

Ward #1-30
Well Pad Reclamation Inspection
API #05-009-06638

July 24, 2023

Prepared For:

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1 Introduction

Thomas L Spring, LLC operates the Ward #1-30 well location (API #05-009-06638) in Baca County, Colorado six miles east of Springfield at 37.410770 N, -102.515630W. Reclamation monitoring of this well pad was completed by Habitat Management, Inc. in accordance with Colorado Oil and Gas Conservations Commission (COGCC) requirements on July 24, 2023.

2 Reclamation Requirements

This site is subject to reclamation requirements established by the COGCC Rule 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 on, compacted, covered, paved, or otherwise stabilized in such a way as to minimize erosion to the extent practicable, or a uniform vegetative cover has been established that reflects pre-disturbance or reference area forbs, shrubs, and grasses with total percent plant cover of at least eighty percent (80%) of pre-disturbance levels or reference areas, excluding noxious weeds.

Additionally, operators are required to perform the following activities to achieve permit release.

- Remove all equipment, supplies, weeds, rubbish, and other waste materials.
- Install and maintain Best Management Practices (BMPs) to control stormwater runoff and minimize erosion.
- Alleviate compaction associated with production activities.
- Control state listed noxious weed species to the extent practicable.

Permanently reclaimed well pads must be monitored until they fulfill all of the requirements listed in Table 1.

Table 1. COGCC Requirements for Final Reclamation

1. Total acceptable vegetative cover is greater than or equal to 80% of adjacent area cover.
2. Perennial, non-noxious vegetation is uniform in cover.
3. No A or B-list noxious weeds present; C-list weeds not impacting desirable vegetation cover.
4. Erosion is controlled: No gullying, head cutting, or slumping and no rills greater than 3" deep.
5. No equipment, materials, or waste are present.

3 Monitoring Methods

Both quantitative and qualitative assessments were made on the well pad location as well as the access road.

3.1 Qualitative Assessments

Qualitative assessments included the following.

- A general evaluation of the vegetation community and health
- Identification of areas of low-density vegetation
- Visual assessments of noxious weed infestations
- Visual assessments of pests
- Evaluation of excessive soil compaction
- Visual assessment of erosion (gullying, head cutting, rilling, or excessive soil movement)
- Recommendations for additional reclamation activities

Items of concern were noted, mapped with GPS, and/or photographed.

3.2 Quantitative Assessments

Vegetative cover data were collected in representative locations on the former well pad, the access road, and the adjacent pasture (Figure 1). Vegetation cover data were collected using the line-point intercept method along 50-meter transects with two point-intercepts recorded at every meter along the transect, for a total of 100 points per transect. “First-hit” data were recorded by plant species, litter, rock, or bare ground. Species frequency was also measured by listing each plant species found within one meter on either side of cover transects. A GPS location was recorded at each transect origin and a photograph was taken from the origin along the transect.

4 Monitoring Results

Photographs supporting the quantitative assessment are attached in Appendix 1. The location of each photograph is shown in Figure 1. Transect photographs are attached in Appendix 2 and raw vegetation monitoring data is in Appendix 3. A qualitative assessment form completed in the field is attached in Appendix 4.

