



## ECMC OPERATOR GUIDANCE

# OPERATOR SUPPLIED CROPLAND DRONE IMAGERY AND INFORMATION FOR SUBMITTING A FINAL RECLAMATION COMPLETE NOTICE

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### Document Change Log

Change Date	Description of Changes
5/25/2023	Guidance drafted.
7/17/2023	Guidance issued.

## 1.0 INTRODUCTION

### 1.1 Purpose of Guidance Document

The Colorado Energy & Carbon Management Commission (ECMC) developed this guidance document to assist oil and gas operators (Operators) in preparing a Final Reclamation Complete Notice (FRCN) using drone technology for cropland locations. This guidance document includes a detailed description of the information and data required, and a discussion on how ECMC will audit operators participating in this drone final reclamation program.

This guidance document only pertains to final reclamation cropland locations; it does not address interim reclamation, final reclamation on rangelands, improved pasture, hay meadow and Conservation Reserve Program (CRP) lands.

### 1.2 Intent of Guidance Document

ECMC acknowledges the challenges associated with inspections of cropland locations during the appropriate growth stage to ensure compliance with Reclamation Rules. ECMC is creating this process to be able to make use of Operator supplied drone imagery and technology to achieve passing final reclamation inspections at oil and gas locations and facilities. In addition, this reduces ECMC resources to allow Operators and ECMC to expeditiously move the closure process of cropland locations forward. If an Operator can properly document and submit the required information set forth in this guidance, the Reclamation Group can use this information to pass final reclamation for cropland locations through the submission of a desktop inspection.

### **1.3 Rule Citations**

Multiple Rules provide requirements for compliance with final reclamation on cropland locations. For the full list and citation, please see Appendix A . For quick reference, please see the following Rules:

- Rule 1003.e.(1)- Revegetation of croplands
- Rule 1004.a.- Well sites and associated production facilities
- Rule 1004.b.- Production and special purpose pit closure
- Rule 1004.c.(1)(3)(4)(5)- Cropland requirements
- Rule 1004.d.- Performance standards for final reclamation
- Rule 1004.e.- Weed control

### **1.4 100 Series definition**

Cropland shall mean lands which are cultivated, mechanically or manually harvested, or irrigated for vegetative agricultural production.

### **1.5 Background**

In 2018, ECMC started to develop a program using Unmanned Aircraft Systems (UAS), commonly referred to as “drones”, to determine the viability and reliability for ECMC inspections. ECMC now uses drones for more robust data collection to facilitate documentation for field inspection reports and gathering of other relevant information. All ECMC Units benefit from the information provided by drone flights and analysis. The Reclamation Group uses drones to help document the life of a location and complaint responses regarding the extent of surface disturbance, topsoil salvage, cropland growth, bare soil evaluation, and stormwater compliance.

ECMC acknowledges that there are remote sensing applications for evaluating vegetation health and productivity in the agricultural sector; however, drone data submitted to ECMC will not be used with any crop analytics. Drone data submitted to ECMC will be used as a visual analysis tool to evaluate the cropland vegetation. The cropland evaluation will then be used to demonstrate that an oil and gas location on cropland has been returned to its original condition and crops are reflective of the cropland reference areas.

### **1.6 Required Training**

In order to ensure that sufficient data is provided and an efficient process can be conducted by ECMC, the Operator will be required to attend ECMC training if they want to participate in the drone final reclamation program. At least one Operator

representative or the consultant conducting the work for the Operator must attend the training, in-person or virtual. Specific dates and virtual attendance will be announced at a future date. The in-person training will be held at the Adams County government office at 4430 S Adams County Pkwy, Brighton, CO 80601.

## **1.7 Organization of Guidance Document**

This guidance document is organized into six sections and two appendices. Section 2.0 provides a discussion on the applicable cropland types this guidance will be used for, explanation of crop growth stages, and acceptable crop growth stages for drone photos. Section 3.0 includes a list of the information required to submit a FRCN using drones for cropland locations, as well as other requirements. Section 4.0 are instructions on how to complete the FRCN using a Form 4 and the required attachments. Section 5.0 is a discussion on how ECMC will audit Operators to ensure accurate and complete reporting is being submitted.

