155 FERC ¶ 61,236
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Norman C. Bay, Chairman;
Cheryl A. LaFleur, Tony Clark,
and Colette D. Honorable.

East Cheyenne Gas Storage, LLC Docket No. CP16-25-000

ORDER ISSUING CERTIFICATE

(Issued June 2, 2016)

1. On November 30, 2015, East Cheyenne Gas Storage, LLC (East Cheyenne) filed an application pursuant to section 7(c) of the Natural Gas Act (NGA)[1] seeking authorization to further amend the certificate of public convenience and necessity issued by the Commission on August 2, 2010, in Docket No. CP10-34, *et al*., as amended,[2] by expanding the certificated boundaries of the East Cheyenne Gas Storage Project reservoirs in the West Peetz and Lewis Creek fields located in Logan County, Colorado.

2. For the reasons discussed below, and subject to the conditions herein, the Commission will grant in part East Cheyenne's proposal.

I. Background

3. East Cheyenne, a Delaware limited liability company authorized to do business in Colorado, is a natural gas company as defined by section 2(6) of the NGA.[3] East Cheyenne is a wholly owned subsidiary of Midstream Energy Holdings, LLC, a

[1] 15 U.S.C. § 717(f) (2012).

[2] *E. Cheyenne Gas Storage, LLC*, 132 FERC ¶ 61,097 (2010); *E. Cheyenne Gas Storage, LLC*, 135 FERC ¶ 61,021 (2011); *E. Cheyenne Gas Storage, LLC*, 138 FERC ¶ 62,071 (2012); *E. Cheyenne Gas Storage, LLC*, 140 FERC ¶ 62,083 (2012) (revised through errata issued July 31 and September 4, 2012); *E. Cheyenne Gas Storage, LLC*, 148 FERC ¶ 62,138 (2014).

[3] 15 U.S.C. § 717a(6) (2012).

subsidiary of Quantum NGS Holdings, LLC, which in turn is a joint venture with Larry Bickle, Ph.D., and Quantum Energy Partners, a private equity firm. East Cheyenne provides storage and hub services at market-based rates.

4. East Cheyenne's storage facility comprises the West Peetz and Lewis Creek fields, which are anticlinal traps[4] on the Eastern flank of the D-J (or Denver) Basin in Logan County, Colorado. Production from the formation began in the early 1950's.

5. East Cheyenne completed construction of the certificated West Peetz facilities and commenced service in 2011. To date, East Cheyenne has focused exclusively on development of the West Peetz facilities, with the exception of two monitoring wells between the Lewis Creek field and the West Peetz field that are used to monitor both fields, as well as one water-supply well located in the Lewis Creek field.

II. Description of Proposal

6. East Cheyenne requests authorization to revise the certificated reservoir boundaries in the West Peetz and Lewis Creek fields. The current certificated boundary of the East Cheyenne Gas Storage Project encloses 6,089 acres.[5] The proposed amendment would increase the certificated acreage of the storage field by 2,793 acres, to a total of 8,882 acres. East Cheyenne states that, based on its geologic interpretation of the project reservoirs, the current certificated boundary does not accurately enclose the area required for storage operations. Specifically, East Cheyenne asserts that full development of the reservoirs to the maximum certificated capacities will result in natural gas presence extending beyond certain of the certificated reservoir boundaries, thereby requiring an expansion of reservoir boundaries to protect the integrity of the project.

7. As Attachment 1 shows, East Cheyenne proposes to expand the project boundary along portions of the northern, eastern, southern, and western sides of the current boundary. Specifically, East Cheyenne proposes to expand its existing reservoir boundary to include 1) all of Township 12N Range 52W (Section 30), which is located north of the currently certificated project area; 2) the east half of Township 11N, Range 52W (Section 5), and the northeast and southwest quarters of Township 11N, Range 52W (SW Section 8 and NE Section 8, respectively), which are located east of the currently certificated project area; 3) all of Township 11N, Range 53W (Section 2), the southwest

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[4] An anticline is a fold of rock strata that inclines downward on both sides from a median line or axis. An anticlinal trap is a rock reservoir within the anticline in which oil, gas, or water may accumulate.