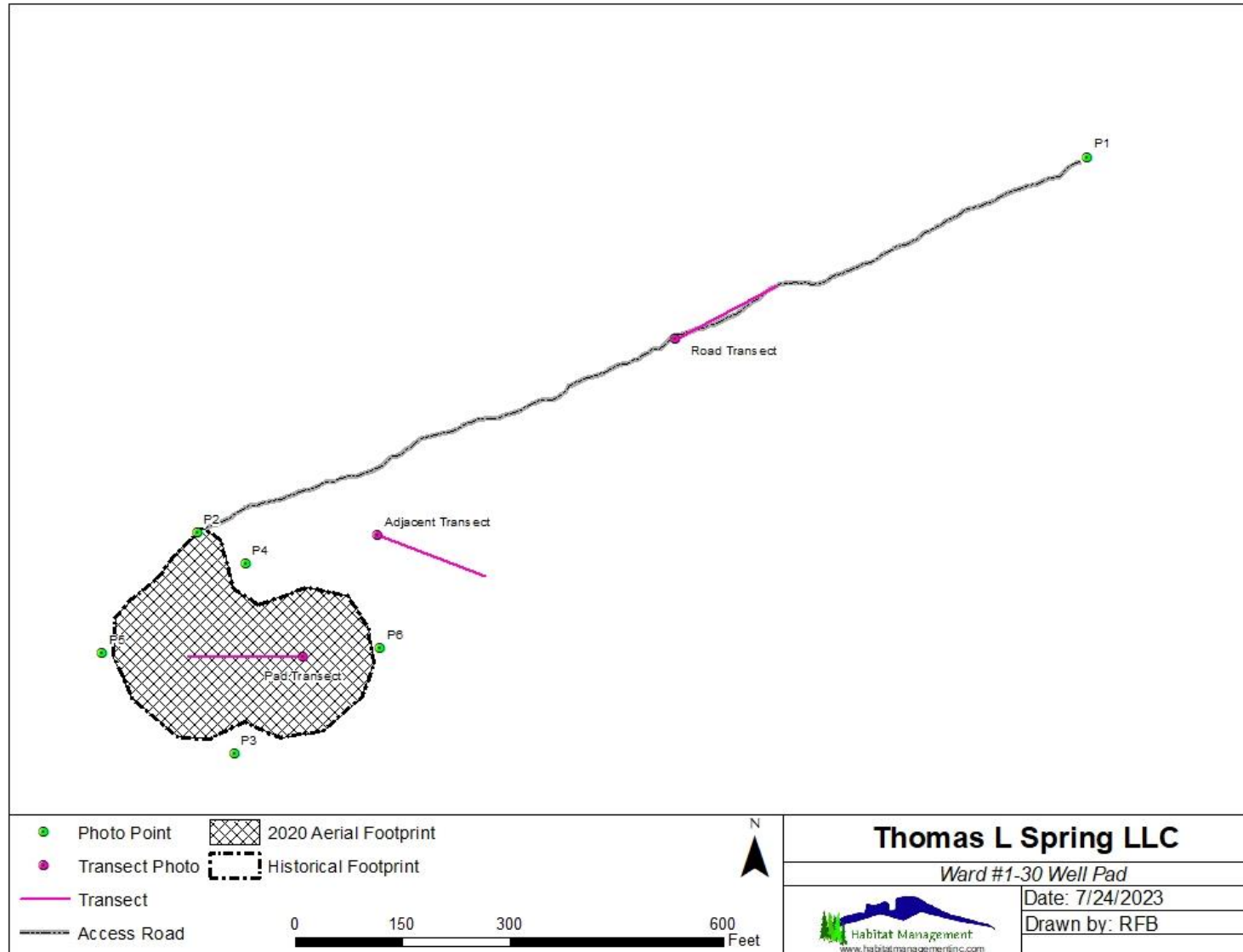
4.1 Qualitative Assessments

The Ward #1-30 well pad is located at the end of a 0.26-mile access road (Figure 1) that runs southwest from a permanent farm road that continues south from where County Road 31 ends. The surrounding pasture is dominated by native warm season grasses including silver beardgrass (*Bothriochloa laguroides*), buffalograss (*Bouteloua dactyloides*), purple threeawn (*Aristida purpurea*) and sand dropseed (*Sporobolus cryptandrus*). The access road is well revegetated and is almost impossible to discern on the ground in some locations (Appendix 1, Photos 1-2). The well pad disturbance that is visible on recent aerial imagery is approximately 1.6 acres, but it is difficult to discern in the field (Appendix 1, Photos 3-6). The only evidence of the boundary is a minor change in the relative dominance of native perennial grass species from the surrounding pasture to the former pad location.

There was no evidence of recent grazing, and the pasture did not appear to have been overgrazed previously. The only noxious weeds observed in the vicinity of the well pad or access road were a few scattered individuals of field bindweed (*Convolvulus arvensis*) which were as prevalent in the surrounding pasture as on the well pad. No erosion was observed in the vicinity of the well pad or access road.

Ward #1-30 Well Pad Reclamation Inspection

Figure 1: Site Map



4.2 Quantitative Assessments

Total vegetation cover on the pad was 62% and native perennial cover was 60% (Table 2, Figure 2). Total vegetation cover on the access road was 67% with 66% native perennial cover. Both of these transects compared well to the adjacent reference area transect which exhibited 63% total vegetation cover and 62% native perennial cover.

Diversity (measured as species richness) on the pad was 24 species was greater than that observed in the reference area (Table 2, Figure 3). While the total diversity of the access road was slightly lower than the reference area at 19 species, the native perennial diversity was the same as the reference area.

