteria Manual criteria.

Project Specific Information

Project Name, Property Address and Boulder County Parcel No.

Pivot Energy Solar Facility on the Dewire Parcel,
Parcel No. 146529000018

Developer/Owner

Pivot Energy, 1601 Wewatta St, #700, Denver, CO 80202

Site/Civil Engineer

Enertia Consulting Group, LLC, 1515 Market Street, Denver, CO 80202

Project Location and Description

The Project will consist of up to an approximately 1 MW solar facility located on approximately 4.148 acres of undeveloped land within an approximately 13.08 acre parcel; and within Section 29, Township 1 North, Range 66 West of the 6th P.M., Boulder County, Colorado. The Project site is bounded by Arapahoe Rd to the south, and Rural Residential to the west, north, and east.

Project components include: up to a 1 MW solar facility with approximately 2000 solar panels mounted on steel H-piles; concrete equipment pads; 20' gravel access driveway with emergency turn-around; and perimeter fence with access gate. With the exception of a gravel driveway and concrete pads for transformers and inverters, the remainder of the solar facility will not require clearing/grubbing of existing vegetation and grading unless required to prevent shading of the solar array.

Reviewed by Dr. Andrew Earles, P.E., P.H., Wright Water Engineers, Inc.
Email: aearles@wrightwater.com

Comments are provided throughout the Drainage Narrative Letter and attachments. Some of the most significant comments include:

1. I do not buy the argument that the area where the panels will be installed will be "undisturbed." Unless specialized equipment is used, I would expect disturbance in the form of vegetation damage from driving over it and compaction of soils. These would be considered "disturbed" soils and would have a higher runoff coefficient/imperviousness than undisturbed areas.
2. The angle of the panels at the time a storm event occurs is unknown, so runoff calculations must consider panels at a flat angle where rainfall will fall on the surface of the panels and become runoff. See Table 6-2 and 6-3 of the MHFD Runoff Chapter for guidance on appropriate imperviousness values to assign to different portions of the solar array based on the orientation of the panels relative to the ground contours. Some areas may behave more or less like pervious area, but other areas where panels rows run perpendicular to ground contours would generate more runoff than undisturbed conditions,
3. Please note that unless the soil will be decompacted, per Table 6, an imperviousness of 20% must be used for disturbed pervious areas that are driven over by installation equipment.
4. When correct imperviousness values are used, I expect that water quality may be effectively managed by pervious area (applicant would need to demonstrate this), but some form of detention or other flow attenuation may be required for larger events.

If the solar panels will be installed using equipment to drive the H-piles, the areas accessed by the equipment are considered part of the area of disturbance due to compaction effects of the equipment. Unless specialized equipment is used, this compaction must be factored into runoff calculations.

Land Disturbance and Drainage Information

Existing Ground Surface Conditions, Drainage Patterns and Imperviousness

The 4.148 acre solar facility project area may be characterized as residential and undeveloped agricultural land. The applicable FIRM Map (No. 0813C0419J), included in Appendix A, indicates that the Project site is located in a Zone X floodplain which is an area of minimal flood hazard. Based on NRCS soils data (also included in Appendix A), the site soils are identified as Clay Loam classified as Hydrologic Soil Group C. As shown on Figure 1 in Appendix A, the site generally slopes at an average of ~1 percent from west to east of the Project site. Irrigation is conveyed across the Project area toward the eastern property boundary.

Please explain how H-piles will be installed without driving equipment over vegetation (a disturbance) or compacting soils (also a disturbance).

Land Disturbance Activities

The site improvements considered as land disturbance activities include installation of: (i) all-weather gravel surface driveway, (ii) concrete equipment pads, and (iii) Class VI equipment pads:

- (i) Gravel Access Drive – One all-weather gravel surface access drives will extend from existing Arapahoe Rd. Given the site soils, a 12-inch-thick gravel Class VI base surface (consistent with similar solar facility access drives within Weld County) is proposed. This depth of gravel over compacted subgrade is sufficient to provide routine and emergency access to the
- (ii) Concrete Equipment Pads – Concrete equipment pads will be installed beneath inverters and transformers and other electrical equipment as required with the development. The pads will be at least 8-inches thick with reinforcing steel.
- (iii) Class VI Equipment Pads – Class VI road base equipment pads will be installed beneath other electrical equipment as required with the development. The pads will be at least 12-inches thick over compacted subgrade.

Lastly, components of the 4.148 acre solar facility will include up to 2000 solar panels placed on steel H-piles driven into the ground. Since the solar panels will be tracking panels (rotate through the day to track the path of the sun), the ground surface vegetation beneath the panels will continue to grow. Some minimal grubbing may be necessary to prepare the site with planned native seed mixes. Onsite conditions at the time of seeding will dictate necessity of such methods. The purpose of the seeding is to increase the density of native vegetation; therefore, the grubbing is not considered land disturbance (if it is necessary).

The angle of the panels at the time a storm event occurs is unknown, so runoff calculations must consider panels at a flat angle where rainfall will fall on the surface of the panels and become runoff.

The imperviousness values included herein are based on these values. These values are subject to change as design progresses.

See Table 6-2 and 6-3 of the MHFD Runoff Chapter for guidance on appropriate imperviousness values to assign to different portions of the solar array based on the orientation of the panels relative to the ground contours. Some areas may behave more or less like pervious area, but other areas where panels rows run perpendicular to ground contours would generate more runoff than undisturbed conditions,

Land Disturbance Area

A total of approximately 4798 sf or 0.11 acres of total disturbance numbers are summed in the following table:

Also, please note that unless the soil will be decompacted, per Table 6, an imperviousness of 20% must be used for disturbed pervious areas that are driven over by installation equipment.

Disturbance Surface Type	Disturbance Area (sf)	Disturbance Area (ac)
Gravel Access Drive	4,053	0.093
Concrete Equipment Pads	365	0.008
Class VI Equipment Pads	380	0.009
Total	4,798	0.110

Disturbed area should also include area accessed by equipment during construction, including areas where equipment drives across or is parked upon vegetation.

Hydrologic Design Criteria

The following table includes hydrologic design criteria used in this analysis.

Parameter	Value	Unit	Reference
Time of Concentration, Tc		min.	MHFD Peak Runoff Prediction by the Rational Method (Appendix A)
Runoff Coefficient, C	-	-	MHFD Criteria Manual, Chapter 6, Table 6-4
1-hr Point Rainfall, P1 (100-Year)	2.74	inches	NOAA Rainfall Data (Appendix A)
Storm Runoff, Q (100-YR)	-	cfs	Q = CIA

Basin Conditions

The footprint of the solar facility and access drive along with the areas delineated by oil seep are considered to be the subject drainage area under both existing and proposed conditions.

Update table using imperviousness values from Table 6-2 or 6-3 of the MHFD Runoff Chapter.

The existing condition basin (identified as basin X1 on Figure 1) was analyzed to calculate the peak runoff for the design storm using an **imperviousness percentage of 2%**. This percentage is based on the soil type and existing conditions of the site.

Updated criteria in MHFD Runoff chapter use 5% for Undisturbed or Decompacted Soil (Native Grasses and Open Space Areas)

The proposed condition basin (identified as basin A1 on Figure 1) was analyzed to calculate runoff for the design storm using an impervious percentage of 3.13%. This percentage is based on the majority of the site remaining as 2% impervious, 0.09 acres changing to 40% impervious (access drive area), 0.01 acres changing to 100% impervious (concrete pad area), and 0.01 acres changing to 40% impervious (Class VI pad area). **It should be noted that the tracking solar panels are not classified as ground surface because precipitation falling on the solar panels will shed onto the undisturbed vegetated surface below.**

See MHFD Runoff Chapter and supporting technical memorandum on imperviousness values for solar fields.

Stormwater Runoff

The stormwater runoff for existing and proposed conditions is calculated based on the Rational Method. The 100-year, 1-hour storm event was analyzed for basins A1 and X1. The flow path for the basins is generally from west to east on the Project site. The average ground surface slope along the flow path is 1%. The time of concentration to this point was calculated using MHFD equations and are summarized below and can be found on the MHFD Peak Runoff Prediction by the Rational Method form in Appendix A. The Runoff Coefficients are also included in the MHFD Peak Runoff Prediction by the Rational Method and are summarized below.

Basin	Time of Concentration (min)	Runoff Coefficients (C ₁₀₀)
X1	27.10	0.49
A1	26.88	0.50

The precipitation data used for the 100-year, 1-hour storm event is based on NOAA rainfall data from the Project site and is included in Appendix A. Per the Basin Runoff Calculation (MHFD Peak Runoff Prediction by the Rational Method) included in Appendix A the 100-year runoff flows are as follows:

Basin	Q100 (cfs)
X1	8.26
A1	8.38
Net	0.12

Update table using correct imperviousness values for undisturbed soils, disturbed or driven over soils, and solar panels in accordance with MHFD Runoff chapter.

Under developed conditions, runoff will follow existing drainage patterns and will not significantly increase peak flows (increase from 8.26 cfs to 8.38 cfs).

Detention Exemption

It is understood that facilities are exempt from detention requirements if it can be demonstrated that the peak flows from the development will not increase the peak flows from the watershed for storm events up to the 100-year flood. This solar project proposes a net increase of 0.12 cfs of peak flow in the 100-year event, which is not considered to be a significant enough increase in the peak flow of the watershed to warrant detention. Therefore the Site is exempt from the detention requirements. Additionally, the site proposed disturbances of less than 1-acre, so water quality is not required.

Summary

The following list summarizes key components and storm water impacts.

I do not think this will be the case once correct imperviousness values are used from MHFD Runoff chapter. It is very likely you can show with analysis that the water quality storm is managed through disconnection of impervious areas, but it is likely you will see increases in runoff rates and volumes for larger events. With careful grading and the use of level spreaders, it may be possible to avoid construction of a detention pond, but you would need to provide analysis that demonstrates this.

1. Installation of the solar facility will temporarily disturb the ground surface within the 4.148 acre project area but won't require clearing and grubbing of vegetation or grading, except for concrete equipment pad and gravel access drive installation.
2. Grubbing may be required to provide appropriate conditions for seeding. It is intended for the vegetation throughout the site to be improved as a result, therefore is not considered land disturbance.
3. The areas considered impervious (365 SF of 100% impervious concrete pads) or semi-impervious (4053 SF of 40% impervious gravel access drive and 380 sf of 40 sf Class VI pads) total 0.11 acres, or 2.65% of the 4.148 acre solar facility area.
4. Under existing conditions, the peak flow originating from the solar facility area for the 100 yr – 1hr storm event is 8.26 cfs.
5. Under developed conditions, the peak flow originating from the solar facility area for the 100 yr - 1 hr storm event is 8.38 cfs.
6. The solar facility does not significantly increase the peak flow of the watershed, and is therefore exempt from the detention requirements.
7. Since the land disturbance is less than 1 acre, a CDPS storm water certificate issued by CDPHE is not required for this Project.
8. Installation and operation of the solar facility is not expected to impact existing drainage patterns or flow rates on or around the Project site. Runoff water quality will not be impacted by the solar facility components.
9. The Project design will adequately protect public health, safety and general welfare and have no adverse effects on offsite properties.

Boulder County Planning and Permitting Department
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We trust that the information provided is acceptable and complete. Please let me know if you have any questions or require additional information. Please contact me at rick.hagmayer@enertiag.com or (609) 234-5502 should you require additional information.

Sincerely,
ENERTIA CONSULTING GROUP, LLC



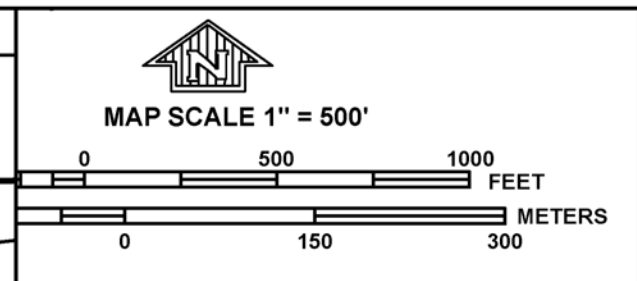
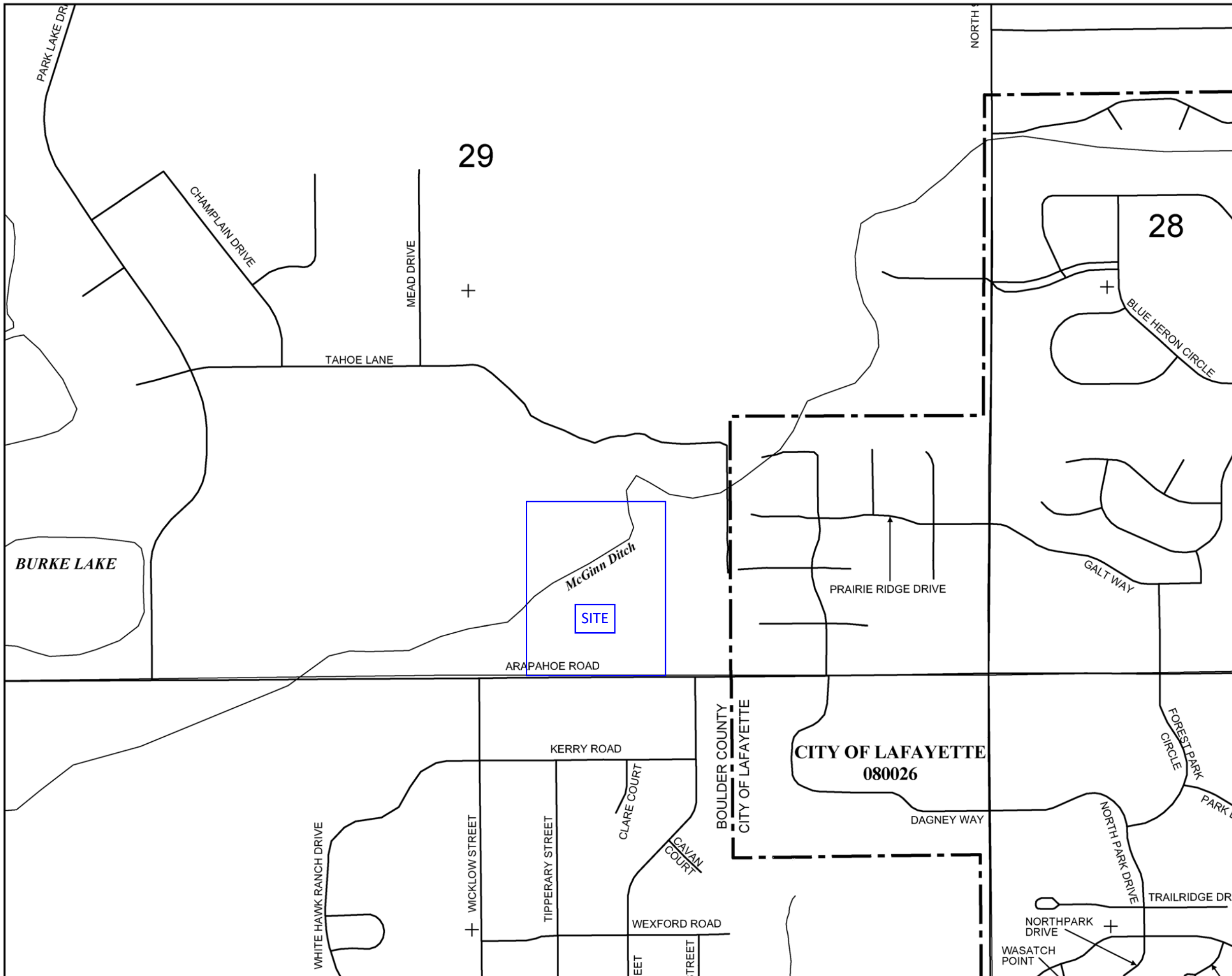
Rick Hagmayer, PE
Senior Project Manager

attachment

Appendix A

Reference Documents

- FIRM Map
- USDA Soils Report
- Project Drainage Map
- Basin Runoff Calculations
- Project Vicinity Map



NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0419J

FIRM

FLOOD INSURANCE RATE MAP

BOULDER COUNTY, COLORADO

AND INCORPORATED AREAS

PANEL 419 OF 615

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BOULDER COUNTY	080023	0419	J
LAFAYETTE, CITY OF	080026	0419	J

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
08013C0419J

MAP REVISED
DECEMBER 18, 2012

Federal Emergency Management Agency

This is an official FIRMette showing a portion of the above-referenced flood map created from the MSC FIRMette Web tool. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For additional information about how to make sure the map is current, please see the Flood Hazard Mapping Updates Overview Fact Sheet available on the FEMA Flood Map Service Center home page at <https://msc.fema.gov>.



A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Boulder County Area, Colorado



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

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Map Unit Descriptions.....	8
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NnA—Nunn sandy clay loam, 0 to 1 percent slopes.....	11
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Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



Soil Map may not be valid at this scale.

Map Scale: 1:1,430 if printed on A portrait (8.5" x 11") sheet.

0 20 40 80 120 Meters


0 50 100 200 300 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84


Custom Soil Resource Report


MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)


Soils


 Soil Map Unit Polygons


 Soil Map Unit Lines


 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit


 Clay Spot


 Closed Depression

 Gravel Pit

 Gravelly Spot


 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water


 Perennial Water

 Rock Outcrop


 Saline Spot

 Sandy Spot

 Severely Eroded Spot


 Sinkhole


 Slide or Slip


 Sodic Spot


 Spoil Area

 Stony Spot


 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals


Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Boulder County Area, Colorado
 Survey Area Data: Version 20, Aug 24, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 1, 2020—Aug 25, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

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Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AcA	Ascalon sandy loam, 0 to 3 percent slopes	5.6	79.7%
NnA	Nunn sandy clay loam, 0 to 1 percent slopes	1.4	20.3%
Totals for Area of Interest		7.0	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

Custom Soil Resource Report

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Custom Soil Resource Report

Boulder County Area, Colorado**AcA—Ascalon sandy loam, 0 to 3 percent slopes****Map Unit Setting**

National map unit symbol: 2swl3
Elevation: 3,870 to 5,960 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 46 to 57 degrees F
Frost-free period: 135 to 160 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Ascalon and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ascalon**Setting**

Landform: Interfluves
Landform position (two-dimensional): Summit
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Wind-reworked alluvium and/or calcareous sandy eolian deposits

Typical profile

Ap - 0 to 6 inches: sandy loam
Bt1 - 6 to 12 inches: sandy clay loam
Bt2 - 12 to 19 inches: sandy clay loam
Bk - 19 to 35 inches: sandy clay loam
C - 35 to 80 inches: sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
 (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.1 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Moderate (about 7.7 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4c
Hydrologic Soil Group: B
Ecological site: R067BY024CO - Sandy Plains
Hydric soil rating: No

Custom Soil Resource Report

Minor Components**Olnest**

Percent of map unit: 10 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R067BY024CO - Sandy Plains
Hydric soil rating: No

Vona

Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R067BY024CO - Sandy Plains
Hydric soil rating: No

NnA—Nunn sandy clay loam, 0 to 1 percent slopes**Map Unit Setting**

National map unit symbol: jps9
Elevation: 4,900 to 5,500 feet
Mean annual precipitation: 12 to 18 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 140 to 155 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Nunn and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nunn**Setting**

Landform: Valley sides, terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium

Typical profile

H1 - 0 to 10 inches: sandy clay loam
H2 - 10 to 16 inches: clay
H3 - 16 to 60 inches: clay loam

Custom Soil Resource Report

Properties and qualities

Slope: 0 to 1 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Available water supply, 0 to 60 inches: High (about 10.8 inches)

Interpretive groups

Land capability classification (irrigated): 2s

Land capability classification (nonirrigated): 3s

Hydrologic Soil Group: C

Ecological site: R067BY042CO - Clayey Plains

Hydric soil rating: No

Minor Components

Ascalon

Percent of map unit: 5 percent

Ecological site: R067BY002CO - Loamy Plains

Hydric soil rating: No

Kim

Percent of map unit: 5 percent

Ecological site: R067BY002CO - Loamy Plains

Hydric soil rating: No

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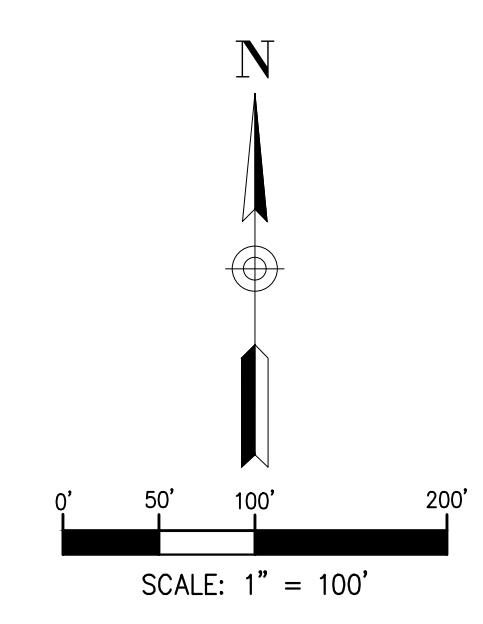
LEGAL DESCRIPTION:

PARCEL 1
 A PART OF THE SOUTHWEST 1/4 OF THE SOUTHEAST 1/4 OF SECTION 29, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF BOULDER, STATE OF COLORADO, DESCRIBED AS FOLLOWS: BEGINNING AT THE SOUTHEAST CORNER OF THAT PARCEL DESCRIBED IN DEED RECORDED NOVEMBER 26, 1971 ON FILM 753, UNDER RECEPTION NO. 998535, BOULDER COUNTY RECORDS, A POINT ON THE SOUTH LINE OF THE SAID SOUTHWEST 1/4 OF THE SOUTHEAST 1/4, FROM WHENCE THE SOUTH 1/4 CORNER OF SAID SECTION 29 BEARS SOUTH 89°47'40" WEST 824.38 FEET; THENCE ALONG THE EXTERIOR BOUNDARY OF SAID PARCEL RECORDED UNDER RECEPTION NO. 998535 AS FOLLOWS:
 NORTH 00°02'32" EAST, 819.00 FEET PARALLEL WITH THE NORTH-SOUTH CENTERLINE OF SAID SECTION 29, SOUTH 89°47'40" WEST, 265.93 FEET, PARALLEL WITH THE SOUTH LINE OF THE SAID SOUTHWEST 1/4 OF THE SOUTHEAST 1/4 AND NORTH 00°02'52" EAST, 351.00 FEET; PARALLEL WITH THE NORTH-SOUTH CENTERLINE OF SAID SECTION 29 TO THE NORTHEAST CORNER ON THE NORTH LINE OF SAID PARCEL RECORDED UNDER RECEPTION NO. 998535;
 THENCE NORTH 89°47'40" EAST, PARALLEL WITH THE SOUTH LINE OF THE SAID SOUTHWEST 1/4 OF THE SOUTHEAST 1/4, 112.63 FEET; THENCE SOUTH 01°05'07" EAST 62.24 FEET; THENCE SOUTH 04°22'33" EAST, 33.07 FEET; THENCE NORTH 52°25'07" EAST, 90.47 FEET; THENCE SOUTH 75°59'10" EAST, 293.55 FEET; THENCE SOUTH 00°02'52" WEST, PARALLEL WITH THE NORTH-SOUTH CENTERLINE OF SAID SECTION 29, 879.45 FEET TO A POINT ON THE SOUTH LINE OF THE SAID SOUTHWEST 1/4 OF THE SOUTHEAST 1/4, FROM WHENCE THE POINT OF BEGINNING BEARS SOUTH 89°47'40" WEST, 223.52 FEET;
 THENCE SOUTH 89°47'40" WEST ALONG THE SOUTH LINE OF SAID SOUTHWEST 1/4 OF THE SOUTHEAST 1/4, 223.52 FEET TO THE POINT OF BEGINNING.

AND
 PARCEL 2
 A PART OF THE SOUTHWEST 1/4 OF THE SOUTHEAST 1/4 OF SECTION 29, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF BOULDER, STATE OF COLORADO, DESCRIBED AS FOLLOWS: BEGINNING AT THE SOUTHWEST CORNER OF THAT PARCEL DESCRIBED IN DEED RECORDED ON NOVEMBER 26, 1971 ON FILM 753, UNDER RECEPTION NO. 998535; BOULDER COUNTY RECORDS, A POINT ON THE SOUTH LINE OF SAID SOUTHWEST 1/4 OF THE SOUTHEAST 1/4, FROM WHENCE THE SOUTH 1/4 CORNER OF SAID SECTION 29 BEARS SOUTH 89°47'40" W, 558.45 FEET; THENCE ALONG THE EXTERIOR BOUNDARY OF SAID PARCEL RECORDED UNDER RECEPTION NO. 998535 AS FOLLOWS:
 NORTH 00°02'52" EAST, PARALLEL WITH THE NORTH-SOUTH CENTERLINE OF SAID SECTION 29, 585.00 FEET; SOUTH 89°47'40" WEST, PARALLEL WITH THE SOUTH LINE OF THE SAID SOUTHWEST 1/4 OF THE SOUTHEAST 1/4, 186.15 FEET; NORTH 00°02'52" EAST, PARALLEL WITH THE NORTH-SOUTH CENTERLINE OF SAID SECTION 29, 585.00 FEET TO THE NORTHWEST CORNER OF SAID PARCEL RECORDED UNDER RECEPTION NO. 998535; AND NORTH 89°47'40" EAST, PARALLEL WITH THE SOUTH LINE OF THE SAID SOUTHWEST 1/4 OF THE SOUTHEAST 1/4, 186.15 FEET TO THE NORTHEAST CORNER ON THE NORTH LINE OF SAID PARCEL RECORDED UNDER RECEPTION NO. 998535;
 THENCE CONTINUING NORTH 89°47'40" EAST, 112.63 FEET;
 THENCE SOUTH 01°05'07" EAST, 62.24 FEET;
 THENCE SOUTH 04°22'33" WEST, 211.37 FEET;
 THENCE NORTH 89°41'33" EAST, 33.07 FEET;
 THENCE NORTH 52°25'07" EAST, 90.47 FEET;
 THENCE SOUTH 75°59'10" EAST, 293.55 FEET;
 THENCE SOUTH 00°02'52" WEST, PARALLEL WITH THE NORTH-SOUTH CENTERLINE OF SAID SECTION 29, 879.45 FEET TO A POINT ON THE SOUTH LINE OF THE SAID SOUTHWEST 1/4 OF THE SOUTHEAST 1/4, FROM WHENCE THE POINT OF BEGINNING BEARS SOUTH 89°47'40" WEST, 489.45 FEET; THENCE SOUTH 89°47'40" WEST, ALONG THE SOUTH LINE OF THE SAID SOUTHWEST 1/4 OF THE SOUTHEAST 1/4, 489.45 FEET TO THE POINT OF BEGINNING.

LEGEND

- PROPOSED CONDITION DRAINAGE BASIN BOUNDARY
- PROPOSED CONDITION DP BASIN BOUNDARY
- 5525 EXISTING CONTOUR
- PROPOSED BASIN IDENTIFICATION
- IMPERVIOUSNESS
- AREA (ACRES)
- PROPOSED SLOPE ARROW
- EXISTING BASIN IDENTIFICATION
- IMPERVIOUSNESS
- AREA (ACRES)
- PROPOSED FENCE



NO.	DATE	DR	TN	CHK	RH	APVD	RH

ENERTIA
 CONSULTING GROUP, LLC
 1515 MARKET STREET
 DENVER, COLORADO 80202

Pivot Energy
 1601 WEWATTA ST., #700
 DENVER, CO 80202

PIVOT ENERGY SOLAR FACILITY 48
 ON DEWIRE PARCEL
 BOULDER COUNTY, COLORADO
OVERALL DRAINAGE AREA MAP

VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. SCALE

DATE	MARCH 28, 2024
FILE	
DWG	
SHEET	1 OF 1

CASE NUMBER: _____

REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF ENERTIA CONSULTING GROUP AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF ENERTIA CONSULTING GROUP.