## 2.0 CROPLAND DISCUSSION

This section provides a discussion on the applicable cropland types this guidance will be used for, an explanation of crop growth stages, and outlines estimated planting and harvest date ranges to assist Operators for planning purposes. In addition, some concerns, challenges and limitations of drone photos are also discussed below.

### 2.1 Types of Acceptable & Unacceptable Cropland

Due to the difficulty in identifying certain weed species using drone photos, drone data will not be accepted if the cropland is designated improved pasture, hay meadow or CRP lands, unless it is a monoculture of alfalfa. Examples of some acceptable cropland types that can be submitted to ECMC are corn (silage and grain), wheat (spring and winter), alfalfa with no mix, potatoes (summer and fall), sorghum (silage and grain), barely, sugarbeets and millet.

### 2.2 Crop Growth Stages and Planting/Harvest Dates for Drone Photos

Below is a table of common crops grown in Colorado and acceptable growth stages for drone photos. Operators may submit drone photos for crops not listed on this table (e.g., triticale, sudangrass, sorghum-sudangrass, sunflower, ect.) but will have to coordinate with the Reclamation Group. The table includes USDA and Integrated Pest Management database planting and harvesting dates based on when crops are usually planted and harvested.

Crop	Acceptable Crop Growth Stages for Drone Imagery	Usual Planting Dates	Usual Harvesting Dates
Corn- silage	Tasseling stage > up to harvest	Apr 28-May 20	Sep 5-Sep 30
Corn- grain	Tasseling stage > up to harvest	Apr 28-May 20	Oct 8-Nov 13
Wheat- spring	Heading stage > up to harvest	Apr 9-May 16	Aug 3-Sep17
Wheat- winter	Heading stage > up to harvest	Sep 11-Oct 2	Jul 2-Jul 21
Alfalfa*	30 days after spring greenup > up to the last cutting	N/A	May 30-Oct 6
Potatoes- summer	80 days after planting > up to harvest	Apr 14-May 18	Aug 17-Sep 25
Potatoes- fall	80 days after planting > up to harvest	May 6-May25	Sep 15-Oct 11
Sorghum- silage	Heading stage > up to harvest	May 19-Jun 23	Sep 5-Sep 20
Sorghum- grain	Heading stage > up to harvest	May 19-Jun 23	Oct 11-Nov 18
Barley	Heading stage > up to harvest	Mar 26-May 5	Jul 29-Sep 6
Millet	Heading stage > up to harvest	May 15-Jun 30	Sep 1-Sep 30
Sugarbeets	70-90 days after planting > up to harvest	Apr 7-Apr 30	Oct 10-Nov 4

Alfalfa: Operators shall wait for sufficient growth after each cutting before capturing drone data.

## **2.3 Crop Growth Stages**

Crops have different growth stages and reach maturity at different times. The growth stages can be separated into vegetative and reproductive stages. It might not always be necessary to wait until crops reach full maturity to be able to make an evaluation using drone photos, but it will be necessary to capture drone photos around each crop's full cover stage. Full cover is at the peak growth stage when the crop is intercepting maximum energy and most of the soil is shaded by the crop canopy.

Based upon the USDA 2022 State Agriculture Overview for Colorado, corn and wheat covered the largest number of acres in Colorado. This section uses corn and winter wheat as examples to further describe some crop growth stages.

### **2.3.1 Corn**

Corn has a vegetative growth stage from emergence to the tasseling stage (VT) and reaches maturity at the reproductive stage 6 (R6)- see the below figure. Corn reaches full cover stage approximately ten days after tasseling. ECMC will not accept drone photos for corn captured during much of the early vegetative growth stage. Unacceptable vegetative stages include less than vegetative stage 10 (V10). Drone photos for corn will be accepted around the tasseling stage until it is harvested.

