

# OIL AND GAS RECLAMATION WORKPLAN GUIDE

## PURPOSE

This document has been prepared by the New Mexico State Land Office (NMSLO) Environmental Compliance Office (ECO). This document intends to provide detailed guidance related to the preparation of an oil and gas industry-related reclamation plan that will satisfy the requirements outlined in NMSLO leases and rules.

## DEFINITIONS

**Remediation** involves the containment, removal, or stabilization of contaminants from soil, significant water courses, and groundwater. Any unauthorized spills and releases of hazardous or toxic substances (including RCRA-exempt waste) and waste illegally disposed of must be remediated. Remediation is often the first step in the reclamation of a site.

**Reclamation** involves the removal of hard structures and infrastructure; and the physical reconstruction of soils and terrain; including revegetation, on a disturbed site to achieve land conditions equivalent to the conditions that existed before disturbance. Pits, pads, roads, and other disturbed surface areas must be reclaimed when permitted uses are complete. Reclamation often follows remediation.

**Sensitive receptors** on State Trust Land include groundwater, continuously flowing or significant watercourse, lakebed, sinkhole, playa lake, spring, drinking water source, or wetland; or any regularly occupied structure including, school, daycare, church, clinic, or residence; or any threatened, endangered, or sensitive wildlife or plant species habitat; or cave or other critical karst features; or sensitive soils.

## PREPARING A RECLAMATION WORKPLAN

The examples provided in the following sections meet the minimum requirements for an oil and gas industry-related reclamation plan being submitted to ECO. The outline for a reclamation plan provided in this document follows ECO's "Document Checklist"; see attached.

Note, that the information provided is not a template or form to be filled out, the information is intended to guide the author in preparing a site-specific, narrative reclamation plan. The order the information is presented in the site-specific workplan is the author's choice; however, all required information must be addressed. If a required item does not apply to the site, a statement of non-applicability with an explanation must be provided in the workplan.

### A. Site Information

Basic site information must be provided in a cover sheet or the introduction narrative of the workplan. The information must include the following:

- Location Name
- API or Facility Number
- NMSLO Lease Number
- Operator and NMSLO Lessee Names
- OCD Incident Number, if applicable
- Quarter, Quarter, Section, Township, Range, and County
- Latitude and Longitude

### B. Introduction

A brief introduction to the project and site location should be presented at the beginning of the reclamation workplan. Introductory language can include, but is not limited to, the following:

1. Provide the reason the reclamation plan is being prepared. Examples include:
  - *This reclamation plan is being prepared per the settlement agreement with NMSLO's Office of General Counsel.*
  - *This reclamation plan is being prepared because the well site has been designated for plug and abandonment.*
2. Describe the site location, access, and driving directions. An example follows:
  - *The subject well site is located approximately 25 miles west of Lovington, New Mexico, in an area of oil and gas activity and cattle grazing. No surface water is present in the area, and vegetation is sparse. The site can be accessed by traveling west from Lovington, New Mexico on Highway 82 for 24.5 miles to County Road 121. Travel north on 121 for 4.63 miles to County Road 118. Turn east on County Road 118 and go 0.35 to the lease road going north to the Site. There are no locked gates or other access issues. A map is attached that shows the well location and the NMSLO easement boundary.*

### C. Site Conditions and History

Details about the site should be discussed within the reclamation workplan. This section should provide further details regarding historical or current spills/releases, and other areas of concern identified during a site visit by the operator, consultant, or NMSLO, etc.

1. Describe special circumstances that may exist for the subject facility. For example:
  - *Company A is listed as the current operator of record for this well that is listed as plugged (site released) in OCD imaging records. Company B is the lessee of record for the NMSLO for the oil and gas lease and did not ever operate the well. As such, per legal demand*

*from the Office of General Counsel, Company B is coordinating the reclamation of surface disturbances resulting from the development and production of this oil and gas lease.*

- *Before any earth-disturbing activities, Company B contacted the NMSLO Commercial Resources Division (CRD) to acquire a right of entry (ROE) permit for authorized access allowing for reclamation activities on Site. On June 7, 2023, NMSLO executed the permit, beginning the period of 180 days for which the permit would be active. A copy of the right of entry permit can be found in Appendix A.*

## Resources

The following are resources to determine active lease information:

