

A vibrant sunflower in a field under a clear blue sky. The sunflower is the central focus, with its bright yellow petals and dark brown center. The background is a soft-focus field of other sunflowers, creating a sense of depth and a warm, natural atmosphere.

Pinedale Anticline Project Area Monitoring for Reclamation Success

In accordance with the Pinedale Anticline Record of Decision signed September 12, 2008, this Reclamation Monitoring Plan was developed to give standardized guidance for monitoring the reclamation success in the Pinedale Anticline Project Area. This plan contains criteria that are required to be measured and reported annually to the Bureau of Land Management and Pinedale Anticline Project Office.

**Bureau of Land Management
Pinedale Field Office
Pinedale Anticline Project Office
Pinedale, Wyoming
September 2009**

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Bureau of Land Management
Pinedale Field Office
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Pinedale, Wyoming



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September 12, 2009

Date

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Pinedale Anticline Project Area Monitoring for Reclamation Success

1. Introduction

In accordance with the Record of Decision for the Final Supplemental Environmental Impact Statement for the Pinedale Anticline Oil and Gas Exploration and Development Project dated September 2008 (FSEIS ROD), this Reclamation Monitoring Plan was developed to give standardized guidance for monitoring reclamation success in the Pinedale Anticline Project Area (PAPA). This Plan contains criteria that are required to be measured and reported annually to the Bureau of Land Management (BLM) and Pinedale Anticline Project Office (PAPO). All development will be considered under this monitoring plan including new, existing and future development. Methodologies for monitoring include guidance from the Reclamation Plan identified in the FSEIS ROD (Appendix C). Suggested seed mixes (Appendix A), required forms (Appendix B), Weed Management Plan (Appendix D), and a glossary of terms are included in this document. All parts of this monitoring plan are subject to the adaptive management process as outlined in Appendix E. Adaptive management and site-by-site reclamation applications and modifications may be considered on a case by case basis. It is a recommendation that monitoring be conducted early in the season when plants are growing and forbs are present; generally May 1 to June 30. If a lease is sold or changes ownership, it shall become the responsibility of the new lessee to follow the regulations set forth in this document and in the FSEIS ROD including all other State and Federal regulations associated with leased lands.

2. Responsibilities

2.1. Responsibilities of the Operator

Provide a geospatial data meeting Federal Geographic Data Committee (FGDC) standards hard and digital copies with metadata (location, physical and biological description of sites to be used as reference areas for reclamation success). Operator shall provide an Annual Monitoring Report and assessment as per the FSEIS ROD Appendix C Reclamation Plan, no less than three weeks prior to the Annual Planning Meeting or January 31, whichever comes first, to both the BLM and PAPO for review. Operator shall submit data to the PAPO database as collected in the format provided by the PAPO. (Hard copies shall be submitted of all data to both the BLM and PAPO until the database is functioning). Operator shall report any reclamation issues upon discovery (present or upcoming events that may impair success) to both the BLM and PAPO in writing. All locations will require Wyoming Big Sage *Artemisia tridentata ssp. wyomingensis*, unless otherwise approved by the BLM AO and PAPO.

2.2. Responsibility of the PAPO

Evaluate annual monitoring reports, support or refute findings of reclamation assessments (regarding success and rational) and recommend adaptive management as warranted to achieve successful reclamation. In addition, coordinate with the BLM Authorized Officer (AO) to achieve the goals set forth in the FSEIS ROD. The PAPO will randomly evaluate a minimum of 5 % of the locations within the PAPA each year generally May 1 and June 30. PAPO will maintain the monitoring database and provide Operators with data submission protocols once the database is functioning.

2.3. Responsibility of the BLM

Will accept or refute PAPO recommendations, coordinate with the PAPO to achieve the goals set forth in the FEIS ROD, and prescribe remedial actions to the operators when reclamation success criteria are not met. Remediation in writing from the BLM AO may include one or more actions such as soil amendments, irrigation, seeding, etc.

3. Quantitative Monitoring

3.1. Reference locations

- 3.1.1.** Permanent reference sites will be identified by each Operator and submitted to the BLM and PAPO for approval. Reference sites will be located in areas not planned for future disturbance/development and may lay outside of the infill in order to retain them as long term reference sites year to year.
- 3.1.2.** Reference sites will be recorded by Global Positioning System (GPS) North American Datum (NAD) 83 marked and described in writing identifying the ecological site, vegetation, precipitation zone and any other information deemed relevant to provide year-to-year comparison to the monitored site. A permanent transect and photo point (also marked by GPS) will be taken and marked for year-to-year verification. These photos will be taken from the same point each year and start with north, then east ,south and west to keep them uniform and will include one photo of the soil surface for reference. Every reference site will be verified once per year using the point intercept method. This data will be included in the Annual Monitoring Report. Each reference location will be representative of the ecological site of the location to be monitored as a whole (Appendix C, C.4).