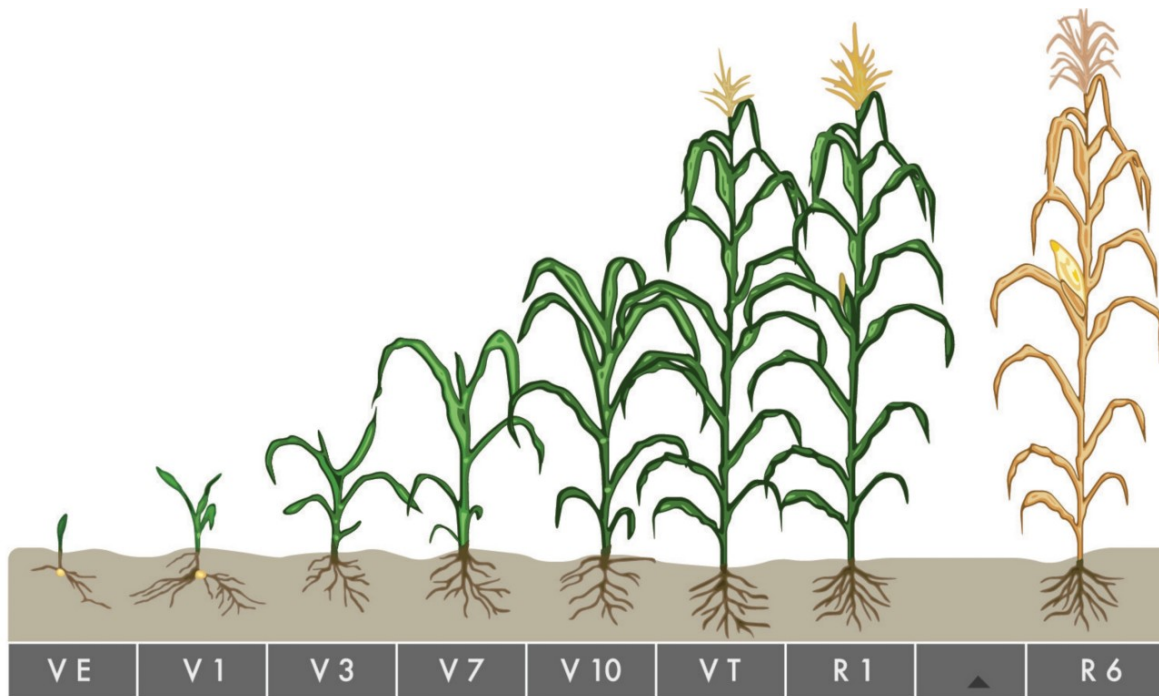
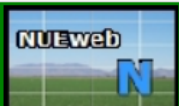


Figure 1. “Corn growth stages from emergence to maturity” (Kruger Seeds).