- NMSLO Mapping Portal:  
<https://mapservice.nmstatelands.org/LandStatus/>
  - NMOCD Mapping Portal with NMSLO lease layer:  
<https://nm-emnrd.maps.arcgis.com/apps/webappviewer/index.html?id=4d017f2306164de29fd2fb9f8f35ca75>
2. Describe the current site and access road conditions: status of well, equipment inventory, vegetation, noxious weeds, surface staining, erosional features, etc. Include field inspection photographs and/or aerial photographs. Examples include:
- *The subject well site was plugged and abandoned on July 11, 2022. The pumpjack and all ancillary equipment have been removed from the Site. On January 13, 2023, the Site was inspected and released by the New Mexico Oil Conservation Division (NMOCD). On October 25, 2023, a site inspection was conducted by Company C. Although recent rainfall had accumulated at the Site, no evidence of visibly impacted soil was observed, and all caliche had been removed from the well pad area. Some caliche remained on the spur road leading to the former well location. Attachments include a Site Map and photographs from the site inspection.*
  - *According to available documentation, the subject lease was issued on June 10, 1942 and was terminated on September 5, 2018. The lease is on full estate. According to records provided by Company A to Company B, the NMSLO conducted three reviews of current, observable conditions within the former NMSLO oil and gas lease in April 2020. The first was an aerial imagery review, the second a field staff site visit was completed on April 22, 2020, and the third, an NMSLO environmental site inspection was conducted on October 23, 2020. Multiple areas of concern were observed during the reviews. This reclamation workplan addresses the assessment/delineation of the areas of concern identified by NMSLO.*
  - *The saltwater disposal well on this easement has been plugged and abandoned. All surface equipment has been removed from the property (discussed in detail below). The current site and access road consists of a caliche surface and conditions appear to be suitable for access. Note, all caliche surfaces will be removed as part of the reclamation*

*of this location. Details regarding the caliche removal are provided in the sections below. The main easement area appears generally free of weeds and erosional features.*

- *On April 22, 2024, Company B conducted a site inspection. No visible evidence of hydrocarbon staining or salt crystallization was observed in the soil. Vegetation was present around the former well and well pad, even though tire tracks were observed crossing through the former well pad, and cattle were congregated at the edge of the former pad. Topsoil was not observed in the area around the Site, and vegetation is very sparse throughout the area. Attachments include photographs from the site inspection.*
  - *Company B personnel were onsite on April 22, 2024, to assess current site conditions and take photographs of the site features and the identified/impacted areas, if any were observed. Some areas of the 26,000-square-foot pad are exhibiting vegetation recolonization. Overhead powerlines were noted to the north of the lease pad. During the site visit, soil staining was observed around the pumping unit, and surface steel lines, surface polylines and electrical lines were observed in the vicinity of the wellhead. The area to the south of the well pad leading to the playa contained little to no vegetation and no evidence of staining. Observed areas of impact and site features are shown in Figure 1. Photographic documentation from the site visit is included in Appendix B.*
3. Provide historical information including NMOCD well file and incident report searches, and historical information from the operator or lessee. Provide findings from the review of historical satellite imagery which may disclose releases, surface scars, unnaturally sparse or barren vegetation, etc. Resource links to obtain site information include:

#### Resources

- <https://wwwapps.emnrd.nm.gov/OCD/OCDPermitting/Data/Incidents/Incidents.aspx>
- <https://wwwapps.emnrd.nm.gov/OCD/OCDPermitting/Data/Wells.aspx>
- <https://wwwapps.emnrd.nm.gov/ocd/ocdpermitting/OperatorData/ActionStatusParameters.aspx>
- <https://www.google.com/earth/about/versions/#earth-pro>
- County tax assessor websites can also include historical and current aerial imagery.