Calculation of Peak Runoff using Rational Method

Designer: Tom Nichols
 Company: Enerlix Consulting Group
 Date: 3/28/2024
 Project: Pwct Solar 48
 Location: Dewire Parcel

Version 2.00 released May 2017

Cells of this color are for required user input
 Cells of this color are for optional override values
 Cells of this color are for calculated results based on overrides

$$t_t = \frac{0.395(1.1 - C_2)\sqrt{L_t}}{S^{0.33}}$$

$$t_t = \frac{L_t}{60K\sqrt{S}} = \frac{L_t}{60V_t}$$

Computed $t_c = t_t + t_r$

$t_{\text{minimum}} = 5$ (urban)
 $t_{\text{minimum}} = 10$ (not-urban)

Regional $t_c = (26 - 17t) + \frac{L_t}{60(1.41 + 9)\sqrt{S_t}}$

Selected $t_c = \max\{t_{\text{minimum}}, \min(\text{Computed } t_c, \text{Regional } t_c)\}$

Select UDPCD location for NOAA Atlas 14 Rainfall Depths from the pull-down list OR enter your own depths obtained from the NOAA website (click this link)

2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	500-yr
0.77	1.04	1.29	1.69	2.04	2.43	3.48

1-hour rainfall depth, P1 (in) =

a	b	c
29.50	10.00	0.786

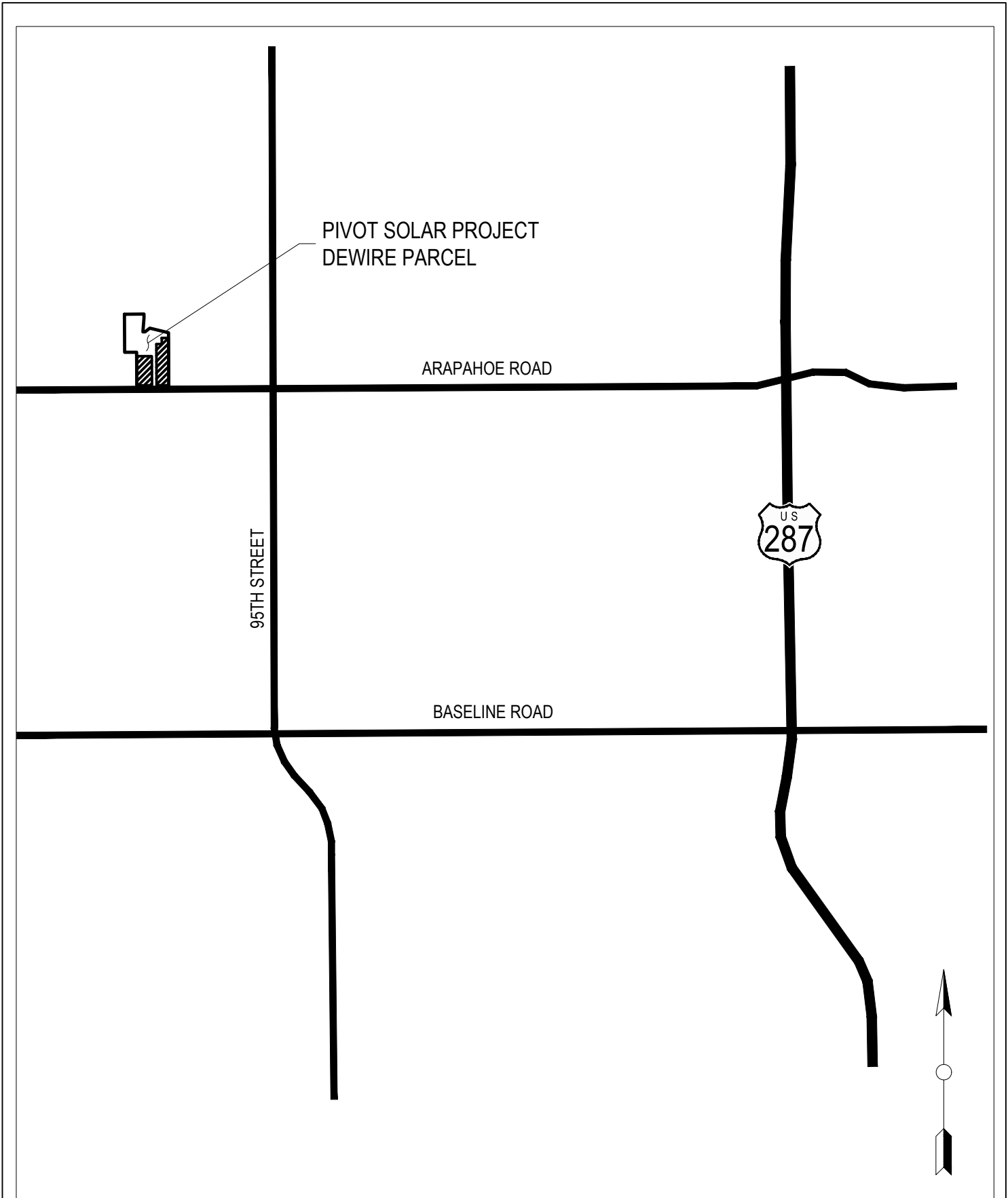
Rainfall Intensity Equation Coefficients =

$$I(n/hr) = \frac{a + P_1}{(b + t_c)^c}$$

$Q(cfs) = CIA$

Subcatchment Name	Area (ac)	NRCS Hydrologic Soil Group	Percent Imperviousness	Runoff Coefficient, C							Overland (Initial) Flow Time					Channelized (Travel) Flow Time					Time of Concentration			Rainfall Intensity, I (in/hr)							Peak Flow, Q (cfs)								
				2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	500-yr	Overland Flow Length L _t (ft)	U/S Elevation (ft) (Optional)	D/S Elevation (ft) (Optional)	Overland Flow Slope S _t (ft/ft)	Overland Flow Time t _t (min)	Channelized Flow Length L _c (ft)	U/S Elevation (ft) (Optional)	D/S Elevation (ft) (Optional)	Channelized Flow Slope S _c (ft/ft)	NRCS Conveyance Factor K	Channelized Flow Velocity V _c (ft/sec)	Channelized Flow Time t _c (min)	Computed t _c (min)	Regional t _c (min)	Selected t _c (min)	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	500-yr	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	500-yr
				X1	4.15	C	2.0	0.01	0.05	0.15	0.33	0.40	0.49	0.59	300.00			0.010	32.80	80.00			0.010	5	0.50	2.67	35.46	27.10	27.10	1.29	1.73	2.15	2.81	3.40	4.05	5.79	0.06	0.37	1.31
A1	4.15	C	3.1	0.02	0.06	0.16	0.34	0.41	0.50	0.60	300.00			0.010	32.51	80.00			0.010	5	0.50	2.67	35.17	26.88	26.88	1.29	1.74	2.16	2.83	3.41	4.06	5.82	0.09	0.44	1.39	3.95	5.78	8.38	14.44

Did not review. Will review on next round of review once imperviousness values are corrected.



1515 MARKET STREET
DENVER, CO 80202
(720) 250-8305

FIGURE 1 - VICINITY MAP
PIVOT ENERGY SOLAR FARM ON DEWIRE PARCEL
BOULDER COUNTY, COLORADO

DATE:	10/26/2023
SCALE:	1" = 5,000'
BY:	TN



Community Planning & Permitting

Courthouse Annex • 2045 13th Street • Boulder, Colorado 80302
 Mailing Address: P.O. Box 471 • Boulder, Colorado 80306
 303-441-3930 • www.BoulderCounty.gov

TO: Pete L'Orange
FROM: Ethan Abner, Long Range Planning Division
RE: Referral for SU-24-0002
DATE: June 26, 2024

The Boulder County Long Range Team has reviewed the provided referral materials for docket SE-24-0002 and has the following comments:

1. The applicant proposes an approximate 4-acre solar energy facility on a 13-acre parcel at 9215 Arapahoe Road where the current Principal use on the parcel is residential. Approval of a Ground-Mounted Solar Energy System of this size, in the Agricultural district and located on Agricultural Lands of National Importance, requires Special Use Review.
2. The applicant states that the 550-kW project will generate enough energy to power the equivalent of approximately 135 average Colorado homes annually, offsetting approximately 526 tons of CO2 emissions per year based on Xcel Energy's 2022 generation mix. The anticipated operational life of the facility is expected to be 21-41 years. Furthermore, the applicant notes that this facility is being evaluated as part of an agrivoltaics initiative at Pivot Energy. If agriculture is determined to be feasible at the site, Pivot will work with a local tenant farmer to cultivate low-growth vegetables and herbs underneath the rows of solar panels using water available onsite. If this is determined not to be feasible, agricultural activity may consist of sheep grazing onsite.
3. The entire parcel is classified as Agricultural Lands of National Importance. The Boulder County Comprehensive Plan ("the Comprehensive Plan") differentiates between Agricultural Lands of National, Statewide, and Local Importance. Agricultural Lands of National Importance are considered "Prime Farmland" based on criteria outlined in Public Law 95-87. These lands include the best physical and chemical characteristics related to soil moisture, irrigation and/or water availability, soil temperature, grade, and a variety of other factors.

The Comprehensive Plan recognizes that agricultural land is a non-renewable resource. Once public and private decisions are made that result in the conversion of agricultural land and/or water to non-agricultural uses, this vital resource is almost always irretrievably lost. The County finds itself in a period of transition which requires a thoughtful balancing of the goals and objectives in the Comprehensive Plan. On the one hand, it remains the intent of the Comprehensive Plan and attendant land use codes to promote and assist in the preservation of agricultural lands for agricultural and other rural purposes. On the other hand, the County has strongly committed to taking actions to reduce greenhouse gas emissions and promote clean, sustainable energy. If proper care is exercised, this project may be found to support the Comprehensive Plan's goals and objectives as they relate to the preservation of agricultural land and the promotion of sustainable energy sources.

4. The purpose of the objectives in the Agricultural Element of the Comprehensive Plan are to preserve the agricultural lands in the county and their related uses by whatever means available. The Agricultural Element of the Comprehensive Plan identifies the following goals and objectives that are relevant to this proposal:
- AG 1.01 Agricultural Land Preservation. It is the policy of Boulder County to promote and support the preservation of agricultural lands and activities within the unincorporated county, and to make that position known to all citizens currently living in or intending to move into this area.
 - AG 1.02 Diversity and Sustainability. The county shall foster and encourage varied activities and strategies which encourage a diverse and sustainable agricultural economy and utilization of agricultural resources.
 - AG 1.03 Agricultural Lands of Importance. It is the policy of Boulder County to encourage the preservation and utilization of those lands identified in the Agricultural Element as Agricultural Lands of National, Statewide, or Local Importance and other agricultural lands for agricultural or rural uses...
 - AG 1.11 Water Rights. The county shall encourage that water rights historically used for agricultural production remain attached to irrigable lands and shall encourage the preservation of historic ditch systems.

It has been demonstrated in other areas of the unincorporated county that certain agricultural activities and practices can coexist on the same parcel as solar energy systems. Staff support efforts to continue agricultural activity on this parcel in a manner that maintains its classification as Agricultural Lands of National Importance. Key factors for staff are irrigation of the parcel, that the installation of the system adhere strictly to best practices which minimize the negative impacts on soils, and that there be a plan for removal and restoration at the end of the system's life. If the parcel is irrigated and has associated water rights, staff advocate that the applicant or tenant farmer pursue agricultural activities that continue beneficial use of the water rights and avoid abandonment. Considering the prime nature of the agricultural land on this particular parcel, staff recommend conditions of approval to protect the water rights, the soils during installation of the system, the submission of a farm management plan, and a plan for removal and restoration.

5. There is a View Protection Score of 1.11 along Highway 7 to the east of the parcel and a score of 0.27 in front of the parcel along Highway 7. The Open Space Element notes that to the extent possible, the county shall avoid, minimize, or mitigate impacts on views from view protection corridors. The applicant's development proposal includes landscaping to screen the panels from the highway and adjacent property owners. Staff would also recommend that panels be limited to a maximum height of 10 feet.
6. The applicant notes that the proposed solar energy system will generate enough energy to offset approximately 526 tons of CO₂ emissions per year. Boulder County's 2023 Sustainability Plan notes that 24% of greenhouse gas emissions in Boulder County result from energy use in residential buildings. The Sustainability Element of the Comprehensive Plan acknowledges the impacts of greenhouse gas and climate change, with Goal 4 specifically identifying climate change as a matter of paramount concern. Goal 4 further recommends that, in accordance with Boulder County Commissioners' Resolution 2005-137, "the county shall identify and implement

actions... that will reduce Boulder County's contribution to total greenhouse gas emissions." Increasing the solar generation capacity in the unincorporated county will help meet this goal.

This concludes the Long-Range Team's comments. We look forward to continuing to provide feedback and input throughout this process.

Best,

A handwritten signature in blue ink, appearing to read 'Ethan Abner', with a stylized flourish at the end.

Ethan Abner, Long Range Planner II



Parks & Open Space

5201 St. Vrain Road • Longmont, CO 80503
303-678-6200 • POSinfo@bouldercounty.org
www.BoulderCountyOpenSpace.org

TO: Pete L'Orange, Community Planning & Permitting Department
FROM: Ron West, Natural Resource Planner
DATE: May 31, 2024
SUBJECT: Docket SU-24-0002, Pivot Solar Energy Facility, 9215 Arapahoe Road

Staff has reviewed the submitted materials, and has many comments/concerns on the proposal. The largest concern is that the array will be on Significant Agricultural Lands of National Importance, as mapped in the county Comprehensive Plan. This is equivalent to the federal designation of "Prime Farmland" -- having the best soils in the county, and irrigation water.

This may be the county's second commercial array exclusively on such prime farmlands – the other site is the well-known "Jack's Solar Garden." It is staff's opinion that the application's suggested agricultural use of the site is both incompletely discussed and likely unacceptable. The application does not, for example, explain if the array site is currently irrigated, and whether or not it will continue to be irrigated, the latter being key to achieving its full potential as nationally important lands.