### 2.3.2 Winter wheat

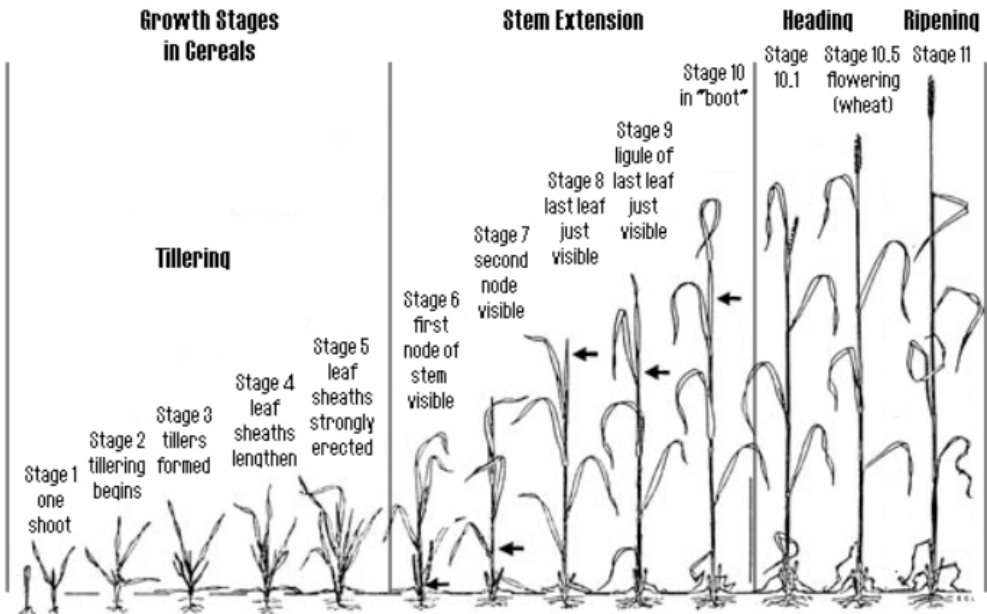
Winter wheat planted in the fall will emerge and develop into the vegetative growth stage before the onset of winter. It will remain in the vegetative growth stage throughout winter until temperatures warm up to resume growth and start the reproductive stage resulting in head development. ECMC will not accept drone photos for winter wheat in the vegetative stage and will only accept drone photos during the reproductive stage. Drone photos for winter wheat will be accepted during the heading stage of growth until it is harvested, see heading stage on the figure below.



# Physiological Feekes Growth Stages in Winter Wheat

## Critical level for GDD (NDVI versus Yield)

Large, E.C. 1954. Growth stages in cereals. Plant Pathol. 3:128-129.



According to Large (1954) cereals develop as follows via Feekes Growth Stages

### **3.0 DRONE AND HANDHELD DOCUMENTATION REQUIREMENTS**

The following section includes detailed instructions on what types of imagery and drone photos will be required, as well as handheld photographic documentation. Examples will be discussed in detail during the required training.

#### **3.1 Imagery and Drone Photos Overview**

Since the Reclamation Group will be evaluating whether or not to pass final reclamation for cropland locations from a desktop review inspection, the Operator will have to document all disturbance areas and infrastructure including any tank batteries or associated spill areas for each location. There will be a series of required imagery, including historic imagery and drone photos. Due to the different drone technology and capabilities, the height of drone photos can vary. This will be explained in more detail in the below sections and in the required training.

At a minimum in some cases, the following information will be required for imagery, drone photos and handheld photographic documentation: provide a title and description, historic imagery source, date of imagery, date of drone photos, height of drone photos, GPS location (decimal degree format), legend identifying the disturbance area and infrastructure, extent or scale bar and compass.

##### **3.1.1 Pre-Plugging Active Operations Location Overview**

Provide a pre-plugging active operations location overview of the total disturbance area and infrastructure which shall depict but not limited to the following: well location, facility (tank battery), access road, flowline areas, pits and any other disturbances created by the oil and gas including spills or releases. The scale will vary depending on whether all the disturbance areas and infrastructure are on the well location or off the location. The location overview shall be from active operations and may require a variety of height/scale to capture the disturbance information over-time. To accomplish this, historic imagery is available from a number of imagery acquisition sources (e.g., ECMC Interactive Map, Google Earth, County Property Portals, etc.).

##### **3.1.2 Post-Plugging and Abandonment Location Overview**

Provide a post plugging and abandonment location overview of the total disturbance area and infrastructure similar to the above with approximately the same extent. To accomplish this, Operator will document the location overview using an orthomosaic drone image, depicting final reclamation areas. Historic imagery will not be accepted.



### **3.1.3 Cardinal Directional Drone Photos and Reference Area Photos**

Operator will document successful final reclamation for the total disturbance area and infrastructure by providing drone photos taken during an acceptable crop growth stage. Any associated spill or release that occurred outside of the initial or approved location disturbance shall also document successful final reclamation. Drone photos are preferred to be taken at a height of 80-120 feet above ground surface. ECOM acknowledges advanced drone technologies allow for photos to be taken at a higher level (300 feet or more above ground surface), site specific constraints and safety hazards unique to each location. Cardinal directional drone photos shall adequately illustrate final reclamation areas as well as reference crop areas for comparison. Cardinal directional drone photos shall be taken at an angle to capture a wider perspective and include a viewpoint for evaluation of the crops heights. If reference crop areas are not adequately illustrated in the cardinal directional drone photos, then provide one drone photo which documents an adjacent or nearby undisturbed reference crop area.