Narrative examples include:

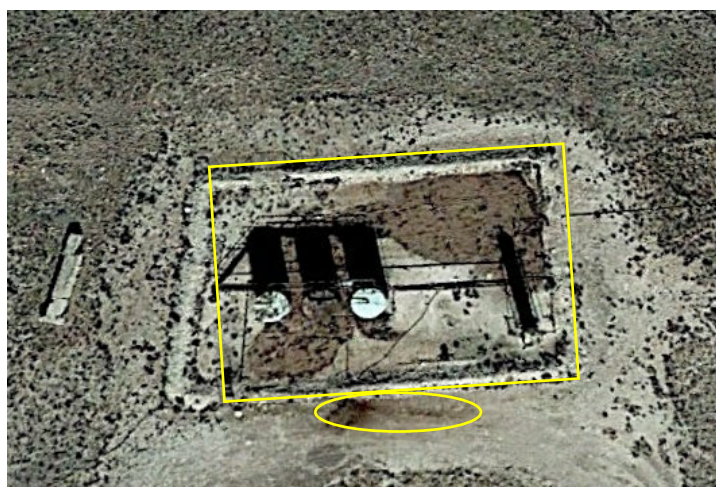
- *One NMOCD incident (NAPP#) was originally identified for the easement in the NMOCD online database; however, this was determined to be a clerical error. Incident NAPP # was confirmed to be a duplicate entry of Incident NAB#, which occurred at the State #A well site (a separate easement that is operated by a separate entity and is located approximately 0.5 miles north of the State #A well site). The clerical error has since been verified by the NMOCD in an email dated 17 August 2023, and the NMOCD online records now show Incident NAPP# as being canceled on 17 August 2023. Therefore, there are no outstanding incidents associated with this easement. The NMOCD well file for the*

*easement, online database search records, NMOCD e-mail confirming the clerical error, and updated incident record (showing Incident NAPP# with a status of “canceled”) are included as Attachment A of this report.*

- Following a review of the New Mexico Oil Conservation Division Permitting site, no incidents were noted. A notice of violation was noted for lack of appropriate signage at the site but this has been resolved. The violation notice is attached in Appendix E. Areas of concern were investigated during a desktop review using historical aerial imagery. The review included an assessment of discolored soil, erosional features extending from the well pad and access road, and any unnaturally barren spots within the lease boundary. A review of historical aerial imagery did not disclose areas of concern for the subject site.*
  - A review of historical aerals identified surface staining from a potential release surrounding the wellhead in 1996 and in proximity to the tank battery in 2014. This area of concern will be assessed/delineated. A delineation plan will be submitted to [eco@slo.state.nm.us](mailto:eco@slo.state.nm.us) before proceeding with fieldwork. Additionally, a review of the New Mexico Oil Conservation Division (NMOCD) database identified one historical violation (cRB#) for the remaining ancillary equipment and a lack of wellhead marker post-plugging activities during a routine inspection. The violation has not been resolved. A wellhead marker will be installed during planned reclamation activities.*
4. Provide photographic or aerial imagery descriptions of historical areas of concern that will require assessment and delineation and possible reclamation. Include assessment sample points where applicable. The following are example images that document areas of concern:







5. Provide soil types (*use Web Soil Survey <https://websoilsurvey.nrcs.usda.gov/app/>*). This will be used to determine the appropriate seed mix; seed mixes for southeast New Mexico are attached to this document. For other regions in New Mexico work directly with ECO and a certified seed supplier for an approved seed mix. Example language for the reclamation plan is:

- *The prepared soils within the site will be seeded with a seed mix purchased from a New Mexico Department of Agriculture (NMDA) licensed dealer. Soil at the site is characterized as gravelly sandy loam and the corresponding “Coarse” seed mix will be used. Seed species will include:*
  - *Sand Bluestem, “Chet” (Andropogon hallii),*
  - *Sideoats Grama, “Vaughn” (Bouteloua curtipendula),*
  - *Blue Grama, “Lovington” (Bouteloua Gracilis),*
  - *Little Bluestem, “Cimarron” (Schizachyrium scoparium),*
  - *Sand Dropseed, (Sporobolus cryptandrus), and*
  - *Plains Bristlegrass, (Setaria vulpiseta).*

*Following seeding operations, the seed tags will be made available to the NMSLO, along with a copy of the materials certification in a “Reclamation Activities Report”.*