The application states that, "IF determined to be feasible at the site, Pivot will work with a local tenant farmer to cultivate low-growth vegetables and herbs underneath the rows of solar panels..." (emphasis added). The "feasibility" of this is not discussed nor are parameters given on how it would be determined. If infeasible, which appears to be entirely up to the applicant's determination, then sheep grazing would occur. Agrivoltaics take a lot of planning and effort, and it is questionable if the applicant can accomplish this. The company has a new "agrivoltaics initiative," but there is no indication of what this entails.

On sheep grazing, the application states that, "A mix of forbs, fescues, and clovers will be planted on site." Yet later it states that, "Areas not to be cultivated will have native pollinator-friendly, low-growth vegetation..." It does not state how much of the leased acres would be cultivated (if found feasible), or, if not feasible, how much would be grazed by sheep and how much "extra" area planted in pollinator-friendly natives.

The two latter uses are mutually exclusive, and thus the sheep would have to be both fenced into the array area, but fenced out of the native plant area. Plantings for sheep – "forbs, fescues, and clovers" – are not native species, and should not be native species if sheep grazing is the intended use. Sheet 4 shows a native, plains Boulder County seed mix, presumably to be used for revegetation, but where? This mix does not contain any "pollinator-friendly" forb species; what forbs would be used?

Also unexplained is if sheep grazing occurs, would the range still be irrigated, which would significantly increase range production. If so, who would do it, how often, and how senior

are the ditch rights used on the site? If the site would not be irrigated, what would be done with the Agitator ditch rights (for 41 years) associated with the overall 13-acre parcel. Would these be sold, leased, lost/abandoned?

The application's statement that, "Sheep grazing helps to further establish plants via animal hooves integrating seeds into the soil" is a misunderstanding of the (Allan Savory) holistic method of grazing. First, sheep are notoriously hard on range plants, and graze "to the nub;" and second, if rest/rotational grazing is not instituted – requiring a lot of internal fencing and active labor -- then the plants never produce seed, which is what the hooves would theoretically incorporate. Staff is unclear if this is even feasible on, say, the 2 to 3 acres of the site that might be grazed.

In short, again, these options are not discussed in any meaningful way. And the option of simply turning to sheep grazing seems to be the easiest "solution," which would not be the best solution. The county needs to hold commercial solar developers to the "above and beyond" industry standards for agriculture that the application aspires to. These need to be Conditions of Approval, not just theoretical discussions.

Finally, the application states that there is Agitator Ditch water and an "existing well." The state water well permit should be submitted and reviewed for its allowable uses of groundwater – irrigation may not be part of that, often depending on how old the permit is.

Staff notes that the "after" photo in Figure 1 appears to show California poppy "at a local site." This is not native to Colorado nor is it a range plant for sheep. Staff also notes that the Narrative text states that there are 8 acres under lease, the application form shows a 6.77-acre "permit area," and the graphic of the array area appears to be about 4 acres. Which is it?

On possible sound impacts, staff questions whether a study by the Massachusetts Clean Energy Center (presumably completed in New England) is germane to our climate in Boulder County (page 2 of the Narrative). New England humidity and vegetation is considerably different than ours, and sound likely carries differently here.

The landscaping berms on Sheet 1 of the Landscaping Plan should not be approved. They "elevate" the root area of plantings, subjecting them to winter freezes, as well as increased evaporation in summer. Since there are no excavations proposed, would the berms be "mounded" from existing nearby topsoils, and thus remove topsoils from rather large areas? Or, would material for the berms be imported, and if so what kind of material, from what source, and how would the importation of weed seeds be prevented?

The landscape screening plantings are *Cornus stolonifera* and *Rhamnus smithii*. The first is native, but is a riparian species requiring large amounts of water. Are these areas to be irrigated – either initially for establishment, or permanently? Staff questions whether red osier dogwood would survive without irrigation. The *Rhamnus* is not native, but acceptable to use.

Development Report:

This report seems cursory and does not sufficiently go into the details of construction phases, locations, access/no-disturbance areas, methods, and BMPs to be employed. For example,

how would the “drive aisles, concrete pads, landscaping, and several hundred feet of medium voltage conduit be accessed?

It also needs to include a clause on work stoppage during wet soil or weather conditions. Machinery working on top of wet soils can *permanently* destroy soil structure, which cannot be recovered. Even with hammer-driven piles, the weight of machinery and trucks can destroy soil structure in wet conditions. This would be a permanent loss of nationally-significant agricultural lands, and cannot be allowed to occur. This work restriction needs to be a Condition of Approval and a stipulation in the contract.

“Before construction begins, Pivot pre-seeds a locally appropriate, soil-stabilizing mixture which prepares the site to minimize disturbance during construction and prevents the emergence of weeds.” What does this mean; when is it planted relative to seasons and construction, and what is the “locally appropriate” mix? This needs to be reviewed.

Why is a 8-foot fence proposed. The last Pivot Energy project in the county used a 7-foot fence. Staff recommends a 4-foot livestock fence at most, and preferably no fence at all. What is the purpose of the fence? Was Colorado Parks and Wildlife consulted for wildlife concerns, and what were their recommendations?

“The site will also be registered on DriftWatch.org to ensure aerial pesticides used anywhere nearby will not have any drift potential to affect the parcel.” What is entailed with this program; how is the farmer or landowner contacted?

Recommendations

All of the above questions need to be discussed, reviewed, and resolved before approval.



Public Works Department

Memorandum

Date: May 20, 2024
To: Peter L'orange plorange@bouldercounty.org
From: Jennifer Keyes, Boulder County Stormwater Quality Coordinator
Subject: SU-24-0002: Pivot Solar Energy Facility at 9215 Arapahoe Road

The Public Works Department Stormwater Quality Coordinator has reviewed the above referenced project, and has the following comments:

1. As a part of Boulder County's water quality protection and Municipal Separate Storm Sewer System Construction Program, a stormwater quality permit (SWQP) is required for the development of the 4.148 acres solar field. In our experience, a significant portion of the ground will be temporarily disturbed while constructing the H-pile foundations and installing the electric infrastructure.
2. This solar energy facility is within the municipal separate storm sewer system (MS4) urbanized area, which will require a permanent stormwater management checklist be submitted. The drainage letter is in the process of being reviewed to determine if runoff reduction measures will be required.

This concludes our comments at this time, but we welcome questions at stormwater@bouldercounty.gov and invite applicants to review the information on the Boulder County Stormwater Quality Permit website:

<https://www.bouldercounty.org/transportation/permits/stormwater-quality-permit/>

Claire Levy County Commissioner **Marta Loachamin** County Commissioner **Ashley Stolzmann** County Commissioner

Physical Location • 2525 13th Street • Boulder, Colorado 80304 • Tel: 303.441.3900
Mailing Address: P.O. Box 471 • Boulder, CO 80306 • www.BoulderCounty.gov



Public Health

Environmental Health Division

May 14, 2024

TO: Staff Planner, Land Use Department

FROM: Carl Job, Environmental Health Specialist

SUBJECT: SU-24-0002: Pivot Solar Energy Facility

OWNER: DEWIRE FAMILY TRUST

PROPERTY ADDRESS: 9215 ARAPAHOE RD

SEC-TOWN-RANGE: 29 -1N -69

The Boulder County Public Health – Environmental Health division has reviewed the submittals for the above referenced docket and has the following comments.

OWTS:

1. Boulder County Public Health (BCPH) issued a new permit for the installation of an absorption bed system on 07/27/1972. The permit was issued for an onsite wastewater treatment system (OWTS) adequate for a 4-bedroom house. Boulder County Public Health approved the installation of the OWTS on 01/08/1973.
2. The proposed solar array must not be installed on top of the absorption field. Heavy equipment should be restricted from the surface of the absorption field during construction of the solar array and other trenching and excavation activities to avoid soil compaction, which could cause premature absorption field malfunction.

This concludes comments from the Public Health - Environmental Health division at this time. For additional information on the OWTS application process and regulations, refer to the following website: www.SepticSmart.org. If you have additional questions about OWTS, please do not hesitate to contact HealthOWS@bouldercounty.org.

Cc: OWTS file, owner, Community Planning and Permitting



Community Planning & Permitting

Courthouse Annex • 2045 13th Street • Boulder, Colorado 80302
 Mailing Address: P.O. Box 471 • Boulder, Colorado 80306
 303-441-3930 • www.BoulderCounty.gov

MEMO TO: Referral Agencies
 FROM: Pete L'Orange, Planner II
 DATE: April 22, 2024
 RE: Docket SU-24-0002

Docket SU-24-0002: Pivot Solar Energy Facility

Request: Special Use Review for an approximately 4-acre solar energy facility on a 13-acre parcel at 9215 Arapahoe Road.
 Location: 9215 Arapahoe Road, located on the north side of Arapahoe Road approximately 0.3 mile west of the intersection of Arapahoe Road and N. 95th Street, in Section 29, Township 1N, Range 69W.
 Zoning: Rural Residential (RR) Zoning District
 Owner: Dewire Family Trust
 Applicant: Pivot Solar 48 LLC

Special Use Review / Site Specific Development Plan is required of uses which may have greater impacts on services, neighborhoods, or environment than those allowed with only Building Permit Review. This process will review compatibility, services, environmental impacts, and proposed site plan.

This process includes public hearings before the Boulder County Planning Commission and the Board of County Commissioners. Adjacent property owners and holders of liens, mortgages, easements or other rights in the subject property are notified of these hearings.

The Community Planning & Permitting staff, Planning Commission, and County Commissioners value comments from individuals and referral agencies. Please check the appropriate response below or send a letter to the Community Planning & Permitting Department at P.O. Box 471, Boulder, Colorado 80306 or via email to plorange@bouldercounty.gov. All comments will be made part of the public record and given to the applicant. Only a portion of the submitted documents may have been enclosed; you are welcome to call the Community Planning & Permitting Department at 303-441-3930 or email planner@bouldercounty.gov to request more information. If you have any questions regarding this application, please contact me at 303-441-1418 or plorange@bouldercounty.gov.

Please return responses by **May 27, 2024**.

We have reviewed the proposal and have no conflicts.
 Letter is enclosed.

Signed  PRINTED Jessica Fasick

Agency or Address CP&P Historic Review

Date 4/23/24

From: [Bolton - CDOT, Kellye](#)
To: [L'Orange, Pete](#)
Subject: [EXTERNAL] Docket SU-24-0002: Pivot Solar Energy Facility Comment
Date: Wednesday, June 5, 2024 12:02:23 PM
Attachments: [image001 \(3\).png](#)
[SU-24-0002PermitRequest \(1\).pdf](#)

Hi Pete,

I am with the Colorado Department of Transportation and am working on an upcoming project along Arapahoe Road. I have been in contact with a property owner along the corridor and have been informed that Pivot Solar Energy has submitted the attached Planning Application with Boulder County for proposed development at 9215 Arapahoe Road.

Here is a screenshot of the proposed ROW for the Segment B project which includes a multi-use trail and a little more widening to the north. On the west side of the parcel they expect 43' of additional ROW and on the east end they expect almost 60'. If you could try to keep their solar infrastructure out of that space that would be helpful so we don't have to relocate it in the future.

Please let me know if you have any questions or concerns.

Thank you,

Kellye



Kellye Bolton
Acquisition/Relocation Specialist, Right of Way



P 970.652.0478
10601 West 10th Street, Greeley, CO 80634
kellye.bolton@state.co.us | www.codot.gov | www.cotrip.org

From: [Morgan, Heather](#)
To: [L"Orange, Pete](#)
Subject: Fwd: Referral Packet for Docket SU-24-0002: Pivot Solar Energy Facility at 9215 Arapahoe Road
Date: Friday, May 3, 2024 3:35:50 PM
Attachments: [image002.png](#)
[image001.png](#)
[P-547182.png](#)

Pete,

Please see below & attached.

Thank you,
Heather Morgan

From: PlatReview <PlatReview@lumen.com>
Sent: Friday, May 3, 2024 2:55:04 PM
To: Morgan, Heather <hmorgan@bouldercounty.gov>
Cc: Taylor, Lisa <Lisa.Taylor@lumen.com>
Subject: [EXTERNAL] FW: Referral Packet for Docket SU-24-0002: Pivot Solar Energy Facility at 9215 Arapahoe Road

Requester,

Our engineer has reviewed this plat and their comments are: "After review, Lumen does not have facilities in potential conflict with the given plans. However, buried facilities are in the North Right-of-Way of Arapahoe Rd. between Wicklow St. and Kilkenny St. Please have all utilities in the area located to ensure safety and protection of all facilities. Drawing is also attached for reference."

If you require signatures or have any further questions, please contact the engineer at Lisa.Taylor@lumen.com to schedule.

Thank you!

The logo for LUMEN, featuring the word "LUMEN" in a bold, sans-serif font. The letter "U" is stylized with a blue horizontal bar above it. A registered trademark symbol (®) is located to the upper right of the word.

Lumen Plat Review
platreview@lumen.com

From: Hester, Renee <Renee.Hester@lumen.com>
Sent: Thursday, May 2, 2024 3:19 PM
To: PlatReview <PlatReview@lumen.com>
Subject: FW: Referral Packet for Docket SU-24-0002: Pivot Solar Energy Facility at 9215 Arapahoe

Road

Hello,

Please set up for Plat Review.

Thanks...