Table 2. Vegetation Data Summary

Parameter	Ward #1-30		Reference
	<i>Pad</i>	<i>Access Road</i>	<i>Adjacent</i>
Vegetation Cover (%)			
Total	62	67	63
Non-Noxious	62	67	63
Native Perennial	60	66	62
Species Richness			
Total	24	19	23
Non-Noxious	23	19	22
Native Perennial	15	16	16

Figure 2: Vegetation Cover by Transect

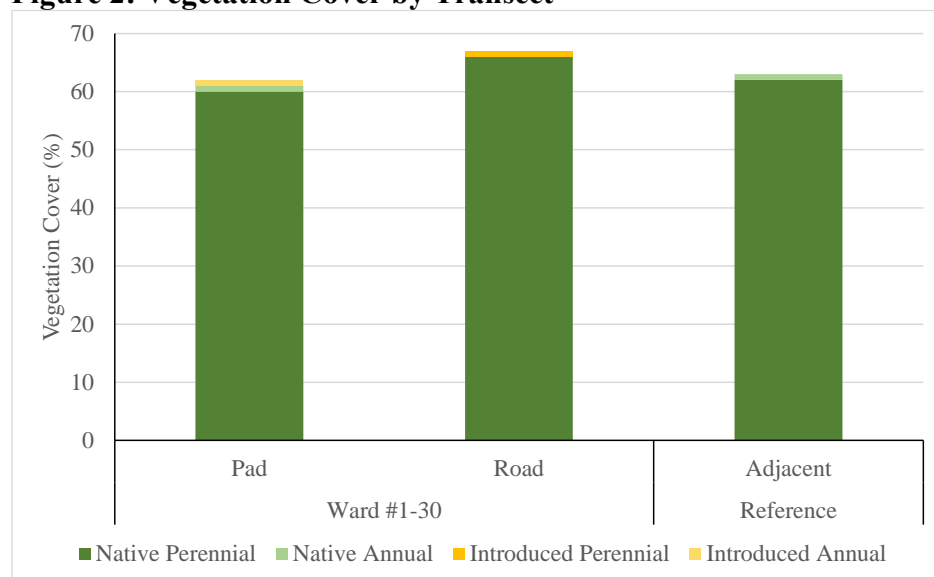
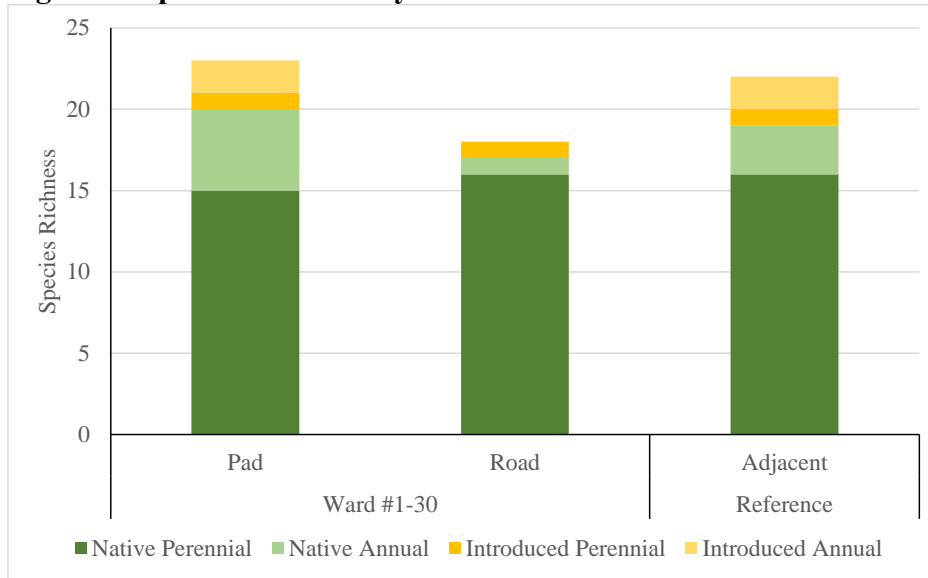


Figure 3: Species Richness by Transect



5 Summary and Recommendations

The Ward #1-30 well pad and access road have been revegetated successfully and are no longer easily discernible from the surrounding pasture. The quantitative data collected on both the pad and the access road was greater than 80% of the reference area. No noxious weeds or erosion were observed, and all equipment, materials, and waste associated with oil and gas operations have been removed. This site has met all five COGCC reclamation requirements (Table 1), and it is recommended that the site be considered for release from further reclamation liability.