Below are a couple situations which describe how many drone photos are required.

On-location associated production facility- If the well location and associated production facilities are all on-location, then a minimum of four (4) drone photos facing each cardinal direction shall be taken. Operator shall document the access road portion which may require multiple drone photos depending upon the length of road. At a minimum, this situation would require five (5) drone photos (4 location photos and 1 access road drone photo).

Off-location associated production facility- If the well location and associated production facilities are off-location, then a minimum of four (4) drone photos facing each cardinal direction shall be taken from each location. Operator shall document the flowline area which may require taking more than one drone photo, and shall also include the access road portion as described above. At a minimum, this situation would require ten (10) drone photos (4 well location photos, 4 associated production facility photos, one flowline and one access road drone photo).

If an associated production facility is not within cropland, then refer to the below Section 3.1.4 for more information (see Example 1).

### **3.1.4 Handheld Photographic Evidence**

Provide handheld photos that demonstrate all equipment has been removed including wellhead and production equipment, flowline risers, gathering line risers, meter sheds, and electrical equipment including electrical poles. Identify the cardinal direction on handheld photos and include a date stamp.

If handheld photos can not be provided to demonstrate that all equipment has been removed due to crop growth, Operators may use drone photos. For example, if the well location was within a pivot irrigation field and crop growth is limiting access, then drone photos could be acceptable.

If an associated facility is not within cropland, provide handheld photos documenting that all equipment has been removed, document the vegetative cover, document the location is stabilized with no erosion issues and provide reference area photos (see Example 1 regarding reference area photos).

Below are examples of potential situations and how to handle off-location tank batteries not within cropland.

#### Example 1

If the off-location tank battery was located in the corner section of a pivot irrigation field and it is not part of agricultural production, Operator shall demonstrate using handheld photos that all equipment has been removed, the location is stabilized with no erosion issues and provide photo documentation of the vegetative cover.

Operator shall select another corner section of the pivot irrigation field that is also not part of agricultural production and document the vegetative cover. This will be used as a reference area photo.

#### Example 2

If the off-location tank battery was located on a graveled surface that was pre-existing to oil and gas development, Operator shall provide historic imagery to support this determination. Operator shall demonstrate using handheld photos that all equipment has been removed, the location is stabilized with no erosion issues and provide photo documentation of the vegetative cover.

## **4.0 FORM 4- FINAL RECLAMATION COMPLETE NOTICE REQUIREMENTS**

The following section includes detailed instructions on how to submit a Final Reclamation Complete Notice using a Form 4 and the required documentation.

### **4.1 Filling out the Form 4**

1. Log onto Webforms
2. Create a Form 4- Sundry Notice using the Location ID number. Location ID should be used rather than an API number.
3. Click on Reclamation Tab
4. Select the box “Final reclamation is complete and site is ready for inspection” and add comments that refer to the form as a request for a final reclamation inspection based upon Operator drone and other required information (see example comment). Make sure to request that the form be routed to the area reclamation specialist in the comments section.

#### Example Comment

Cropland final reclamation drone documentation is attached per the ECMC Operator Guidance. Please route to the area reclamation specialist.

### **4.2 Closure Information**

Provide a written summary of the location, total disturbance areas and infrastructure. This section should be used to further explain the complexity of a location (e.g., multi-well location, off-location tank battery, flowline abandonment, pits, spills or releases, remediation projects, access road, electric utilities, ect.).

If it is a shared location with another Operator where portions remain in-use for active operations, provide supporting documentation that shows that the Operator of record is the remaining Operator. If the road is to be left due to there being an Operator of an active location beyond the location in question, then provide documentation to show that is the case. If the access road was pre-existing to oil and gas development and will remain in-place, provide historic imagery to support this determination.