Renee Hester

Network Implementation Engineer

5325 Zuni St.

Denver, CO 80221

Tel: 720-738-2778

renee.hester@lumen.com

From: Morgan, Heather <hmorgan@bouldercounty.gov>

Sent: Monday, April 22, 2024 11:03 AM

To: !LongRange <longrange@bouldercounty.gov>; Historic <historic@bouldercounty.gov>; #AssessorReferral <AssessorReferral@bouldercounty.org>; #CAreferral <CAreferral@bouldercounty.gov>; Oehlkers, Jason <joehlkers@bouldercounty.gov>; Allshouse, Alycia <aallshouse@bouldercounty.gov>; Kelly, Allison <akelly@bouldercounty.gov>; Keyes, Jennifer <jkeyes@bouldercounty.gov>; BDRCO@xcelenergy.com; Donna.L.George@xcelenergy.com; jstruble@northernwater.org; bflockhart@northernwater.org; cdryden@bouldercolorado.gov; allaradd@bouldercolorado.gov; angie@dangrantbookkeeping.com; johnathonoppermann@gmail.com; Hester, Renee <Renee.Hester@lumen.com>; relocations <relocations@centurylink.com>; bonnellj@bouldercolorado.gov; CollinsB@bouldercolorado.gov; CassidyJ@bouldercolorado.gov; planning@lafayetteco.gov; Vanessa McCracken <bldrvalleyandlongmontcads@gmail.com>; submittals@udfcd.org; dora_puc_website@state.co.us; prevention@mvfpd.org; Atherton-Wood, Justin <jatherton-wood@bouldercounty.gov>; Moline, Jeffrey <jmoline@bouldercounty.gov>; Flax, Ron <rflax@bouldercounty.gov>; Frederick, Summer <sfrederick@bouldercounty.gov>; HealthWaterQuality-EnvironmentalBP LU <HealthWQ-EnvironBPLU@bouldercounty.gov>; Huebner, Michelle <mhuebner@bouldercounty.gov>; Sanchez, Kimberly <ksanchez@bouldercounty.gov>; Skufca, Erika <eskufca@bouldercounty.gov>; Transportation Development Review <TransDevReview@bouldercounty.gov>; West, Ron <rowest@bouldercounty.gov>

Cc: L'Orange, Pete <plorange@bouldercounty.gov>

Subject: Referral Packet for Docket SU-24-0002: Pivot Solar Energy Facility at 9215 Arapahoe Road

CAUTION: This email originated outside of Lumen Technologies. Do not click links or open attachments unless you recognize the sender and know the content is safe.

My apologies, the correct docket number is SU-24-0002: Pivot Solar Energy Facility at 9215 Arapahoe Road. Please [click here](#) for the referral packet.

Thank you,

Heather Morgan | Lead Administrative Technician



Planning Division | Boulder County Community Planning & Permitting

P.O. Box 471, Boulder, CO 80306 | Courthouse Annex—2045 13th St., Boulder, CO 80302

hmorgan@bouldercounty.gov | (720) 864-6510 | www.boco.org/cpp

My usual working hours are Monday-Friday, 7:30 a.m.-4:00 p.m.

From: Morgan, Heather <hmorgan@bouldercounty.gov>

Sent: Monday, April 22, 2024 10:09 AM

Subject: Referral Packet for Docket LU-23-0034: Pivot Solar Energy Facility at 9215 Arapahoe Road

Please [click here](#) for the referral packet for Docket **LU-23-0034: Pivot Solar Energy Facility at 9215 Arapahoe Road**.

Please return responses and direct any questions to [Pete L'Orange](#) by **May 27, 2024**. (Boulder County internal departments and agencies: Please attach the referral comments in Accela.)



Heather Morgan | Lead Administrative Technician

Planning Division | Boulder County Community Planning & Permitting

P.O. Box 471, Boulder, CO 80306 | Courthouse Annex—2045 13th St., Boulder, CO 80302

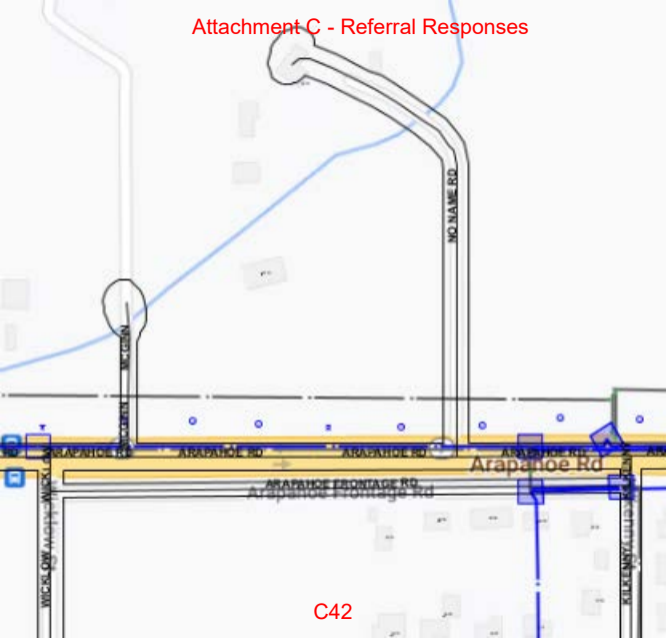
hmorgan@bouldercounty.gov | (720) 864-6510 | www.boco.org/cpp

My usual working hours are Monday-Friday, 7:30 a.m.-4:00 p.m.

*Boulder County has migrated all email to the .gov domain. Please update your contact lists to reflect the change from hmorgan@bouldercounty.org to hmorgan@bouldercounty.gov. **Emails sent to both .org and .gov addresses will continue to work.** This work is part of the migration to the .gov domain that began in July 2022 when the Boulder County website moved to www.bouldercounty.gov. This move to the .gov domain provides a higher level of cybersecurity protection.*

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Attachment C - Referral Responses



C42



Community Planning & Permitting

Courthouse Annex • 2045 13th Street • Boulder, Colorado 80302
 Mailing Address: P.O. Box 471 • Boulder, Colorado 80306
 303-441-3930 • www.BoulderCounty.gov

MEMO TO: Referral Agencies
 FROM: Pete L'Orange, Planner II
 DATE: April 22, 2024
 RE: Docket SU-24-0002

Docket SU-24-0002: Pivot Solar Energy Facility

Request: Special Use Review for an approximately 4-acre solar energy facility on a 13-acre parcel at 9215 Arapahoe Road.

Location: 9215 Arapahoe Road, located on the north side of Arapahoe Road approximately 0.3 mile west of the intersection of Arapahoe Road and N. 95th Street, in Section 29, Township 1N, Range 69W.

Zoning: Rural Residential (RR) Zoning District

Owner: Dewire Family Trust

Applicant: Pivot Solar 48 LLC

Special Use Review / Site Specific Development Plan is required of uses which may have greater impacts on services, neighborhoods, or environment than those allowed with only Building Permit Review. This process will review compatibility, services, environmental impacts, and proposed site plan.

This process includes public hearings before the Boulder County Planning Commission and the Board of County Commissioners. Adjacent property owners and holders of liens, mortgages, easements or other rights in the subject property are notified of these hearings.

The Community Planning & Permitting staff, Planning Commission, and County Commissioners value comments from individuals and referral agencies. Please check the appropriate response below or send a letter to the Community Planning & Permitting Department at P.O. Box 471, Boulder, Colorado 80306 or via email to plorange@bouldercounty.gov. All comments will be made part of the public record and given to the applicant. Only a portion of the submitted documents may have been enclosed; you are welcome to call the Community Planning & Permitting Department at 303-441-3930 or email planner@bouldercounty.gov to request more information. If you have any questions regarding this application, please contact me at 303-441-1418 or plorange@bouldercounty.gov.

Please return responses by **May 27, 2024**.

We have reviewed the proposal and have no conflicts.
 Letter is enclosed.

Signed *LuAnn Penfold* PRINTED LuAnn Penfold

Agency or Address Mountain View Fire District

Date 04-23-24



Right of Way & Permits

1123 West 3rd Avenue
Denver, Colorado 80223
Telephone: **303.571.3306**
Facsimile: 303.571.3284
donna.l.george@xcelenergy.com

May 17, 2024

Boulder County Community Planning and Permitting
PO Box 471
Boulder, CO 80306

Attn: Pete L'Orange

Re: Pivot Solar Energy Facility, Case # SU-24-0002

Public Service Company of Colorado's (PSCo) Right of Way & Permits Referral Desk has reviewed the special use plan for **Pivot Solar Energy Facility**. This appears to be a PSCo/Xcel Energy project; however, PSCo has an existing high-pressure natural gas transmission pipeline along the north side of the property. Therefore, should there be any activities in this area, an engineering review will be necessary via: [encroachment requests \(xcelenergy.com\)](https://www.xcelenergy.com/encroachment-requests).

As a safety precaution, PSCo would like to remind the developer to contact Colorado 811 for utility locates prior to construction.

Donna George
Right of Way and Permits
Public Service Company of Colorado dba Xcel Energy
Office: 303-571-3306 – Email: donna.l.george@xcelenergy.com

From: [Wufoo](#)
To: [LU Land Use Planner](#)
Subject: [EXTERNAL] Ask a Planner - Annmarie Jensen - SU-24-0002 - 2757 West White Oak Court
Date: Wednesday, April 24, 2024 5:34:41 PM

Boulder County Property Address : 2757 West White Oak Court

If your comments are regarding a specific Docket, please enter the Docket number: SU-24-0002

Name: Annmarie Jensen

Email Address: annmariejensencolorado@gmail.com

Phone Number: (720) 999-4765

Please enter your question or comment: I believe in the future there will be pressure to develop this property as it is immediately adjacent to the Lafayette City Limits. In the interest of keeping the rural agriculture character of this area, I wholeheartedly support this project.

Public record acknowledgement:

I acknowledge that this submission is considered a public record and will be made available by request under the Colorado Open Records Act.

From: [Carol Makowski](#)
To: [L"Orange, Pete](#)
Cc: [Carol Makowski](#)
Subject: [EXTERNAL] Docket # SU-24-0002 Pivot Solar Energy Facility
Date: Thursday, April 25, 2024 7:12:21 PM

We strongly object to building this facility so near to our lovely residential community. This is NOT an industrial area and that unsightly solar facility does NOT belong here. It will ruin the neighborhood's country ambiance, something that has attracted so many residents here. Please do not move forward with this project.

Carol Makowski
9007 Tahoe Lane
Boulder, CO

From: [Ask A Planner](#)
To: [LU Land Use Planner](#)
Subject: [EXTERNAL] Ask a Planner - Susan Inslee - SU-24-0002:Pivot Solar Energy Facility - 9215 Arapahoe Rd
Date: Friday, April 26, 2024 2:45:48 PM

Boulder County Property Address : 9215 Arapahoe Rd

If your comments are regarding a specific Docket, please enter the Docket number: SU-24-0002:Pivot Solar Energy Facility

Name: Susan Inslee

Email Address: sue.inslee@gmail.com

Phone Number: (303) 926-9193

Please enter your question or comment: Having attended the 3-14-24 virtual community meeting for this project it is very concerning that this resulting proposal does not conform to the agreed layout and preferences of the attendees at that meeting. The organizers agreed to put forth a proposal following their option that placed the solar arrays along the Southern most edge of property in a horizontal E-W configuration. This proposal however shows them running N-S along the Eastern edge of the property. This layout option was rejected by the majority of meeting attendees since it unduly maximizes the negative western visual impact to the majority of existing residents (as well as the walking trail) of the Cross Ridge neighborhood.

The solar array configuration of this proposal needs to be addressed and revised to minimize the western visual impact on the majority of residents per the last community meeting.

Public record acknowledgement:

I acknowledge that this submission is considered a public record and will be made available by request under the Colorado Open Records Act.

From: [Steven Arrivo](#)
To: [L"Orange, Pete](#)
Subject: [EXTERNAL] SU-24-0002
Date: Saturday, May 11, 2024 12:50:00 PM

This proposal, if allowed, sets a poor precedent as it allows rezoning for people to capitalize their open land - what would stop the 55 acres behind me from doing it? My property value would decrease as a result and I'm very much NOT ok with those types of good for one deals when it's bad for the rest of us.

Steve

--

Steve Arrivo
520-241-5994

Suzanne Bruch, M.D.
9191 Tahoe Ln
Boulder, CO 80301

May 21, 2024

Boulder County Community Planning and Permitting Department
PO Box 471
Boulder, CO 80306
Attention: Pete L'Orange

Regarding: SU-24-0002: Pivot Solar Energy Facility

Dear Boulder County Commissioners,

I am writing to express my concerns about SU-24-0002, a private corporation's proposed industrial solar array located at 9215 Arapahoe Rd. As the property owner of two adjacent parcels located at 9267 Arapahoe Rd. and 9191 Tahoe Ln., I am troubled by a large-scale, industrial project being developed next door (adjacent to two sides of my property) on a parcel zoned for rural residential use.

I attended both community meetings hosted by Pivot Energy (though I can assure you my invitation did not arrive in a USPS Priority Mail envelope as stated in their proposal). At the first meeting, a couple members from Pivot Energy did seem somewhat receptive to neighbors' feedback; whereas others were more dismissive. At the subsequent meeting, the community continued to support a layout, which had been proposed at the initial meeting. Unfortunately, this design was not the one submitted to the county for approval. Vague and/or contradictory responses to questions have increased my serious reservations about this proposal.

It is very difficult for me to trust a company that compelled an 87 year old man to put a 41 year encumbrance on his property despite objections from his son who also lives on the property. After speaking with Mr. Dewire's son, Brian Dewire, it is clear he has no idea that this lease extends for 21 years with 2 additional 10 year options, most likely at the discretion of Pivot Energy. As a psychiatrist who has performed hundreds of capacity evaluations, it is hard for me not to consider whether Mr. Dewire has legal decision-making capacity to enter into such a contract. As someone who has worked in the capacity of mandated reporter, this situation also raises concern about potential elder abuse, specifically financial exploitation. Obviously, I have a severe conflict of interest in this case and have not examined Mr. Dewire, but the Dewires are a very nice family, and I hope that someone at the county is able to ensure that Mr. Dewire understands the terms of the contract he signed and that he is acting in the best interest of his family trust.

At my request, Pivot Energy kindly arranged a site visit as I hoped that seeing a similar project would allay my fears. Unfortunately, it only magnified them. My primary concern is the noise.