[5] *See* East Cheyenne Gas Storage, LLC Response to April 15 Data Requests.

quarter of Township 11N, Range 53W (Section 1), and all of Township 12N, Range 53W (Section 35), which are located on the western side of the currently certificated project area; and 4) the south half of the western quarter of Township 11N, Range 52W (Section 18), which is located on the south of the currently certificated project boundary. The proposed section boundaries and acreage are summarized below in Table 1.

Table 1[6]

Proposed New Boundary-Section	***Area (acres)***
S30-T12N-R52W	640 acres
E1/2 S5-T11N-R52W	320 acres
NE1/4 S8E-T11N-R52W	160 acres
SW1/4 S8-T11N-R52W	160 acres
S2-T11N-R52W	640 acres
SW1/4 S1-T11N-R53W	160 acres
S35-T12N-R53W	640 acres
S1/2 SW1/4 S18-T11N-R52W	73 acres

III. Notice, Interventions, and Protests

8. Notice of the application was published in the *Federal Register* on December 21, 2015.[7] No motions to intervene or protests in this proceeding were filed.

[6] Acreage is informed by Commission staff's interpretations of geologic and engineering data in the record.

[7] 80 Fed. Reg. 79,328 (2015).

IV. Discussion

9. Because the proposed extension will be used for the storage of natural gas in interstate commerce subject to the Commission's jurisdiction, the proposal is subject to the requirements of subsections (c) and (e) of section 7 of the NGA.[8]

A. Certificate Policy Statement

10. The Certificate Policy Statement provides guidance for evaluating proposals to certificate new construction.[9] The Certificate Policy Statement establishes criteria for determining whether there is a need for a proposed project and whether the proposed project will serve the public interest. The Certificate Policy Statement explains that in deciding whether to authorize the expansion of natural gas facilities, the Commission balances the public benefits against the potential adverse consequences. The Commission's goal is to give appropriate consideration to the enhancement of competitive transportation alternatives, the possibility of overbuilding, subsidization by existing customers, the applicant's responsibility for unsubscribed capacity, the avoidance of unnecessary disruptions of the environment, and the unneeded exercise of eminent domain.

11. Under this policy, the threshold requirement for applicants proposing new projects is that the applicant must be prepared to financially support the project without relying on subsidization from its existing customers. The next step is to determine whether the applicant has made efforts to eliminate or minimize any adverse effects the project might have on the applicant's existing customers, existing pipelines in the market and their captive customers, or landowners and communities affected by the construction of the new natural gas facilities. If residual adverse effects on these interest groups are identified after efforts have been made to minimize them, the Commission will evaluate the project by balancing the evidence of public benefits to be achieved against the residual adverse effects. This is essentially an economic test. Only when the benefits outweigh the adverse effects on economic interests will the Commission proceed to complete the environmental analysis where other interests are considered.

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[8] 15 U.S.C. §§ 717f(c), (e) (2012).

[9] *Certification of New Interstate Natural Gas Pipeline Facilities*, 88 FERC ¶ 61,227 (1999), *clarified*, 90 FERC ¶ 61,128, *further clarified*, 92 FERC ¶ 61,094 (2000) (Certificate Policy Statement).

12. As noted above, the threshold requirement for applicants proposing new projects is that the applicant must be prepared to financially support the project without relying on subsidization from its existing customers. However, the Certificate Policy Statement provides that it is not a subsidy for existing customers to pay for projects designed to improve existing service or the reliability of that service.

13. As discussed in more detail below, we find that most of the proposed boundary expansion is supported by the geological and engineering data provided by East Cheyenne and that the proposed boundary expansion as modified herein, is necessary for East Cheyenne to fully develop and maintain the integrity of its authorized storage facility and the services it provides to its customers. Moreover, East Cheyenne provides all of its storage and hub services at market-based rates. Thus, existing customers will not be required to subsidize new facilities. That finding remains unchanged.