3.2. Well Pads and Rights-of-Way (ROW)

3.2.1. Well Pads

- 3.2.1.1.** There will be a minimum of one 100 meter transect per every 5 acres of well pad. Each well pad will require one set of directional photos north, east, south and west, rather than each transect, unless otherwise required by the PAPO or BLM. Each transect will be paired with a reference location representative of the five acres as a whole.
- 3.2.1.2.** Seed mix method used for seeding, including dates and disturbance history of each pad, will be recorded in the annual reports.

3.2.2. ROW

- 3.2.2.1.** All ROW require a minimum of one 100 meter monitoring location every half mile, including photos down the transect and notation of the direction will be in the comments (north, south, east, west) and one photo of the soil surface (total 2 photos per location). These photos can be downloaded by batch to the database once online.
- 3.2.2.2.** ROW Operators will provide a plan of their reclamation monitoring plan to the BLM and PAPO. This plan will address all goals and requirements listed in the FSEIS ROD, as well as more specific requirements listed in this document

for well pads. In addition, this plan will include a detailed outline stating how each pipeline company will comply with the reclamation monitoring criteria and shared ROW plans of action for short term and long term monitoring. This plan will include location identification, seed mix, seeding dates, deliverables, soil preparation, monitoring dates, etc. All ROW of less than one half mile will require a minimum of 1 monitoring location.

3.3. Monitoring schedule:

- 3.3.1.** Year of reclamation: Operators will submit a Sundry Notice to the BLM and PAPO with updated information on actual site preparation methods, seed mixes used, planting methods, time of planting, and any specific treatments to the pad. ROW will require an updated plan of development/ reclamation plan that include information on actual site preparation methods, seed mixes used, planting methods, time of planting, and any specific treatments. In addition, ROW will submit a plan of action detailing how they will deal with shared and overlapping ROW, to the PAPO and BLM.
- 3.3.2.** Starting in the third growing season post seeding, quantitative monitoring will be required annually for all well pads and ROWs until the location meets interim reclamation standards as set forth in the FSEIS ROD, Appendix C.
- 3.3.3.** In the fourth season post seeding, a baseline should be formed. If monitoring shows reclamation is not establishing, PAPO will make recommendations for remedial actions.
- 3.3.4.** In the fifth season post seeding, a trend meeting successful reclamation criteria should be seen. If quantitative monitoring shows reclamation is not proceeding, PAPO will make recommendations for remedial actions.
- 3.3.5.** In the eighth season post seeding, reclamation criteria outlined in the FSEIS ROD, Appendix C, should be met. If quantitative monitoring shows reclamation does not meet reclamation criteria, PAPO will make recommendations for course of action.
- 3.3.6.** Quantitative monitoring will be conducted annually on 20% of locations that have met interim reclamation criteria outlined in FSEIS ROD, Appendix C. These locations will be monitored on an alternating schedule approved by the BLM and PAPO. This schedule should be proposed in the Operator's Annual Monitoring Report.

3.3.7. Quantitative monitoring will continue until final reclamation for bond release has been met unless otherwise approved by the BLM AO and PAPO.

3.4. Data Collection

- 3.4.1.** Permanent photo points will be established for each monitoring site on each pad and half mile of ROW. At each location photos will be taken as close to the same time each year as feasible in order to reduce the differences in plant growth characteristics.
- 3.4.2.** A close-up photo to show the soil surface characteristics and the amount of ground surface covered by vegetation and litter will be required for every transect. For pad locations, photos will be taken from the center mark of transect nearest the center of the pad in a north, east, south and west views. This will allow for consistency in the direction when downloaded to the database. The center point may vary as pad size increases and will be noted in the comments on the monitoring forms for each location. NOTE: each well pad will require one set of directional photos north, east, south and west, rather than each transect, unless otherwise required by the PAPO or BLM.
- 3.4.3.** When possible a representative of the BLM and PAPO will accompany the Operator and or their representative during data collection within the season to verify compliance with the monitoring criteria.
- 3.4.4.** BLM, PAPO, all Operators and their representatives will use the following methods to verify compliance. (See Appendix B for methodology and data forms).
- 3.4.5.** Line-point intercept method will be used to determine bare ground (basal or canopy cover).
- 3.4.6.** Density method as described in “Sampling Vegetation Attributes Interagency Technical Reference” will be used to measure density (Appendix B).
- 3.4.7.** Frequency method as described in “Sampling Vegetation Attributes Interagency Technical Reference” will be used to measure frequency (Appendix B)
- 3.4.8.** Production measurements at final reclamation will be made using the double sampling method (Appendix B).

4. Qualitative Monitoring

4.1. Monitoring Schedule:

- 4.1.1.** Starting the first growing season post seeding, qualitative monitoring shall be conducted annually on all reclamation sites (all pads and ROW) until the locations have met the interim reclamation criteria, usually at the eighth year, set forth in Appendix C, C.4.1.
- 4.1.2.** Once interim reclamation has been met as approved by the BLM and PAPO, a location can be included into a monitoring cycle of 10% of pad locations and 5% of the ROW to be monitored on an alternating schedule. Operator must notify the BLM and PAPO in writing to make this request and submit an alternating schedule to be approved by the BLM and PAPO. Monitoring will continue until final reclamation for bond release has been met unless otherwise approved by the BLM AO and PAPO.
- 4.1.3.** All pads and ROW: locations will be free of all undesirable materials such as trash and construction debris.