While I expected some background humming from the inverters, the constant ratcheting of the panels as they track the sun was very loud and unpleasant. This grating sound was reminiscent of nails on a chalkboard. A Decibel X tool at the site recorded this sound in the 80's at a distance 20 to 30 feet away, exclusive of additional noise in the area which sent the total sound in excess of 90 dBA. I spend considerable time, day and night, with my animals at my barn, which is their primary residence. I have concerns about how the myriad noises generated from this project will impact my animals as well as my own peace of mind as spending time with my animals at the barn and in their adjacent paddocks is how I decompress, seeking solace in the serenity of nature. Horses and goats are prey animals with far more sensitive hearing than humans, allowing them to perceive sound at higher frequencies. Pivot Energy has not specified noise levels in terms of decibels or frequencies emitted by the various components of this project. They also have not specified whether this project will include VAR control (Voltage-Ampere Reactive), which would result in additional noise at night. I do not believe that a solar array of this magnitude in this proximity to my property would comply with Boulder County's noise ordinance, which limits noise at the property line to 55 dBA from 7 a.m. to 11 p.m. and 50 dBA from 11 p.m. to 7 a.m. According to OSHA, "exposure to high levels of noise can cause permanent hearing loss. Neither surgery nor a hearing aid can help correct this type of hearing loss. Short term exposure to loud noise can also cause a temporary change in hearing (your ears may feel stuffed up) or a ringing in your ears (tinnitus). These short-term problems may go away within a few minutes or hours after leaving the noise. However, repeated exposures to loud noise can lead to permanent tinnitus and/or hearing loss. Loud noise can create physical and psychological stress, reduce productivity, interfere with communication and concentration, and contribute to workplace accidents and injuries by making it difficult to hear warning signals. The effects of noise induced hearing loss can be profound, limiting your ability to hear high frequency sounds, understand speech, and seriously impairing your ability to communicate." OSHA requires employers provide ear protection if employees are exposed to sound levels greater than 85 dB for 8 hours. According to ISO, EPA, and NIOSH, average daily noise exposure in excess of 80 dBA results in excess risk of hearing loss. As property owner in a rural residential neighborhood, I am entitled to peaceable enjoyment of the premises. In no way should I be required to wear hearing protection to prevent hearing loss while working on or utilizing my property. I also cannot afford to place the hearing of my animals at risk. Prey animals depend on their hearing for survival, and we do have an ample predator population, which roams our property. When riding along streets (nearly everyday on my way to access open space) and multi-use trails, my safety depends on my horse hearing and correctly interpreting sounds, most importantly vehicular noise. If Boulder County were to approve this development, it must comply with the 55 dBA sound maximum without exception. Has Pivot Energy performed any type of sound analysis? Does Pivot Energy have a sound control plan? What additional measures is Pivot Energy willing to implement to ensure that this development complies with Boulder County's noise ordinance? How will Boulder County ensure compliance? Any failure to comply would need to result in immediate cessation of activity until such compliance can be achieved so that the health and safety of myself, my family, and my animals are ensured.

We are fortunate to live in an area with abundant wildlife, including a healthy population of raptors. We commonly see various species of hawks, owls, and even bald eagles on our property, sometimes even lucky enough to have them nest in our trees, and are concerned about how these wild animals may be impacted by this development.

When we purchased this property, obtaining homeowner's insurance was far more difficult than imagined, and that was before the Marshall fire. The companies we spoke with were particularly opposed to solar panels (ground or ceiling mounted) given the increased risk of fire danger. As such I am concerned about the insurability of our property given that our newly renovated barn would be located within 380 feet from the solar panels. Given the severity of our windstorms and proximity to this large industrial solar array, fire danger and the safety of my beloved pets are serious concerns. Does Pivot Energy have a fire management plan? What happens if my insurance carrier declines to continue coverage and I am unable to obtain homeowner's insurance?

Initially, I had hoped to replace the existing barn with a new, larger barn with an indoor exercise area and hay storage. Unfortunately, when we met with the planning department, such development was deemed too disruptive to our land despite having one house and a chicken coop on 55 acres. As such, we proceeded to renovate the existing barn at considerable expense, and I have used the field adjacent to the proposed solar array as my riding arena, so it is not entirely unused land as Pivot Energy would like to portray. We do not have any special footing or fencing so as not to disrupt our agricultural use. Furthermore, we do not have any intrusive lighting, so all equestrian activities take place during daylight when the solar array would also be at its loudest. If a 7500 to 10000 sq foot barn would occupy too much floor area on 55 acres of land, I fail to see how a 4+ acre solar operation (lease for 8 acres) on 13 acres is less disruptive. While a glare study was completed for the FDA, I have not seen a glare study assessing impact on neighboring properties or CO-7. Concentrated solar glare from solar collectors shall not be directed toward my property at any time as it would interfere with my peaceable enjoyment of the premises.

Our property and the property at 9215 Arapahoe Rd. have been designated historic agricultural lands of national importance. Installing greater than 4 acres of solar panels is not consistent with this designation nor with the designation of rural residential land use. I am floored that 8 foot high fencing and 4+ acres of 15 foot tall solar panels spanning approximately **a quarter mile** in length only requires a 7 foot setback (roughly the length of my shower or half of an average car length). There is also concern about how shading from this development will affect our own solar access, shading our hay crop and negatively impacting production. We continue to hay our fields to support our own livestock as well as cows and horses in our community. As the vegetation associated with this project will directly impact our fields, we would like to ensure that our haying production is not compromised in any way--this includes potentially noxious plantings which could prove harmful to horses and livestock as well as any encroachment of leaves and debris from any trees or plantings. Furthermore, we question whether Pivot Energy will be able to obtain sufficient water to meet their proposed landscaping and sheep keeping needs, which are vital to the aesthetics of this development. We also have water rights to the

Agitator and McGinn ditches. Unfortunately, given that so many water rights to these ditches have been transferred to the City of Boulder for use by the Flatirons golf course, which stores water in cisterns, our actual water availability is quite limited, typically not more than 6 to 8 weeks per year, given the low flow east of 75th. Additionally the well at 9215 Arapahoe is permitted (Permit number 63042-) for "Household use only." As such, it would not extend to the industrial and agricultural endeavors proposed by Pivot Energy. Pivot Energy needs to submit a more detailed landscaping plan, including specific plantings. Other jurisdictions ensure aesthetics with regulations such as trees and shrubs being 75% of desired height at time of planting or within 3 years of planting. Maintaining landscaping needs to be an enforceable condition for this solar farm. Ideally, Boulder County would require a bond sufficient to carry out maintenance for the duration of this development..

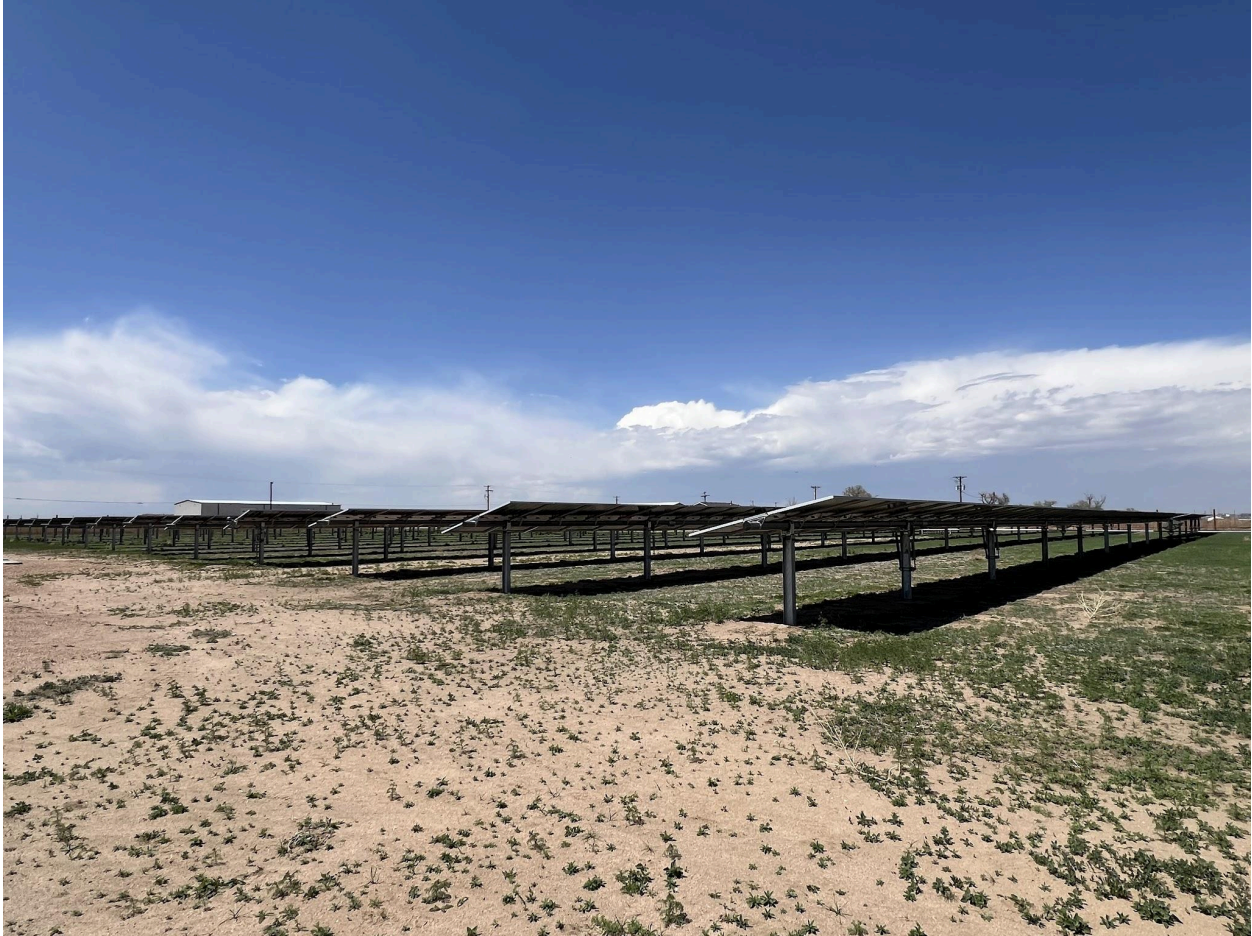
Granting a permit for a large, industrial solar operation on a rural residential property with historical agricultural lands would be disruptive to our community and negatively impact our property values. Nearly the entire western boundary of our 9267 Arapahoe parcel would be bordered by 15 foot high solar panels, creating significant visual and auditory disruptions, severely depreciating our property value. Furthermore, this project would set a dangerous precedent for large scale industrial development on rural residential properties in our community. Pivot Energy is leasing 8 acres of a 13 acre parcel. That is a significant amount and also suggests plans for a proposed expansion (as does the 1 MW transformer for a 500 kW project) as they are currently doing in La Salle. This project proposes 8 foot fencing along the minimum required setbacks, but my understanding is that setbacks of 7 ft and 15 ft are minimums for a 6 foot fence, and that these setbacks typically do not account for a large, noisy, industrial solar operation. Furthermore, we already have a significant problem with trespassing (and dumping) on our property and fear that construction of this "attractive nuisance" will only perpetuate this criminal activity. Trespassers have significantly threatened the safety of my animals, bringing their own animals on our property and opening gates, freeing our livestock at times, necessitating additional security measures including padlocks and cameras. The curiosity in solar arrays is so great that Jack's Solar Garden even offers tours. If this development proceeds, I would expect some sort of protection to ensure that no trespassing takes place on my property during or after development (as I suspect it already has given fluorescent spray painting and flags that were previously placed on our property, and certainly not at our request or through Colorado 811). I am also concerned about what recourse would be available to me, as a neighboring property owner, should this development stray from that which is proposed and permitted and encroach in any way. Installers on another project in our community decided to relocate the project after HOA and county approvals with no adverse consequences.

I am most appreciative of Pivot Energy for accommodating my request for a site visit. They selected Pivot Solar 23 at 22010 Co Rd 35 in La Salle as a comparable project. While the vegetation at that site looked nothing like the beautiful flowers depicted in their submitted application, that was not my primary concern. (Please see attached photos. Unfortunately, I cannot attach the sound.) Unlike 9215 Arapahoe Rd., that location was well-suited for a project of this scope. It was developed on Weld County land in a non-residential area next to a busy

highway and actively used train tracks. Even significant noise from the highway and a passing train did not drown out the noise from the inverters and ratcheting solar panels. Furthermore, Pivot Solar 23 is a 500kW AC system, whereas the proposal for the project next door to me will allow for double this capacity at “up to 1 MW solar facility with approximately 2,000 tracking solar panels 15 ft in height.” A solar array of this magnitude in no way compares to typical stationary solar panels installed on other residential properties in our neighborhood. Stationary solar panels would be far more amenable. This facility touts energy production to power 134 homes, and it will sound like that. In a way, this project is the equivalent of building 134 homes on 4 acres of land at a density of 1 home per 1300 sq ft in a rural residential neighborhood. Before you approve construction of this proposed project at 9215 Arapahoe, I would encourage you to visit Pivot Solar 23 during peak daytime hours so that you too can fully understand the impact that this project will have in a residential neighborhood in Boulder County. I would also encourage you to consider the layout of this project in conjunction with the state’s plan to widen CO-7. I have already begun discussions with Kellye Bolton at the CO DOT to better understand how our property will be impacted. While Pivot Energy’s commitment to sustainability and charitable giving are noteworthy, they should in no way cloud your understanding that SU-24-0002 is allowing private, for-profit corporations (Pivot Energy in conjunction with Excel Energy and “a large local offtaker”) to construct an industrial, for-profit development in a rural residential neighborhood. Pivot Energy would like to highlight that they will be supporting the community by paying taxes, but please note that we have already paid in excess of \$30,000 to Boulder County this year in property taxes alone, and have yet to see how this Pivot Energy project will benefit us in any way. I support Boulder’s commitment to sustainability but not at the expense of disrupting established communities. Such development belongs in more appropriate industrially zoned areas or on county-owned lands. I strongly oppose SU-24-0002.

Sincerely,

Suzanne Bruch, M.D.









From: [Matt Ralston](#)
To: [L'Orange, Pete](#)
Subject: [EXTERNAL] SU-24-0002
Date: Thursday, May 23, 2024 7:52:45 AM

Hello Pete,

I'm writing to you about docket # SU-24-0002: the development of a solar farm at a property off Arapahoe west of 95th.