Appendix 1: Qualitative Assessment Photographs

Ward #1-30 Well Pad Reclamation Inspection

Photo Point 1: Access Road looking west from permanent farm road



Photo Point 2: Access Road looking east from well pad



Ward #1-30 Well Pad Reclamation Inspection

Photo Point 3: Pad footprint looking North from South side



Photo Point 4: Pad footprint looking South from North side



Ward #1-30 Well Pad Reclamation Inspection

Photo Point 5: Pad footprint looking East from West side



Photo Point 6: Pad footprint looking West from East side



Appendix 2: Transect Photographs

Ward #1-30 Well Pad Reclamation Inspection

Transect Photo 1: Well pad



Transect Photo 2: Access road



Ward #1-30 Well Pad Reclamation Inspection

Transect Photo 3: Pasture adjacent to well pad



Appendix 3: Raw Data

Ward #1-30 Well Pad Reclamation Inspection

Scientific Name	Common Name	Ward #1-30		Reference
		Pad	Road	Adjacent
NATIVE ANNUAL & BIENNIAL FORBS				
Chamaesyce serpens	matted sandmat	P		
Cirsium canescens	prairie thistle	P		
Cirsium ochrocentrum	yellowspine thistle	P		P
Dyssodia papposa	fetid marigold	1		P
Helianthus annuus	common sunflower	P	P	1
Subtotal		1	P	1
INTRODUCED ANNUAL & BIENNIAL FORBS				
Melilotus officinalis	sweetclover	1		P
Salsola tragus	prickly Russian thistle	P		P
Subtotal		1		P
NATIVE PERENNIAL FORBS				
Astragalus mollissimus	woolly locoweed			P
Dalea purpurea	purple prairie clover	P		P
Heterotheca villosa	hairy false goldenaster			P
Machaeranthera pinnatifida	lacy tansyaster	P	P	P
Psoralidium tenuiflorum	slimflower scurfpea	P	P	P
Ratibida tagetes	green prairie coneflower			P
Symphotrichum falcatum	white prairie aster		P	
Thelesperma megapotamicum	Hopi tea greenthread		P	
Subtotal		P	P	P
INTRODUCED PERENNIAL FORBS				
Convolvulus arvensis	field bindweed	P		P
Subtotal		P		P
NATIVE PERENNIAL GRASSES				
Aristida purpurea	purple threeawn	25	9	11
Bothriochloa laguroides	silver beardgrass	5	40	21
Bouteloua curtipendula	sideoats grama	1	1	3
Bouteloua dactyloides	buffalograss	14	10	16
Bouteloua gracilis	blue grama	P		1
Chloris verticillata	tumble windmill grass	P		
Elymus elymoides	squirreltail		P	
Erioneuron pilosum	hairy woollygrass	P	1	P
Schedonnardus paniculatus	tumblegrass	2	P	1
Schizachyrium scoparium	little bluestem	P	1	1
Sorghastrum nutans	Indiangrass		1	
Sporobolus cryptandrus	sand dropseed	13	3	8
Subtotal		60	66	62
INTRODUCED PERENNIAL GRASSES				
Bothriochloa ischaemum	yellow bluestem		1	
Subtotal			1	
NATIVE WOODY SPECIES				
Gutierrezia sarothrae	broom snakeweed	P		
Opuntia macrorhiza	twistspine pricklypear		P	
Senecio flaccidus	threadleaf ragwort	P	P	P
Subtotal		P	P	P
Total Vegetation Cover		62	67	63
Non-Noxious Vegetation Cover		62	67	63
Litter	Litter	14	24	27
Rock	Rock			
Total Ground Cover		76	91	90
Bare Ground	Bare Soil	24	9	10
Total Hits		100	100	100
Total Species		24	19	23

Appendix 4: Qualitative Assessment Form

Ward #1-30 Well Pad Reclamation Inspection

Well Pad: Ward #1-30

Monitor Date: 7/24/2023

Observer: Robin Bay

QUALITATIVE ASSESSMENTS

Vegetation

Areas of Low Density Vegetation: No

Comments:

Noxious Weed Infestations: Yes

Comments: A few bindweed observed

Non-Noxious Nuisance Weed Infestations Impacting Desirable Cover: No

Comments:

Soil Concerns

Areas of Soil Compaction: No

Comments:

Erosion Concerns: No

Comments:

Additional Recommended Work

Additional Work Recommended: No

Reclamation Comments: Looks good, vegetation is shorter on pad.

Additional Comments:

Release Recommended: Yes