4.2. Data Collection

- 4.2.1.** Qualitative monitoring consists of “observations” of the location and should be a brief overview. The Reclamation Monitoring Trend Worksheet will be used to collect this data (Appendix B).
- 4.2.2.** Results from qualitative monitoring may require additional photos if there are areas found by the monitoring team to be of concern (rills, no vegetation, weed infestations, slumping or other such problems). These will be sent to the PAPO and BLM for review with a written plan of action from the operator to address the issue.

5. Weed Monitoring

- 5.1.** All pads and ROW will be free of all noxious weeds listed by the State of Wyoming and Sublette County. All State and Federal regulations associated with noxious weed treatments will be required and enforced.
- 5.2.** Annual nuisance weedy plants such as kochia, halogeton, lambsquarters, etc. will have an allowed threshold of 10% canopy cover on each pad as a whole and 4% canopy cover on each one mile of ROW at which time the Pads and ROW will be considered free of

undesirable species. NOTE: At final reclamation for bond release the threshold will not exceed 1% canopy cover of annual weedy species for any location or ROW.

- 5.3.** A Weed Management Plan will be submitted as per the Pinedale BLM weed management policy to the BLM Weed Management Coordinator by every operator for approval from the BLM AO and BLM Weed Management Coordinator. A record of this plan will be filed with the PAPO. Each BLM Natural Resource Specialist (NRS) will receive a copy of the Weed Management Plan submitted by the operator they are assigned to from the PFO Weed Management Coordinator once it has been approved.
- 5.4.** Noxious and invasive species monitoring will be conducted annually, on each location and ROW. Downy Brome (cheatgrass) and other invasive plants will be reported in writing to the BLM and PAPO upon discovery and the location will be recorded as an “invasive species location” in the database. Treatment will follow as per each company’s BLM-approved Weed Management Plan. A written approval for a cheatgrass treatment will be required from the BLM AO, PAPO, and PFO Weed Management Coordinator. All treatments will be conducted in cooperation with the BLM, PAPO, BLM Weed Management Coordinator, and any operators within the affected areas.
- 5.5.** Annual weeds will only be treated for fire breaks around production equipment and other structures on the location. This will be considered routine maintenance as directed in the Conditions of Approval (COA) and each operator’s Weed Management Plan. If this vegetation requires other treatments such as chemical mowing/burn downs, the operator will contact the BLM, PAPO, and BLM Weed Management Coordinator for an onsite to consider treatment options. The approval of these treatments will be obtained from the Company’s BLM NRS, a representative from the PAPO, and BLM Weed Management Coordinator.
- 5.6.** Noxious weeds will be mapped, treated and reported through the appropriate forms/database to the BLM, PAPO and BLM Weed Management Coordinator. Operators will submit data to the database once on line. (*Hard copies will be submitted of all data to both the BLM and PAPO until the data base is functioning at which time monitoring data will be submitted to the database as it is collected*). It is the responsibility of the operators to report to the BLM, PAPO, and BLM Weed Management Coordinator all noxious weed data (weed mapping data due by January 31 of each year). This is in addition to the required documents for the Annual Planning Meetings.
- 5.7.** Monitoring and reporting for noxious and invasive weeds will be conducted each year on every location, access and ROW.

Note: When invasive species such as cheatgrass are located on a pad or ROW, that monitoring section (half mile) of the ROW and whole pad will be marked as an “invasive species location” and yearly follow up monitoring will be required. Following two consecutive seasons with no detection of cheatgrass on the location, the pad or ROW will follow an every other or every third year schedule for monitoring as approved by the BLM AO in writing, in coordination with the PAPO. If cheatgrass is later found during scheduled monitoring, criteria will revert to an annual schedule.

6. Reporting Format

- 6.1.** Detailed documentation of monitoring will be submitted annually and include location, date of monitoring, qualitative and quantitative data, photos, data summary for vegetation measurements, GIS, reference site that was used for this location and any other relevant information dealing with the location. *(Hard copies will be submitted of all data to both the BLM and PAPO until the data base is functioning at which time monitoring data will be submitted to the database as it is collected).* These monitoring and evaluation reports will be submitted to the BLM, PAPO, and other cooperating agencies by January 31 or a minimum of 3 weeks prior to the annual planning meeting (usually in mid February) whichever comes first(Appendix C, C.3 ROD).
- 6.2.** All required monitoring data will be submitted via PAPO Database. *(Hard copies will be submitted of all data to both the BLM and PAPO until the data base is functioning at which time monitoring data will be submitted to the database as it is collected).*
- 6.3.** Any sensitive species that are found within the PAPA through monitoring will be mapped and reported to the PAPO and BLM.
- 6.4.** Soils form Tech note #346 (Appendix B) will be required on all locations unless otherwise stated in writing from the BLM AO and the PAPO.