Let me start by saying I am a strong proponent of alternative energy sources and am highly in favor of solar, wind, geothermal, hydro and others! But not here!

This project is a misuse of alternative energy development in a localized residential area where none of the energy will benefit those residents. In fact, it will almost surely devalue many of the adjacent properties, especially those to the east of the property. I have lived in Boulder County since the 90's and have seen all the changes and development in the area we all love so much for its outdoor spaces, trails and views. This project moves one step closer toward taking more of that away from us.

Specifically:

- Why do people buy and pay premiums for houses in CO? For the views. The Cross Ridge neighborhood at 95th and Arapahoe will be significantly impacted by loss of views.
 - A solar field will be in direct view and will devalue not only the west facing houses, but all the houses in the neighborhood.
- None of the energy generated will be used locally. Why put it here if it won't be used here.
- There are plenty of other spaces in and around the county that can be used for this purpose, but are not located in a dense suburban area. Many/most houses have panels on their roof already (which is the perfect and appropriate placement for solar).
- Why must we continue to eliminate natural areas (private or public) for energy development when the focus should be on utilizing already developed spaces: homes, commercial properties, strip malls, parking lots and other already occupied land. For this project, the land is privately owned, but is largely a natural area frequently occupied by wildlife.
- We have many friends living adjacent to solar fields in Louisville who we have asked about the impacts. They deal with light reflection daily, with some severe reflection issues in shoulder months. They are noisy. They take away free areas for native species to roam freely.
- Impact to wildlife. There are nesting birds in the area: eagles, hawks, and many others. Fox build their dens in the area, as do coyote. Bear and bear cubs are seen passing through seasonally. More native vegetation will be lost by covering the ground with large machine panels.

Please do not approve this development. It is a misuse of an Ag property law, and a

desperate move by a landowner in need of money who has aligned with a company that has no vested interest in our area. There are other, more suitable spaces away from tightly developed residential areas that are a much better fit for this project. Not every homeowner should be entitled to make a selfish decision on their land that negatively impacts everyone around them.

Thank you for reading and listening. I know I speak for many in this area that are both proponents of solar energy, and also against this project.

Best regards,

Matt Ralston

Matt.jacket1@gmail.com

720-480-9900

From: [Matt and Becky Ralston](#)
To: [L"Orange, Pete](#)
Subject: [EXTERNAL] Docket SU-24-0002
Date: Thursday, May 23, 2024 12:43:09 PM

Hello -

I would like to comment on the 4 acre solar farm that is being proposed to the west of my home. My husband and I have lived in our home which borders this proposed farm for 8+ years and in the neighborhood (in another house) for another 10+ years. A primary reason that we bought in this neighborhood and our house bordering this farmland is because of the magnificent views, wildlife that we see everyday, and the path that is the pride of our community.

Prior to purchasing our current home, I did extensive research into land use options for the property to the west, knowing that it was privately-owned agricultural land. Since that time, Boulder County has changed it's policies to allow high density solar farms which (in my opinion) are not in line with agricultural use. Solar farms, while a very important energy solution, do not belong so close to homes and/or on land zoned agricultural.

Furthermore, Pivot Solar energy conducted two neighborhood informational and feedback meetings which were well attended, and many residents gave feedback on how best to mitigate the impact to our quality of life in our neighborhood, line of site, path etc. Of note, it does not appear that the suggestions to lessen impacts were included in this proposal. I was told by their team that there would be no concerns with local impact, but have heard greatly conflicting reports on noise volumes, size/height and glare during certain times of the year. I am concerned with how this site will be monitored by Boulder County for the "pollinator gardens" and other natural landscaping will be maintained. What is planned for non compliance (noise, landscaping) for this site?

I am unclear why Boulder County now allows high density/high impact solar farms when our sacred open spaces and farmland is disappearing every day. A solar farm of this size and magnitude belongs in a more industrial area, in a parking lot, or on top of a large building.

Please consider the impact to our natural and sacred spaces, wildlife and quality of life for those who live very close by.

Thank you -
Becky

From: [Jeff Happoldt](#)
To: [L'Orange, Pete](#)
Subject: [EXTERNAL] Docket SU-24-0002: Pivot Solar Energy Facility
Date: Sunday, May 26, 2024 11:26:44 AM

Hi Pete L'Orange,

This project is clearly an industrial endeavor, well above what one would consider a typical residential undertaking. It is unwise to allow such large scale projects on land zoned rural residential. This raises concerns as to what might be allowed next, having set such a precedent. The zoning does not allow these landowners to add additional dwellings, and yet they can install an industrial sized power-generation facility. Doesn't make sense. We have many ordinances, including set-backs and noise levels. Can Boulder County assure these will be followed if the project progresses, and once operational? Please reconsider granting this request.

Jeff Happoldt

From: [Laura Rhea](#)
To: [Boulder County Board of Commissioners](#); [L'Orange, Pete](#)
Subject: [EXTERNAL] SU-24-0002: Pivot Solar Energy Facility Concerns
Date: Sunday, May 26, 2024 11:13:22 AM
Attachments: [FD96CF53-8D9D-40BB-81D1-FD8782732381.png](#)

Brian and Laura Rhea
9090 Tahoe Lane
Boulder, CO 80301

May 26, 2024

Boulder County Community Planning and Permitting Department
PO Box 471
Boulder, CO 80306
Attention: Pete L'Orange

Regarding: SU-24-0002: Pivot Solar Energy Facility

Dear Mr. L'Orange, Planning Committee, and Boulder County Commissioners Levy, Loachamin and Stolzmann,

We are writing to express our concerns and opposition to the proposed Pivot Solar Energy Facility (Docket SU-24-0002) at 9215 Arapahoe Rd. As residents living nearby at 9090 Tahoe Lane, we are deeply troubled by the significant implications this industrial project poses for our rural residential community.

Our neighborhood is defined by its rural, agricultural landscape, and the introduction of an industrial solar facility is entirely incongruent with the area's zoning and established aesthetic. In fact, the CO 7 Multimodal Corridor plans specifically highlight this area of CO 7 (Segment B) as rural. These transportation plans are being developed with a clear intention to preserve this rural character, and yet, this permit does the exact opposite. (See attached image for reference)

The proposed Pivot Solar Energy Facility poses potential environmental risks that extend beyond the immediate vicinity of the project site. Firstly, the installation of such an array of solar panels threatens to disrupt the habitats of the hawks, bald eagles, and even recently, osprey that we're fortunate to see regularly in our neighborhood. The disturbance caused by large construction operations and the ongoing presence of the facility would upset the biodiversity that our community – and Boulder County at large – deeply values.

We are also suspicious of Pivot Energy's ability to deliver on their plans for crop production or sheep grazing. It sounds good on paper, but we fear the reality of the project will be a

blight on an otherwise serene area of Boulder County. It seems Pivot Energy hasn't done even the most basic research as they incorrectly assume that the onsite well (which is permitted only for residential use) is an option for water.

This is one of several instances of Pivot presenting an option that sounds like a no-impact offset, but the likely reality of this industrial project imposing itself on a rural setting will be nothing like the idyllic vision they present in order to gain this approval.

The construction of this project will also inevitably increase traffic, leading to road wear and potential safety issues on a stretch of CO 7 that is already over-burdened. The last thing CO 7 from 95th toward 75th needs is a construction project placing additional unnecessary strain on a crowded, two-lane rural road.

This is simply the wrong project, for the wrong use area, at the wrong time. Boulder County zones properties for a reason and to ignore the zoning guidelines sets a dangerous precedent.

Our neighbors were not allowed to expand their barn because it was deemed too disruptive to their 55 acres of primarily open space. It would seem that whatever measures were used to disqualify that development would apply to Pivot Energy's application, and then some, given the scale of this project.

Pivot Energy outlines a number of assurances in the permit that sounds good on paper- what recourse do the surrounding residents have if they do not live up to their promises? Who will hold them accountable once the project is complete?

Finally, the process of community engagement by Pivot Energy has been insufficient and disingenuous. The changes in project plans without proper re-engagement of the community and the lack of transparency in addressing our feedback have left many of us skeptical of the developers' commitment to genuinely considering our concerns.

Given these points, we strongly urge the Boulder County Planning Commission to reconsider the approval of this project. It is essential that development within our county aligns with the values and needs of its residents, preserving the character and environmental integrity of our community.

Thank you for considering our concerns. We are eager to see them reflected in the decisions made regarding this project.

Sincerely,
Brian and Laura Rhea



75th Street to 95th Street Section Two | Rural

Three sections emerged based on differing characteristics, needs, and anticipated growth.

- Section One: Urban to rural
- **Section Two: Rural**
- Section Three: Urban development



May 22, 2024

Via E-Mail

Boulder County
Community Planning & Permitting Department
P.O. Box 471, Boulder, Colorado 80306
Attn: Pete L'Orange

Re: Docket SU-24-0002 – Individual Response Letter

Dear Mr. L'Orange:

We're writing in response to the letter sent by Boulder County Community Planning & Permitting in regard to Docket SU-24-0002, the proposed Pivot Solar Energy Facility. My wife and I live at 9175 Arapahoe Road, directly west of and sharing a property line with the proposed project site. We've remained engaged with the applicant, Pivot Solar 48 LLC, when provided the opportunity leading up to the application submittal. Although, in principle, we have no objection to a solar energy project in our community, the application fails to demonstrate compliance with the Special Review approval criteria provided at Boulder County Land Use Code Section 4-601.A.

The application states intentions to mitigate the proposed project's negative impacts on the community, but in order to comply with the Special Review approval criteria, the final approved zoning document must provide for objectively verifiable, in some cases measurable, and enforceable commitments to address the concerns outlined below. Therefore, the approval must be conditioned upon required performance standards, paired with an ongoing monitoring and compliance verification protocol, relating to (1) the decibel level at the project site, (2) the type, size, and viability of any landscaping, trees and groundcover, (3) legal rights to use sufficient water for the purpose of sustaining all proposed landscaping, trees and ground cover and (4) a functional on-site fire suppression system specifically designed to mitigate solar infrastructure hazards.

As responsible neighbors in a rural residential community, the applicant must address the below outlined issues, in enforceable commitments, for the application to meet the Special Review approval criteria.

1. **Fire Hazard Mitigation.** Boulder County Land Use Code ("Code") Section 4-601.A.10 requires the use not be detrimental to the health, safety, or welfare of present or future inhabitants of Boulder County. In response to this criteria, the applicant stated that the "proposed project will enhance the health, safety, and welfare of the present and future inhabitants of Boulder County by creating clean, sustainable, and emission-free energy for decades to come." While solar energy can provide such benefits, the safety concern of fire risk remains, and which outweighs benefits if not properly mitigated. Currently, the proposed project does not demonstrate a commitment to safety for present or future inhabitants due to the risk of fire without mitigation measures in place, particularly with respect to fire suppression and containment.

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We understand that solar farm fires are rare but possible. As we are all keenly aware from the Marshall Fire, a single event can become catastrophic particularly in areas where residences are present. Here, the risk can be mitigated, and we request the applicant take any feasible measures to do so.

Fire risk can be reduced through the following:

- a. Providing Boulder County with a fire protection plan prior to the proposed project moving forward;
- b. Integrating heightened protective infrastructure at both the design/construction phase (e.g., all electrical equipment placed on concrete pad with concrete border and protective concrete walls), as well as frequent, continued maintenance of all infrastructure;
- c. Constructing fire protective fencing surrounding the solar array to contain a fire event;
- d. Incorporating a real-time fire notification and fire suppression system that will provide immediate emergency response and requiring multi-year inspecting and testing by the applicable Boulder County department or Fire Protection District; and
- e. Sufficiently irrigating and maintaining all landscaping, trees and groundcover to ensure low-risk of flare up or fire spread.

On item e., water availability to serve the project site is essential for both fire mitigation and to satisfy proposed landscape buffering commitments the applicant has made. The application notes that the applicant will use “water already available onsite via the Agitator Ditch and an existing well.” The availability of water in the amount and for the particular use proposed by the applicant is a critical element of this application and whether or not the application can meet the Special Review criteria. Therefore, the applicant must show proof of availability, access to, and permission to use the required water at the project site before this application proceeds. Both sources identified in the applicant’s permit request were problematic. McGinn Ditch (the ditch going through the property – Agitator is further east) flows for approximately 12 weeks of the year. If rights to that ditch could be acquired, it wouldn’t be sufficient for the site plan proposed. Use of the on-site well should reasonably require documentation that the well can be used for the purposes proposed (at present, that does not appear to be the case.) Once the applicant can implement enforceable fire hazard mitigation, suppression, and response commitments, the proposed use will pose less threat to the safety of present and future inhabitants.

Noise Pollution and Visual Impacts. Code Section 4-601.A.8 requires the proposed use not cause significant air, odor, water, or noise pollution. Additionally, Code Section 4-601.A.9 requires the proposed use be adequately buffered or screened to mitigate any undue visual impacts of the use.

- a. *Noise Pollution* - We appreciate the time the applicant took to discuss possible layouts of the site with the neighbors, which provides some level of mitigation with respect to our concerns, but further attention is required to comply with the applicable criteria. Solar panels are generally quiet, but do produce a consistent clicking noise, similar to that of gears changing, as the panels track sunlight throughout the day. We attended a site visit to an existing Pivot project at 22010 CR 35, La Salle, CO 80645 on April 24, 2024 (see Exhibit A), where this noise was evident and exceeded 80 dB in close proximity. Although the proposed project is

designed with buffer space to reduce the potential for these noise levels, we're seeking assurance that noise levels will remain consistent with the existing rural residential levels that we and our neighbors chose our properties to enjoy. Therefore, we request the applicant conduct a noise study to determine the existing baseline, measured at the project site's property lines, and implement an enforceable commitment to maintain that noise level during all hours of the day as evidenced by periodic monitoring.