In addition, provide a written summary regarding any of the following actions: Compliance of previous corrective action inspections and Field Inspection Report Resolution forms, Warning Letters, Notice of Alleged Violations, Administrative Order by Consent, Commission Orders and Complaints.

If there is a variance request post January 15, 2021 associated with the location, provide supporting documentation with the Hearing Docket number and proof that it was approved by the Commission. If there is an approved variance request before January 15, 2021, then the Operator will summarize all information including any conditions of approval. Please note there are several rules not eligible for a variance. Final reclamation inspection must be conducted to show compliance with any unwaivable rules and any associated conditions of approval.

#### **4.2.1 Drone Information**

Operators shall provide the make and model of the drone, drone processing software, pilot name, FAA Certificate number and date of issuance. This information can be provided on the Location Checklist.

#### **4.2.2 Location Checklist**

Operators shall fill out the checklist to ensure the location meets applicable ECMC Rules and Regulations (see Appendix B). There are sections of the checklist that require specific information or simply a check mark. Some checklist items with a check mark may require additional information which shall be provided within the written summary of the location (Section 4.2).

#### **4.3 Attachments**

Provide the following as an attachment to the Form 4 FRCN. If any of the attachments are missing or incomplete, the Form 4 will be denied.

1. Pre-Plugging Active Operations Location Overview (Section 3.1.1)
2. Post-Plugging and Abandonment Location Overview (Section 3.1.2)
3. Cardinal Directional Drone Photos & Reference Area Photos (Section 3.1.3)
4. Handheld Photographic Evidence (Section 3.1.4)
5. Closure Information (Section 4.2)
6. Drone Information (Section 4.2.1)
7. Location Checklist (Section 4.2.2)

## 5.0 AUDIT

For any Operator who participates in this drone final reclamation program, which is set forth in this guidance, is subject to an annual audit and evaluation by ECMC. This audit and evaluation will include a subset of locations that the Operator has flown and intends to submit to ECMC. This is to ensure that each Operator is conducting drone flights to the standards of ECMC. ECMC plans to audit approximately 10 percent of the cropland locations submitted to ECMC for final reclamation closure.

Upon the request of ECMC, Operator will provide a list of final reclamation cropland locations that the Operator has flown for the current season. The number of locations has to be flown by the Operator so ECMC can audit a subset of the locations. If a requested list is not provided or the Operator has not flown enough locations such that ECMC has enough time to conduct drone flights themselves for the purposes of auditing the Operator, then the Operator is at risk of losing its ability to participate in this drone final reclamation program. Once ECMC has requested a list of drone flight locations from the Operator, it must be provided to ECMC within two (2) calendar days from the request. ECMC will then conduct its own evaluation once receiving the list. In order for the drone final reclamation program to work properly, ECMC will require Operators to submit all the information requested per Section 4.0 on a FRCN no later than March 1st the following year but ideally before the end of the year.

If there are continued, on-going discrepancies between an Operator and ECMC's evaluations, the Operator could potentially lose its ability to participate in this drone final reclamation program set forth in this guidance.

## 6.0 REFERENCES

Kruger Seeds, 2020, Determining corn growth stages, Kruger Seeds agronomy library, <https://www.krugersseed.com/en-us/agronomy-library/corn-growth-stages-and-gdu-requirements.html>, (Accessed June 2023).

Large, E.C., 1954, Growth stages in cereals: Plant Pathology, v. 3, no. 4, p. 128–129, <https://www.nue.okstate.edu/GSchart.htm>, (Accessed June 2023).

National Integrated Pest Management Database, <https://ipmdata.ipmcenters.org/#cropprofiles>, (Accessed June 2023).

USDA National Agricultural Statistics Service, 2010, Field crops usual planting and harvesting dates, no. 628, [https://www.nass.usda.gov/Publications/Todays\\_Reports/reports/fcdate10.pdf](https://www.nass.usda.gov/Publications/Todays_Reports/reports/fcdate10.pdf), (Accessed June 2023).