14. The modified expansion boundaries described below will serve to protect the integrity of the storage facility and East Cheyenne's existing customers and services. As no new services are proposed, there will not be any impacts on other pipelines or their captive customers. East Cheyenne states that it has acquired most of the storage agreements required for the proposed expansion of the certificated reservoir boundary and that it will negotiate with landowners to acquire storage agreements on the remaining acreage. No landowners or mineral rights holders commented on or protested East Cheyenne's proposal. Thus, we find that East Cheyenne has minimized impacts on landowners and surrounding communities.

15. Based on the project's benefits, its lack of identified adverse impacts on East Cheyenne's existing customers or other pipelines and their customers, and its minimal impacts on landowners and communities, the Commission finds, consistent with the Certificate Policy Statement and section 7(c) of the NGA, that East Cheyenne's proposal, as conditioned below, is required by the public convenience and necessity.

B. Engineering and Geology

1. Background

16. The West Peetz and Lewis Creek Fields comprising the East Cheyenne storage facility are two nearly depleted oil and gas fields that were converted to natural gas storage service in 2010. The fields are located approximately twenty-three miles north of Sterling, in Logan County, Colorado.

17. Previous orders certificated a total storage capacity of 34.6 billion cubic feet (Bcf), as specified in Table 2.[10] The storage facility has an authorized maximum injection capability of 350 million cubic feet per day (MMcf/d) and a maximum withdrawal capability of 350 MMcf/d.[11] The project interconnects through a header system with the Rockies Express Pipeline LLC's (REX) and Trailblazer Pipeline Company LLC's (Trailblazer) interstate pipeline systems.[12]

Table 2

Field	***Working Gas (Bcf)***	***Cushion Gas (Bcf)***
West Peetz	14.5	10.8
Lewis Creek	4.4	4.9
Total Certificated Capacity	18.9	15.7

18. East Cheyenne stores natural gas in two Cretaceous sandstones (sands) – the lower sands (J Sands) and the upper sands (D Sands). Collectively, these sands are referred to as the Dakota-J interval. Approximately 40 feet of Huntsman shale separate the underlying J Sands from the D Sands storage reservoirs. Historical geologic interpretation suggests that vertical migration of natural gas on the Dakota-J interval is not likely.[13]

19. The J Sands are a relatively homogenous sand deposit with respect to structure and grain size, making it a conventional reservoir for natural gas storage.

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[10] *E. Cheyenne Gas Storage, LLC*, 148 FERC ¶ 62,138.

[11] *E. Cheyenne Gas Storage, LLC*, 132 FERC ¶ 61,097.

[12] *Id*.

[13] *See* Application of Colorado Interstate Gas Co., CP05-35-000, Exhibit H.

20. The D Sands are more extensive than the J Sands, with deposits blanketing the Dakota J interval in erratic patterns. There are three D sand layers separated by thin shale beds. East Cheyenne internally designates these strata as D-1, D-2, and D-3 from top to bottom. Geologic interpretation by East Cheyenne identifies only the D-2 and D-3 layers as suitable for providing natural gas storage. Within the proposed expanded boundary, the D-2 sands overlie the D-3 sands.

2. Technical Review

21. East Cheyenne requests authority to increase the size of the active storage reservoir boundary from approximately 6,089 acres to approximately 8,882 acres as determined by the company's recent structural geology and engineering analysis of the West Peetz and Lewis Fields. There is inherent uncertainty regarding the performance of underground storage reservoirs. Because the actual boundaries of an underground reservoir depend on characteristics that can generally be confirmed only after the facility has commenced operation, it is not unusual to find that an underground reservoir does not confine gas volumes as anticipated. In such cases, to ensure the integrity of the storage reservoir and the efficient operation of the storage facility, companies are typically authorized to either revise a storage facility's certificated boundaries to conform to the enlarged contours of the actual underground reservoir[14] or alter the operating parameters of the storage facility to prevent gas from migrating beyond the facility's existing certificated boundaries.[15]