- b. *Visual Impacts* - As noted above, proof of availability, access to, and permission to use the required water at the project site will determine whether the applicant can meet visual buffering commitments. We're hesitant to rely on the verbal commitments made thus far based on the lack of water availability proof in the application, as well the current state of the existing Pivot project, which shows a much bleaker vegetative and landscaping reality than the lush photos included at page 3 of the applicant's narrative (see Exhibit A). While we understand that the existing Pivot project may not have the same commitments in place as the proposed project, it was concerning to see, and we would need assurance that the proposed project would meet a much higher standard to maintain compatibility with the surrounding area and mitigate visual impacts. Additionally, we understand that the project site may require watering to minimize dust and erosion, in order to maintain soil health and mitigate project impact on adjacent neighbors.

Lastly, during the December 6, 2022, Board of County Commissioners hearing which considered Pivot's Energy's project at 5980 N. 79th Street, the applicant representative, Kyle Sundman, stated: "when we think about landscaping and screening it is always on the inside of our fence." The proposed project landscaping plan shows all proposed planting berms and vegetative buffer on the outside of the proposed fence line, so we would appreciate confirmation and clarity of the applicant's intent. Visual impact mitigation must include an enforceable commitment to provide landscaping and maintenance plans that include the type, size, number of plantings, maturity rate, and associated watering requirements to maintain all landscaping, trees and groundcover, as well as the maintenance schedule.

3. Comprehensive Plan Adherence. Code Section 4-601.3 requires compliance with the Comprehensive Plan. The Comprehensive Plan highlights eight guiding principles, one of which is to "maintain the rural character and function of the unincorporated area of Boulder County by protecting environmental resources, agricultural uses, open spaces, vistas, and the distinction between urban and rural areas of the county." The Comprehensive Plan acknowledges that agricultural land is a non-renewable resource, almost always irretrievably lost following conversion to another use. Boulder County classifies agricultural lands by agricultural productivity in the order of significance, as "Lands of National, Statewide and Local Importance," as well as "Other Agricultural Lands." The Comprehensive Plan states that "it is the policy of Boulder County to encourage the preservation and utilization of those lands identified in the Agricultural Element as Agricultural Lands of National, Statewide, or Local Importance and other agricultural lands for agricultural or rural uses" (Policy AG 1.03). The project site falls within the classification of Lands of National Importance. Therefore, staff should "consider potential impacts on existing adjacent agricultural uses and shall use its regulatory authority to mitigate those impacts which would be detrimental to the continuation of existing agricultural operations and activities and the establishment of new agricultural operations and activities" (Policy AG 1.04). The proposed project will remove the project site's agricultural productivity for at least the lease term, which is 21 years with two additional ten-year option periods. Although the applicant's narrative mentions that the applicant is evaluating crop production onsite as

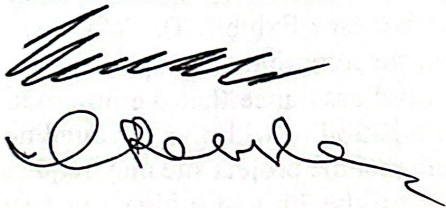
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a secondary use, the applicant's inability to provide proof of water at this time calls that possibility into question and the application provides no enforceable commitment to crop production. Therefore, the measures discussed in items 1 and 2 above must be enforced in order to at the very least mitigate impacts on the existing adjacent agricultural lands to ensure no further loss. Finally, the applicant should provide a plan for decommissioning of the use and restoration of the project site, once the proposed project ceases.

We appreciate staff's review of this application and would be happy to discuss our concerns further.

Sincerely,

Fred and Isabelle Kessler

The block contains two handwritten signatures in black ink. The first signature is a cursive name, likely Fred Kessler, and the second is another cursive signature, likely Isabelle Kessler. Both are written in a fluid, connected style.

From: [George Philips](#)
To: [L'Orange, Pete](#)
Subject: [EXTERNAL] Docket SU-24-0002 Pivot Solar Farm
Date: Monday, May 27, 2024 9:47:51 PM

From: George and Deborah Philips
Date: May 27, 2024
To: plorange@bouldercounty.gov

Subject: Docket SU-24-0002 Pivot Solar Farm

Dear Pete L'Orange and the Planning and Development Review Team

We are writing to inform you of our concerns with the proposed Solar Farm SU-24-0002. We live in the neighborhood immediately east of this proposed project. Our concerns include but are not limited to:

- Excessive noise levels from the movement of the panels rotating and the inverter systems.
- Fire Risk Management, what has been outlined as the fire management elements of this installation
- Environmental impact of disposing these panels and related costs at the end of their service life.
- What bonds have been posted by this Company to provide financial resources when they are either not effectively managing and maintaining this system and as a recourse when and if they go bankrupt or the system is no longer financially viable, due to many possible scenarios.
- Adverse effect on wildlife
- Loss of farmland / 'open space' immediately next to our residential neighborhood and a family run farm.
- 15 foot height of these rotating solar panels obstructing a view of our mountains.
- the Pivot Solar 23 Project in La Salle is similar, though smaller, than this proposed project and it is quite an industrial scale project. It is not appropriate for the proposed location.
- This project will have an adverse effect on our quality of life and the value of our property.
- What are the strategies, oversight and available recourse to address the above concerns and keep Pivot Solar accountable for executing this project in a manner consistent with approved plans?
- We are looking to you to provide the leadership and governance to keep our lives here from becoming further damaged by entities in the pursuit of profit, without being held accountable and without having provided financial resources in the form of bonds, to pay for a project that may not go as planned. We've already seen examples of this, such as with mining and fracking operations.
- This is your jurisdiction and we are counting on you to do your very best and to be responsible custodians of our beautiful Boulder County.

Thank you for your attention,

George and Deborah Philips

Schuyler Bailey
9119 Arapahoe Road
Boulder, CO 80303

May 27, 2024

Boulder County Community Planning and Permitting Department
PO Box 471
Boulder, CO 80306
Attention: Pete L'Orange

Re: SU-24-0002: Pivot Solar Energy Facility

Dear Boulder County Commissioners,

I am writing in response to Docket #SU-24-0002, a proposed 4-acre solar array at 9215 Arapahoe Road. Our family lives at 9119 Arapahoe Road—within view of the proposed facility—and we're concerned about how an industrial installation of this type would disrupt the character of the neighborhood and its historical agricultural nature. While we are supporters of alternative energy, 4 acres of solar panels in the midst of historic farmland seems inconsistent with the fabric of the community. Approving this project would also set a bad precedent for industrial development on rural residential properties in Boulder County.

We are also concerned that we received no communication from Pivot Energy prior to this submission—neither by mail nor by invitation to a community meeting—which goes against what was stated in their proposal. Our first notification of this project was from the County. This fact alone should give the Commissioners great pause.

We would have liked to ask Pivot Energy:

- What is the expected sound generation of the proposed facility? How will noise impact neighbors, livestock, and wildlife?
- Pivot Energy mentions in their proposal that their intention is to plant vegetation under the solar panels, but is this a contingency of the project itself? If not, and there is no vegetation on that historically farmed parcel, how will it impact surrounding farms and wildlife? (A landscape plan should be required and reviewed prior to approval of this project, and landscape maintenance should be an enforceable factor for the entirety of its development and use.)
- Can we visit another facility to get an idea of what this one will look and feel like?
- How will this development affect our property values?
- Are there increased fire risks?
- How will this development affect our insurance premiums?

This development does not seem appropriate for a quiet, rural residential community and historic farmland. Pivot Energy has been less than honest about its communication with community members and our feedback. I oppose SU-24-0002.

Sincerely,
Schuyler Bailey

From: [Heidi Samuel](#)
To: [L'Orange, Pete](#)
Subject: [EXTERNAL] Solar project special use permit on Arapahoe/95th
Date: Tuesday, May 28, 2024 11:49:28 AM

Good Morning Mr. L'Orange,

My apologies for not getting this letter to you last week - we had a medical emergency with our new puppy that consumed a lot of time. Thankfully he has pulled through and now life is almost back to normal. I believe the deadline was last Friday to submit any feedback but thought the I should still send over my concerns regarding a proposed solar permit in our area.

It has been brought to my attention that a neighbor adjacent to the Park Lake subdivision has signed a long-term lease agreement with Pivot Energy to make available 4 + acres along Arapahoe Road for a commercial solar installation. My family moved to this area last year after three years of searching for the perfect rural property that we could have a small farm but still be close to town. We couldn't be more in love with the area. We are longtime residents of Boulder. I am graduate of CU Boulder's geology program ('92) and currently work in mineral appraisal. My most recent work has focused on projects addressing long term access to mineral rights under lands leased for solar farms, as well as the impact on subsurface rights of areas being explored for future carbon sequestration projects in different parts of the country. These projects have brought to light the significant challenges and difficult to forecast variables when establishing lease terms and limits for all parties involved, even when these projects are in remote areas.

I have a great appreciation for the way that Boulder County has historically balanced preservation with growth over the decades. My concern over Pivot Energy's solar plans is that this particular parcel of land is nestled between subdivisions and would potentially set a precedence for the advancement of other small scale commercial solar leasing on the patchwork of remaining private farmsteads in the area. Without careful consideration and input from all concerned parties, the granting of this permit could significantly alter the course of the preservation of fertile lands in Boulder County. A commercial solar operation in this particular area seems very much in opposition to other restrictive and rigorous zoning regulations established to protect the future of farmable lands in the region. Given the current number of residences allowed to be built on a large parcel of farm land is severely restricted, it seems odd that the surface area required to set up a commercial solar panel development would not be scrutinized to ensure that it does not exceed the density of infrastructure permissible on private farmland.

Time should be taken to study the short- and long-term impacts of analogous projects including interviews with neighboring property owners that do not benefit from the installation. It is very important that Boulder establishes reasonable opportunities for the development of solar arrays in areas that make geographical sense. The criteria could include areas that are no longer useable for farming and away from residential subdivisions. A great example is the area that currently has a large solar installation south of the Boulder Reservoir. I believe a better understanding of the implications of increased fire danger presented by this operation is another valid concern; especially having witnessed the Marshall and NCAR fires first hand while living in South Boulder. Moreover, the use of sheep to maintain the landscaping, although seems like a way to 'farm-ify' the solar installation, should consider the

quality of life for these animals being employed in this capacity.

We have solar panels on our roof and so do many of our neighbors. Just recently our neighbor that shares our south boundary just installed a 100+ ft line of 9 ft tall solar panels along the property line. They were kind enough to adjust the location to accommodate the concerns of another neighbor. Ultimately, they positioned their project behind a line of mature juniper trees to blend the panels into the natural landscape. Thankfully these panels are static and do not make any sound. Residential solar panels provide a renewable energy option for homeowners which is not comparable to the impacts of a commercial solar array. Pivot Energy's panels will be 15 ft tall and be automated to move with the sun. This no doubt could be an unwelcome sound to the nearby property owners that actually live and work on their land.

Another final consideration that the permitting needs to be aware of is the access to the subsurface rights of the mineral owners. Although at this time Boulder is not permitting oil and gas wells, as technology continues to advance, access and right of way to the subsurface may be of importance in the future and this should be addressed in the drafting of regulations for permit. Understanding these potential challenges when establishing permitting regulations will hopefully lessen the likelihood of lengthy and expensive legal battles in the future.

Thank you for listening

Heidi Samuel

2400 Park Lake Dr.
Boulder, CO 80301

tel. 303-885-5871

From: [Matt Braun](#)
To: [L'Orange, Pete](#)
Cc: [Jen Braun](#)
Subject: [EXTERNAL] Docket SU-24-0002 Pivot Solar Farm
Date: Tuesday, May 28, 2024 10:48:29 PM

Dear Pete L'Orange and the Planning and Development Review Team,

We are **writing in opposition** to the proposed **Solar Farm SU-24-002**.

We are part of the Cross Ridge Neighborhood directly east of the property and less than 400ft of the site. The proposal to build a solar farm so close to residential neighborhoods is deeply concerning. This project threatens to negatively impact the lives of residents, disrupt local wildlife, and compromise the cherished Boulder open spaces that draw people to our community.

We have the following concerns:

- **Fire Hazard:** Solar panel malfunctions and overheating pose fire risks, especially dangerous in residential areas. Furthermore, Pivot's suggestion to use mulch and other materials that could exacerbate potential risks, coupled with their apparent lack of knowledge on the matter when questioned, raises serious concerns about their competence and commitment to responsible project planning.
- **Chemical Exposure:** Damaged panels can leak hazardous materials, contaminating soil and water. Materials used to maintain these panels can also be harmful to the land.
- **Noise Pollution:** Excessive noise from the operation of the panels and the onsite generator will affect our nearby neighborhoods.
- **Property Values:** Solar farms often decrease nearby property values and will detract from our view and eventual resale value. We just purchased here less than 2 years ago and do not want to see our home value decrease.
- **Habitat Fragmentation:** Installations disrupt wildlife, native plants, harming pollinators and ecosystems.

I remain unconvinced that Pivot will be diligent stewards of this "set it and forget it" project. The proposed location, so close to residential neighborhoods, is ill-conceived when numerous other options exist. We urge you to prioritize the quality of life for our families and neighbors, and to preserve Boulder's open spaces for the enjoyment of all Boulder County residents.

Thank you for your time.

Matt and Jen Braun

From: [Cole Sigmon](#)
To: [L"Orange, Pete](#)
Subject: [EXTERNAL] SU-24-0002 Comment
Date: Thursday, July 4, 2024 10:25:58 AM

Dear Commissioners,

While my property is not directly adjacent to the applicant's property, it's less than half a mile away, and could be affected by an increase in noxious weed seeds from this property as a result of this project.

I'm encouraged by Pivot/Xcel's (the applicant) inclusion of the "agrivoltaics" concepts. In theory, these sound amazing. In practice, their implementation may be challenging in ways that the applicant is underestimating. I am especially concerned about noxious weed management.

Please consider as a condition of the Commission's approval of this project a requirement for the applicant to comply with relevant parts of the county's Integrated Weed Management Plan. If that is already required, please consider requiring at least two mowing and weed clearing operations between June 1 and September 1 or similar.

In appreciation of your public service,

Cole Sigmon
2155 Mead Dr
Boulder CO 80301
ColeSigmon@gmail.com