USDA National Agricultural Statistics Service, 2022, State agriculture overview for Colorado, NASS - Quick Stats, [https://www.nass.usda.gov/Quick\\_Stats/Ag\\_Overview/stateOverview.php?state=Colorado](https://www.nass.usda.gov/Quick_Stats/Ag_Overview/stateOverview.php?state=Colorado), (Accessed June 2023).

## **APPENDICES**

**APPENDIX A- RULE CITATIONS**

**APPENDIX B- LOCATION CHECKLIST**

## APPENDIX A RULE CITATIONS

### 1003. INTERIM RECLAMATION

**1003.e. Restoration and revegetation.** When a well is completed for production, all disturbed areas no longer needed will be restored and revegetated as soon as practicable.

**(1) Revegetation of crop lands.** All segregated soil horizons removed from crop lands shall be replaced to their original relative positions and contour, and shall be tilled adequately to re-establish a proper seedbed. The area shall be treated if necessary and practicable to prevent invasion of undesirable species and noxious weeds, and to control erosion. Any perennial forage crops that were present before disturbance shall be re-established.

### 1004. FINAL RECLAMATION OF WELL SITES AND ASSOCIATED PRODUCTION FACILITIES

**1004.a. Well sites and associated production facilities.** Upon the plugging and abandonment of a well, all pits, mouse and rat holes and cellars shall be backfilled. All debris, abandoned gathering line risers and flowline risers, and surface equipment shall be removed within three (3) months of plugging a well. All access roads to plugged and abandoned wells and associated production facilities shall be closed, graded and recontoured. Culverts and any other obstructions that were part of the access road(s) shall be removed. Well locations, access roads and associated facilities shall be reclaimed. As applicable, compaction alleviation, restoration, and revegetation of well sites, associated production facilities, and access roads shall be performed to the same standards as established for interim reclamation under Rule 1003. All other equipment, supplies, weeds, rubbish, and other waste material shall be removed. The burning or burial of such material on the premises shall be performed in accordance with applicable local, state, or federal solid waste disposal regulations and in accordance with the 900-Series Rules. In addition, material may be burned or buried on the premises only with the prior written consent of the surface owner. All such reclamation work shall be completed within three (3) months on crop land and twelve (12) months on non-crop land after plugging a well or final closure of associated production facilities. The Director may grant an extension where unusual circumstances are encountered, but every reasonable effort shall be made to complete reclamation before the next local growing season.



**1004.b. Production and special purpose pit closure.** The operator shall comply with the 900 series rules for the removal or treatment of E&P waste remaining in a production or special purpose pit before the pit may be closed for final reclamation. After any remaining E&P waste is removed or treated, all such pits must be back-filled to return the soils to their original relative positions. As to both crop lands and non-crop lands, if subsidence occurs over closed pit locations, additional topsoil shall be added to the depression and the land shall be re-leveled as close to its original contour as practicable.

**1004.c. Final reclamation threshold for release of financial assurance.** Successful reclamation of the well site and access road will be considered completed when:

(1) On crop land, reclamation has been performed as per Rules 1003 and 1004, and observation by the Director over two growing seasons has indicated no significant unrestored subsidence.

(3) Disturbances resulting from flow line installations shall be deemed adequately reclaimed when the disturbed area is reasonably capable of supporting the pre-disturbance land use.

(4) A Sundry Notice Form 4, has been submitted by the operator which describes the final reclamation procedures, any changes, if applicable, in the landowner's designated final land use, and any mitigation measures associated with final reclamation performed by the operator, and

(5) A final reclamation inspection has been completed by the Director, there are no outstanding compliance issues relating to Commission rules, regulations, orders, permit conditions or the act, and the Director has notified the operator that final reclamation has been approved.