22. Storage field operators are authorized to revise storage field boundaries when the company can demonstrate with engineering and geologic data that such revisions are required in order to improve the operation of the storage field or to maintain its integrity.[16] In deciding whether the public convenience and necessity requires approval

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[14] *See, e.g., Williston Basin Interstate Pipeline Co.*, 127 FERC ¶ 61,045 (2009); *Dominion Transmission, Inc.*, 100 FERC ¶ 61,168 (2002); *Williams Natural Gas Pipelines Central, Inc.*, 83 FERC ¶ 61,120 (1998); *Williams Natural Gas Co.*, 77 FERC ¶ 61,150 (1996); *ANR Pipeline Co.*, 76 FERC ¶ 61,263 (1996), *reh'g denied*, 78 FERC ¶ 61,122 (1997); and *Columbia Gas Transmission Corp.*, 35 FERC ¶ 61,345 (1986).

[15] *See, e.g., Equitrans, L.P.*, 119 FERC ¶ 61,287 (2007), in which the Commission set maximum inventory and pressure parameters at levels to ensure the integrity of storage reservoirs and to minimize gas migration.

[16] *See Northern Natural Gas Co.*, 131 FERC ¶ 61,209 (2010); *Columbia Gas Transmission Corp.*, 128 FERC ¶ 61,050 (2009); and *Williston Basin Interstate Pipeline Co.*, 127 FERC ¶ 61,045 (2009).

of a company's request to enlarge its storage boundary due to gas migration problems, a material consideration is whether the storage reservoir has expanded and whether the company's estimations of the reservoir and protective boundaries are reasonable.[17]

23. We conclude that East Cheyenne has demonstrated with geologic and engineering data that some, but not all, of the proposed reservoir expansion is warranted, as discussed below. Attachment 2 to this order depicts the revised reservoir boundaries approved in this order.

a. Northern Boundary Expansion: Section 30

24. As Attachment 1 shows, East Cheyenne requests to expand its certificated storage boundaries to include all of Section 30. East Cheyenne states that recent geologic and engineering analysis indicate that natural gas is migrating north of the currently-certificated boundary. Consequently, East Cheyenne has requested that the Commission authorize expansion of the storage facility's boundary to include all of Section 30. Commission staff's independent review of the data, however, does not confirm East Cheyenne's geologic interpretation. Instead, staff review of annual water saturation plots of the D-2 sands recorded from November 2011- 2015 indicates that gas developments to the north have stabilized.[18] Any natural gas migration to the north would be detected by an observation well near the northern certificated boundary. Currently, our interpretation of available geologic data submitted by East Cheyenne does not indicate that the proposed increase in the reservoir boundary is necessary to prevent migration. Therefore, East Cheyenne's request for a boundary expansion to include all of Section 30 is denied.

b. Eastern Boundary Expansion: SW Section 8, NE Section 8, Section 5

25. East Cheyenne also requests authority to expand its certificated project boundaries to include SW Section 8, NE Section 8, and the eastern half of Section 5. East Cheyenne states that its observations and analysis of the project reservoirs show that natural gas is moving eastward beyond the certificated reservoir boundaries into the eastern half of Section 5 and the northeastern and southwestern quarters of Section 8. Commission staff's review of annual water saturation plots of the D-3 sands finds gas presence developing in a southerly direction in Section 7 approaching the boundary with the western border of Section 8. Due to the increasing storage gas presence in the D-3 sands trending south toward the proposed reservoir boundary, the Commission finds that the

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[17] *ANR Pipeline Co*., 76 FERC, at 62,346.

[18] *See* December 17, 2015 Data Response.

request for boundary expansion to include SW Section 8 is reasonable and is required by the public convenience and necessity.

