

Warne Templin #1-29
Well Pad Reclamation Inspection
API #05-061-06713

July 19, 2023

Prepared For:

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Table of Contents

1 Introduction..... 1
2 Reclamation Requirements 1
3 Monitoring Methods 1
 3.1 Qualitative Assessments..... 2
 3.2 Quantitative Assessments..... 2
4 Monitoring Results..... 2
 4.1 Qualitative Assessments..... 2
 4.2 Quantitative Assessments..... 5
5 Summary and Recommendations 6

Tables

Table 1. COGCC Requirements for Final Reclamation 1
Table 2. Vegetation Data Summary..... 5

Figures

Figure 1: Site Map 4
Figure 2: Vegetation Cover by Transect..... 5
Figure 3: Species Richness by Transect..... 6

Appendices

Appendix 1: Qualitative Assessment Photographs 7
Appendix 2: Transect Photographs 12
Appendix 3: Raw Data..... 15
Appendix 4: Qualitative Assessment Form 17

1 Introduction

Thomas L Spring, LLC operates the Warne Templin #1-29 well location (API #05- 061-06713) in Kiowa County, Colorado approximately 10 miles northeast of McClave and 10 miles northwest of Wiley at 38.284840 N, -102.807150 W. 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 19, 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

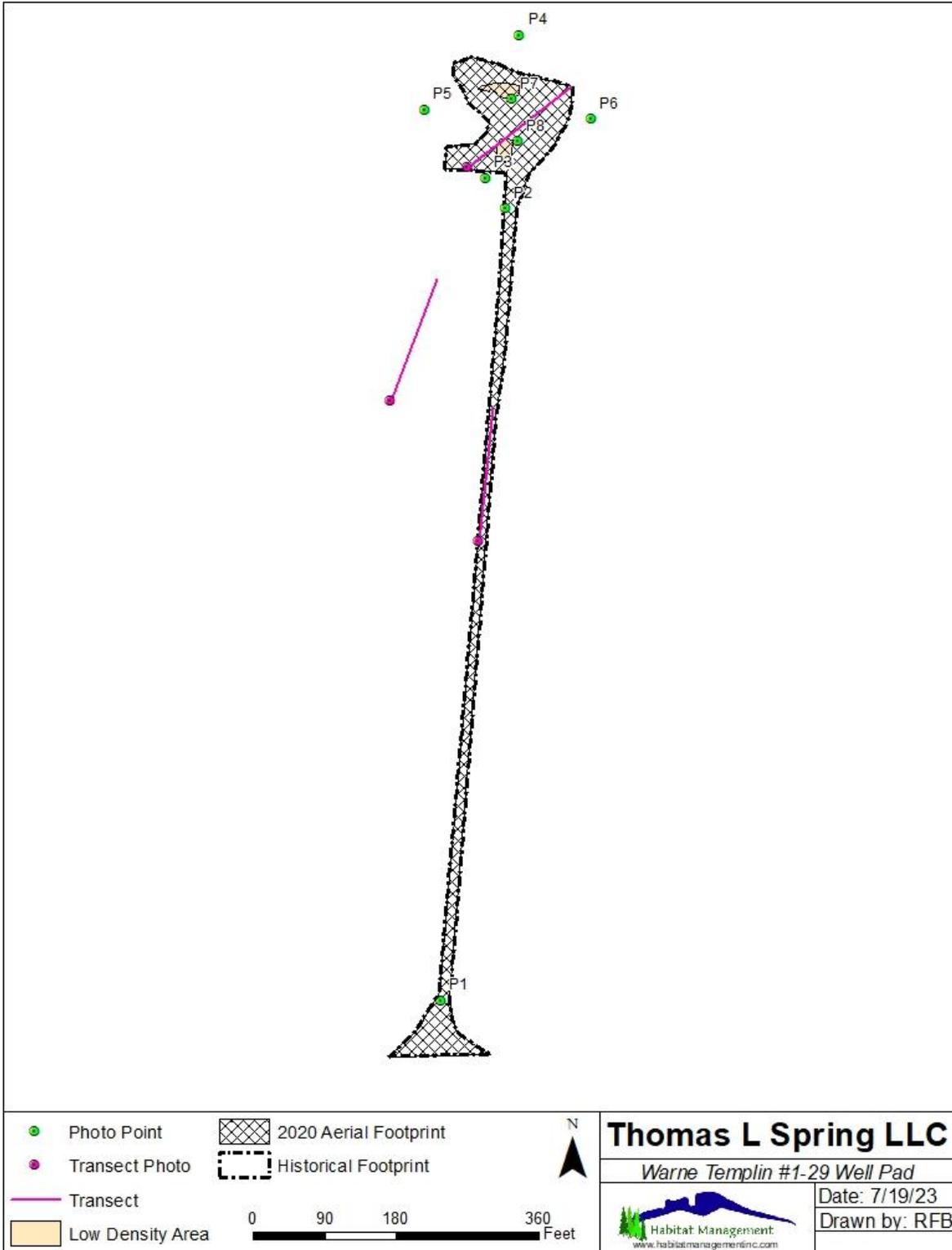
The Warne Templin #1-29 well pad is located at the end of a 0.21-mile access road (Figure 1) that runs north from a permanent farm road that connects to County Road 40 to the east. The surrounding pasture is dominated by the native warm season grass sideoats grama (*Bouteloua curtipendula*). The access 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 in 2020 aerial imagery is approximately 0.7 acres, but it is not obvious in the field (Appendix 1, Photos 3-6). The primary 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 are also two small areas of low-density vegetation measuring approximately 480 and 620 square feet, respectively. These areas appear to ephemerally hold water after rainfall events, and it is apparent that cattle have been using them due to heavier trampling than is seen in the surrounding area. While there was evidence of recent grazing, the pasture did not appear to have been overgrazed previously.