**1004.d. Final reclamation of all disturbed areas shall be considered complete when all activities disturbing the ground have been completed, and all disturbed areas have been either built upon, compacted, covered, paved, or otherwise stabilized in such a way as to minimize erosion, or a uniform vegetative cover has been established that reflects predisturbance or reference area forbs, shrubs, and grasses with total percent plant cover of at least eighty percent (80%) of pre-disturbance or reference area levels, excluding noxious weeds, or equivalent permanent, physical erosion reduction methods have been employed. Re-seeding alone is not sufficient.**

**1004.e. Weed control.** All areas being reclaimed shall be kept as free as practicable of all undesirable plant species designated to be noxious weeds. Weed control measures shall be conducted in compliance with the Colorado Noxious Weed Act, C.R.S.

§35-5.5-115 and the current rules pertaining to the administration and enforcement of the Colorado Noxious Weed Act. It is recommended that the operator consult with the local weed control agency or other weed control authority when weed infestation occurs. It is the responsibility of the operator to monitor affected and reclaimed lands for noxious weed infestations. If applicable, the Director may require a weed control plan.

**APPENDIX B  
LOCATION CHECKLIST**

## LOCATION CHECKLIST

Operator / #				
Location ID & Name				
County				
Well Information* <sup>1</sup>	Well Name:			
	Well API #:			
	Lat/Long As Drilled:			
	Plug date & Form 6S Doc. #:			
Facility Entities* <sup>2</sup>		Tank Battery		Pits
		Wells		On-Location Flowlines (Form 42): Doc. #
		Domestic Taps		Off-Location Flowlines (Form 44): Doc. #
Equipment on Site		None		Debris
	Pit mouse/rat holes, cellars backfilled			
Access Road		Regraded		Contoured
		Culverts removed		Gravel removed
	Pre-existing: must provide supporting documentation			
Reclamation Status	Location and associated disturbances reclaimed			
	Subsidence			
Spills or Releases & Remediation* <sup>3</sup>		No		Yes
On-Location Flowlines* <sup>4</sup>		No		Yes
Off-Location Flowlines* <sup>4</sup>		No		Yes
Inspection Corrective Actions* <sup>5</sup>		No		Yes
Sundry Notice (Form 4)* <sup>6</sup>	Form 4 Doc. # & Date: Purpose: Comments: Attachments:			
Drone Information	See Section 4.21 for requirements			

**Location Checklist footnotes**

<sup>1</sup> If it is a multi-well location, list all the wells and associated Form 6S and plugging dates.

<sup>2</sup> If there is an off-location tank battery, provide a written summary within Section 4.2.

<sup>3</sup> If yes on the checklist, then provide a written summary for all spills, releases or Commission's Rules requiring a Form 19 or Form 27 within Section 4.2. The summary shall include vegetation assessments post closure and when applicable, the written summary shall include at minimum the following information.

<u>Spill/Release Report</u> <ul style="list-style-type: none"><li>- Form 19-I and Form 19-S: Doc. # &amp; Date</li><li>- Spill/Release Point ID</li><li>- Closure Request Approved: ECMC staff name</li><li>- Summarize spill/release event &amp; corrective actions taken</li><li>- ECMC Comments</li><li>- ECMC COAs</li><li>- Final Resolution</li></ul>	<u>Site Investigation and Remediation Workplan</u> <ul style="list-style-type: none"><li>- Form 27-I and Form 27-S: Doc. # &amp; Date</li><li>- Remediation Project #:</li><li>- Closure Request Approved: ECMC staff name</li><li>- Summarize description of impact &amp; corrective actions taken</li><li>- ECMC Comments</li><li>- ECMC COAs</li><li>- Final Resolution</li></ul>
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<sup>4</sup> If yes on the checklist, then provide a written summary to include document numbers & dates, abandonment method, Operator comments and ECMC approval date.

<sup>5</sup> If yes on the checklist, then provide a written summary for any corrective actions that were never cleared by ECMC staff and/or any corrective actions where a Field Inspection Report Resolution form was never submitted within Section 4.2.

<sup>6</sup> If there are any Form 4's related to a 900, 1000, 1100 or 1200 Series Rule, provide a written summary within Section 4.2.