#### D. Cultural and Biological Compliance

1. Document compliance with the Cultural Properties Protection (CPP) Rule, as applicable. If CPP Rule compliance is required options include:
  - *Site assessment activities are anticipated to occur in areas previously undisturbed; therefore, an Archaeological Records Management Section (ARMS) review was conducted on April 22, 2024. Previous cultural surveys indicated no findings within the designated buffer. The cover sheet for the review is provided in Attachment 2 in Appendix B of this reclamation plan.*
  - *A Cultural Survey will be completed by Company C on April 22, 2024, and the cover sheet for the completed survey will be provided in the Reclamation Activities Report which will be submitted to [eco@slo.state.nm.us](mailto:eco@slo.state.nm.us) once reclamation field work is completed. If any cultural materials are encountered during the reclamation process, work will be halted and NMSLO archaeologists will be notified.*
2. Document compliance with any wildlife or other biological rules, as applicable. ECO recommends consulting with a qualified third-party biologist for evaluation of potential impacts to threatened, endangered, and sensitive wildlife and plant species, environmentally sensitive areas, surface waters, and sensitive soils before conducting reclamation activities. Example language to include in the reclamation is provided below:



- *Under timing restrictions for areas within the habitat of the Lesser Prairie Chicken, from March 1st through June 15th, no work will take place on the site between the hours of 3:00 am to 9:00 am.*
- *On April 22, 2024, Company C conducted a Special Status Plant Species (SSPS) survey of the release area. The surveys were conducted in compliance with biological reviews required by the NMSLO. The report indicating negative findings is provided as Attachment VI.*

More information and assistance are available at [nmstatelands.org](http://nmstatelands.org) or by email at [bio@slo.state.nm.us](mailto:bio@slo.state.nm.us). Additional resources can be found here:

#### Resources

- *U.S. Fish and Wildlife Services Information for Planning and Consultation:*  
<https://ipac.ecosphere.fws.gov/>
- *BISON-M database:* <https://bison-m.org/>
- *New Mexico Department of Game and Fish Environmental Review Tool (ERT):*  
<https://nmert.org/content/map>

#### E. Site Assessment and Remediation Information

For areas of concern identified during the desktop review and field visit provide a site assessment/delineation plan for proposed soil sampling activities that will occur before reclamation. This can be included with the reclamation plan or submitted under separate cover. The site assessment/delineation plan must include the following information:

- Scaled Site Map illustrating:
  - Suspected impacted area
  - surface features
  - subsurface features
  - proposed delineation points
- Proposed interval sampling and laboratory analytical methods
- Location of Sensitive Receptors
- Topographic/Aerial Maps, as needed
- Documentation of Cultural Resources Compliance
  - Cover sheet for ARMS review or survey or
  - Paragraph stating when ARMS review or survey was completed or
  - Paragraph stating why CPP Rule was not applicable
- Photographs Including Date and GIS Information

If delineation results indicate that remediation will be necessary to bring site conditions into compliance with regulatory standards, a remediation plan will be required. Use the “Document Checklist” provided by ECO and 19.15.29 NMAC as guidance on the preparation of the



remediation plan. Note, remediation plans can be submitted to ECO under separate cover or with the reclamation plan. *Note, all impacted areas that are remediated will require confirmation soil sampling regardless of the volume of soil remediated. Sampling and analytical protocols must still follow 19.15.29 NMAC unless otherwise directed by ECO.*

#### F. Reclamation Activities

The following items are example statements regarding the fieldwork discussion of the reclamation plan. Elaboration on field activities is essential to a professional reclamation plan.

- *The project manager and field staff will be provided a copy of the approved workplan. Company B understands we are responsible for ensuring that the field staff follows the approved workplan. Any variations from the approved workplan will be discussed with ECO before implementation.*
- *All surface equipment and debris will be removed. Flowlines will be abandoned per applicable NMOCD and NMSLO rules.*
- *All surface equipment and debris have been removed from the subject site. Photographs of the equipment removal are provided with this reclamation plan. Details of all equipment and flowlines removed are discussed in the section below.*
- *Any impacted soil unearthed during reclamation activities will be remediated. Remediation will include excavation of the impacted materials and confirmation sampling will be conducted following sampling and analysis protocols provided in 19.15.29 NMAC, unless otherwise directed by ECO. Remediation results will be submitted in the "Reclamation Activities Report".*
- *Once all contaminated soil is removed, confirmation soil samples will be collected. Confirmation 5-point composite samples will be collected from the base and sidewalls of the remediation area in segments representative of no more than 200 square feet or as directed by ECO. Samples will be submitted a certified analytical laboratory for analysis of BTEX, TPH, and chloride.*
- *Once the caliche surface is removed, the areas subject to reclamation, well pad, and access road, will then be cross-ripped to a minimum of 18 inches with a furrow spacing of 2 feet. Note, that this information must be site-specific. Include a detail discussion for the removal of the caliche. For example, not all areas allow for deep cross-ripping of soils due to cemented material or rocky material. The depth of cross-ripping or decompaction should be completed at a maximum depth that will not encourage cemented materials or rocks to surface.*
- *Site preparation will include ripping and dozer track imprinting. Following the initial rip, soil amendments as recommended by the seed supplier will be applied to the ripped areas, and tilled in, and the amended soils will be roughened. Amendments being applied to the site are provided in the appendices.*