No noxious weeds were observed in the vicinity of the well pad or access road. No erosion was observed in the vicinity of the well pad or access road.

Warne Templin #1-29 Well Pad Reclamation Inspection

Figure 1: Site Map



4.2 Quantitative Assessments

Total vegetation cover on the pad was 42% and on the access road was 66%, all of which was native perennial species (Table 2, Figure 2). The total vegetation cover on the reference transect was 60% and was again all native perennial species. While the vegetation cover on the pad was only 70% of the reference transect, the average vegetation cover of the pad and the access road was 90% of the reference transect.

Diversity (measured as species richness) on the pad was 18 species of which 10 were native perennial species. On the road there were 12 total species and eight native perennial species. On the reference transect there were 16 total species and eight native perennial species (Table 2, Figure 3).

Table 2. Vegetation Data Summary

Parameter	Warne Templin #1-29			Reference
	Pad	Access Road	Average	Adjacent
Vegetation Cover (%)				
Total	42	66	54	60
Non-Noxious	42	66	54	60
Native Perennial	42	66	54	60
Species Richness				
Total	18	12	15	16
Non-Noxious	18	12	15	16
Native Perennial	10	8	9	8

Figure 2: Vegetation Cover by Transect

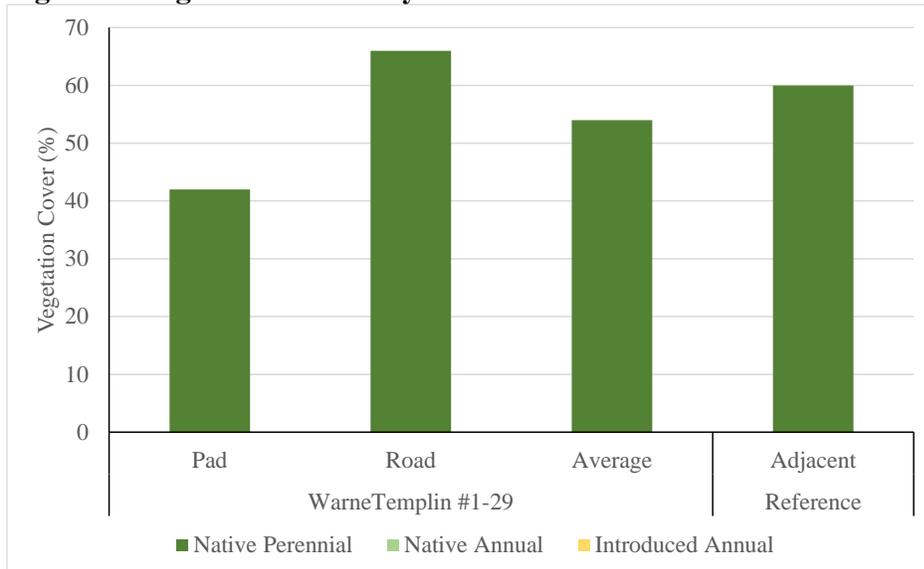
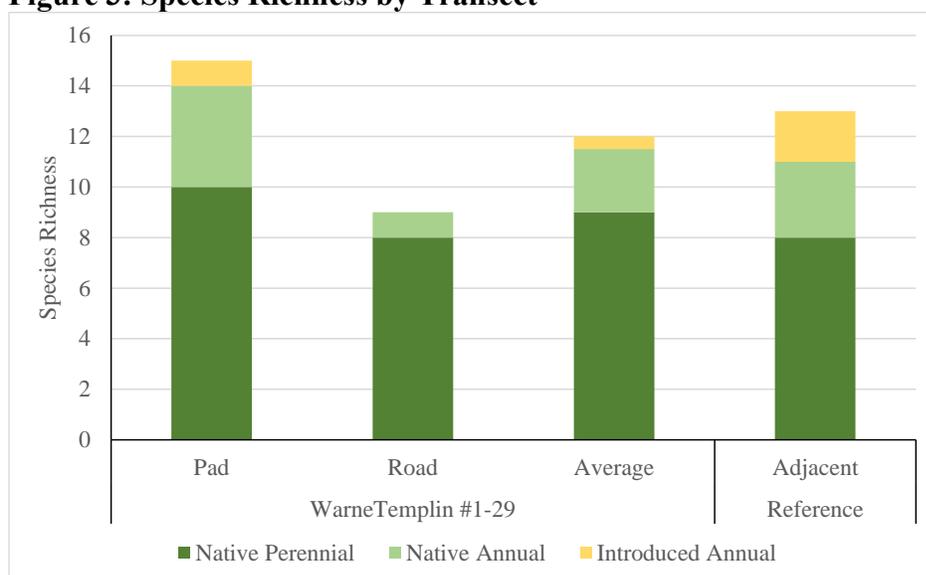


Figure 3: Species Richness by Transect



5 Summary and Recommendations

The Warne Templin #1-29 well pad and access road have been revegetated and are no longer easily discernible from the surrounding pasture. This site has met all five of the COGCC reclamation requirements (Table 1) and it is recommended that the site be considered for release from further reclamation liability.

The quantitative data collected on the access road was 110% of the reference area and the data collected on the pad footprint was 70% of the reference area. When these transects were averaged together, they were 90% of the reference area exceeding the 80% requirement. No noxious weeds or erosion were observed, and all equipment, materials, and waste associated with oil and gas operations have been removed.

While there are still two small low density vegetation areas totaling approximately 1,100 square feet, the disturbance associated with implementing further reclamation efforts would likely equal or exceed the current remaining disturbance area. If the site is not released from reclamation liability, it would be necessary to decompact and reseed the two small low-density areas. Additionally, it would be necessary to fence the well pad area to prevent cattle from grazing these areas.

Appendix 1: Qualitative Assessment Photographs

Warne Templin #1-29 Well Pad Reclamation Inspection

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



Photo Point 2: Access Road looking south from well pad



Warne Templin #1-29 Well Pad Reclamation Inspection

Photo Point 3: Pad footprint looking North from South side



Photo Point 4: Pad footprint looking South from North side



Warne Templin #1-29 Well Pad Reclamation Inspection

Photo Point 5: Pad footprint looking East from West side



Photo Point 6: Pad footprint looking West from East side



Warne Templin #1-29 Well Pad Reclamation Inspection

Photo Point 7: Small low density vegetation area trampled by cattle



Photo Point 8: Small low density vegetation area trampled by cattle



Appendix 2: Transect Photographs

Warne Templin #1-29 Well Pad Reclamation Inspection

Transect Photo 1: Well pad



Transect Photo 2: Access road



Warne Templin #1-29 Well Pad Reclamation Inspection

Transect Photo 3: Pasture adjacent to well pad



Appendix 3: Raw Data

Warne Templin #1-29 Well Pad Reclamation Inspection

Scientific Name	Common Name	WarneTemplin #1-29		Reference
		Pad	Road	Adjacent
NATIVE ANNUAL & BIENNIAL FORBS				
Chamaesyce glyptosperma	ribseed sandmat	P	P	P
Chamaesyce serpens	matted sandmat	P		
Cirsium ochrocentrum	yellowspine thistle			P
Dyssodia papposa	fetid marigold	P		
Helianthus annuus	common sunflower	P		P
Subtotal		P	P	P
INTRODUCED ANNUAL & BIENNIAL FORBS				
Amaranthus blitoides	mat amaranth			P
Salsola tragus	prickly Russian thistle	P		P
Subtotal		P		P
NATIVE PERENNIAL FORBS				
Astragalus sp.	milkvetch		P	
Heterotheca villosa	hairy false goldenaster		P	
Machaeranthera pinnatifida	lacy tansyaster	1	P	
Picradeniopsis oppositifolia	oppositeleaf bahia	1		
Psoralidium tenuiflorum	slimflower scurfpea	1		P
Sphaeralcea coccinea	scarlet globemallow	1	1	
Symphotrichum falcatum	white prairie aster			1
Subtotal		4	1	1
NATIVE PERENNIAL GRASSES				
Aristida purpurea	purple threeawn	2		P
Bouteloua curtipendula	sideoats grama	21	56	55
Bouteloua dactyloides	buffalograss	P		
Bouteloua gracilis	blue grama	1	6	2
Schedonnardus paniculatus	tumblegrass	4		P
Sporobolus cryptandrus	sand dropseed	10	3	1
Subtotal		38	65	58
NATIVE WOODY SPECIES				
Opuntia macrorhiza	twistspine pricklypear		P	1
Subtotal			P	1
Total Vegetation Cover		42	66	60
Non-Noxious Vegetation Cover		42	66	60
Native Vegetation Cover		42	66	60
Litter	Litter	30	24	26
Rock	Rock			
Total Ground Cover		72	90	86
Bare Ground	Bare Soil	28	10	14
Total Hits		100	100	100
Total Species		18	12	16

Appendix 4: Qualitative Assessment Form

Warne Templin #1-29 Well Pad Reclamation Inspection

Well Pad: Warne Templin #1-29

Monitor Date: 7/19/2023

Observer: Robin Bay

QUALITATIVE ASSESSMENTS

Vegetation

Areas of Low-Density Vegetation: Yes

Comments: Low density areas appear to hold water used by cattle

Noxious Weed Infestations: No

Comments:

Non-Noxious Nuisance Weed Infestations Impacting Desirable Cover: No

Comments:

Soil Concerns

Areas of Soil Compaction: Yes

Comments: In low density areas

Erosion Concerns: No

Comments:

Additional Recommended Work

Additional Work Recommended: No

Reclamation Comments: Very small low-density areas are depressions that hold water and appear to be used by cattle.

Additional Comments:

Release Recommended: Yes