- *The ripped areas will be recontoured for initial seedbed preparation. The original landform will be restored, as near as possible, for all unvegetated areas.*
- *A certified weed-free seed mix designed by the NMSLO to meet reclamation standards will be used. Based on the soils at the Site, the NMSLO (ENTER name of seed mixture) will be used for seeding and will be planted in the amount specified in the pounds pure live seed (PLS) per acre.*
- *The seed mixture will be spread by (a drill equipped with a depth regulator) or (a hand-held broadcaster and raked in). If a hand-held broadcaster is used for dispersal, the pounds pure live seed per acre must be doubled. After seeding, the area will be watered in.*
- *Reclamation activities will be documented with photographs in landscape view and will be timestamped with GPS data in decimal degrees. Site photographs will be submitted with the Reclamation Activities Report to [eco@slo.state.nm.us](mailto:eco@slo.state.nm.us).*
- *The area is generally level so erosion control measures will include prompt revegetation with mulching and contouring the surface to limit opportunities for concentrated surface water flow. Or provide a statement that details erosion control measures that will be installed: seeded water bars; seeded rock velocity checks; seed swales etc. Erosion control measures must be illustrated on a site map that is submitted with the workplan.*
- *The former access road will be bermed at the entrance to discourage vehicles from entering the reclaimed areas. Seed will be broadcast on the berm to encourage stabilization. If the access road is not to be reclaimed, provide a statement explaining why the access road is not proposed for reclamation. For example, the access road leads to other active well sites. Note, if there is an alternative route to the other active well sites, ECO may require reclamation of the lease road. Unauthorized two-tracks will also be required to be reclaimed.*

#### G. Reclamation Monitoring

Narrative examples include:

- *The easement will be monitored for vegetative growth to ensure the reclamation activities performed were sufficient. Monitoring will include inspections conducted at least semi-annually on the easement until reclamation is considered complete. The inspections will include monitoring and treating the reclamation for unauthorized traffic, erosion, and invasive or noxious weeds. When it has been determined that vegetation has been established that reflects pre-disturbance vegetation cover with a total percent plant cover of greater than 70% of pre-disturbance area levels, excluding invasive or noxious weeds, a Final Reclamation Report and Reclamation Closure Request will be submitted to [eco@slo.state.nm.us](mailto:eco@slo.state.nm.us).*
- *If the initial reclamation efforts are ultimately deemed unsuccessful, reclamation activities will be reevaluated. Soil amendments will be added as applicable, and reseeding will be performed in the first following favorable growing season.*

- *Through site visits, noxious and invasive weeds will be identified, inventoried, and treated by licensed contracted herbicide applicators or mechanically removed.*

#### H. Schedule of Implementation

Example narrative includes, can provide calendar or Gant Chart:

- *Date or Days – ROE Permit Number X is issued to lessee by NMSLO.*
- *Date or Days – Site Assessment Plan is submitted to the NMSLO for review and approval.*
- *Date or Days – Site Assessment Plan conditionally approved by NMSLO*
- *Date or Days - Execution Phase for Site Assessment Activities and Surface Equipment Removal*
- *Date or Days - Submission of this Site Assessment Report and Reclamation Plan to the NMSLO.*
- *Date or Days - Execution Phase for Reclamation*
- *A brief update report including a narrative of initial activities performed along with corresponding photos illustrating initial reclamation efforts will be provided to the NMSLO within approximately 4 weeks of seeding activities.*
- *The first monitoring event will occur approximately 6 months after the completion of seeding activities. The frequency of monitoring events may be modified by the lessor so long as no more than one year lapses between monitoring events.*
- *A Final Reclamation Closure Report, including a brief narrative and photos showing final reclamation, will be provided within approximately 4 weeks of the final inspection.*