26. Commission staff's review does not find, however, that natural gas in the D-3 sand is developing to the east and approaching the proposed boundary expansion of the eastern half of Section 5. Furthermore, there is insufficient data to suggest gas presence in either the D-2 or D-3 sands trending to the northeastern quarter of Section 8. Coupled with geologic data indicating that gas is actually migrating to the south in the D-3 sands into Section 6 and Section 7, we find that East Cheyenne's estimates of the expanded necessary reservoir boundaries are not reasonable. Thus, the requests to include the eastern half of Section 5 and NE Section 8 as part of the revised certificated boundaries are denied.

c. Southern Boundary Expansion: Section 18

27. East Cheyenne requests that the certificated boundary be revised to include all of Section 18. East Cheyenne's current boundary encompasses most of Section 18 with the exception of a portion of the southwest corner. Stored natural gas expansion appears to be accelerating south through Section 7 into Section 18 and suggests that approach into all of Section 18 is imminent. We find that the proposed boundary expansion of Section 18 is necessary to maintain the integrity of the storage reservoir. Thus, East Cheyenne's request to expand the boundary to include all of Section 18 is approved.

d. Western Boundary Expansion: Section 1, Section 2, Section 35

28. In addition, East Cheyenne requests an amendment to expand its certificated project boundary to include the remainder of Section 1, all of Section 2, and all of Section 35. East Cheyenne asserts that geologic data indicates the development of gas storage to the west of the certificated boundary in the D-3 sand through structural "saddles."[19] Accordingly, East Cheyenne requests that its certificated boundaries be expanded to incorporate all of Section 1. Commission staff confirms East Cheyenne's assessment and finds that expansion is required by the public convenience and necessity.

[19] A saddle is a structural low lying between two structural highs. If gas pressure in one of the structurally high areas is greater than the other structurally high area, gas has the potential to migrate from the higher pressure area, through the saddle, into the other structurally high area.

29. Moreover, staff's structural interpretation suggests potential movement beyond Section 1's existing reservoir boundary into Section 2 and Section 35 which exhibit similar geological features to Section 1. As a result of these demonstrable gas storage reservoir developments, the Commission finds that East Cheyenne's request for boundary expansion to include Section 2 and Section 35 are required by the public convenience and necessity.

V. Summary

30. The findings discussed above regarding the proposed section boundaries with areas are summarized below in Table 3.[20]

Table 3

Proposed New Boundary-Section	***Area (approx. acres)***	***Finding Herein***
Section 30	640 acres	Denied
East half of Section 5	320 acres	Denied
NE Quarter of Section 8	160 acres	Denied
SW Quarter of Section 8	160 acres	Approved
Section 2	640 acres	Approved
Section 1	160 acres	Approved

[20] Our denials of requested boundary expansions are without prejudice to East Cheyenne filing amendment requests in the future, should circumstances change and adequate supporting documentation be available.

Section 35	640 acres	Approved
Section 18	73 acres	Approved

VI. Environmental

31. On November 30, 2015, Commission staff issued an Environmental Assessment Report finding that the requested authorization of this order would result in no environmental impact.

VII. Conclusion

32. The Commission on its own motion received and made a part of the record in this proceeding all evidence, including the application and exhibits thereto, and all comments and upon consideration of the record,

The Commission orders:

(A) A certificate of public convenience and necessity is issued to East Cheyenne authorizing the expansion of the certificated reservoir of the West Peetz and Lewis Creek storage fields in Logan County, Colorado, as modified in Attachment 2, to include sections SW1/4 S8W-T11N-R52W, S2-T11N-R52W, S35-T12N-R53W and SW1/4 S1T11N-R 52W, as described in the body of this order.

(B) The certificate issued in Ordering Paragraph (A) is conditioned on East Cheyenne complying with all regulations under the NGA including, but not limited to, paragraphs (a), (c), (e), and (f) of section 157.20 of the Commission's regulations.

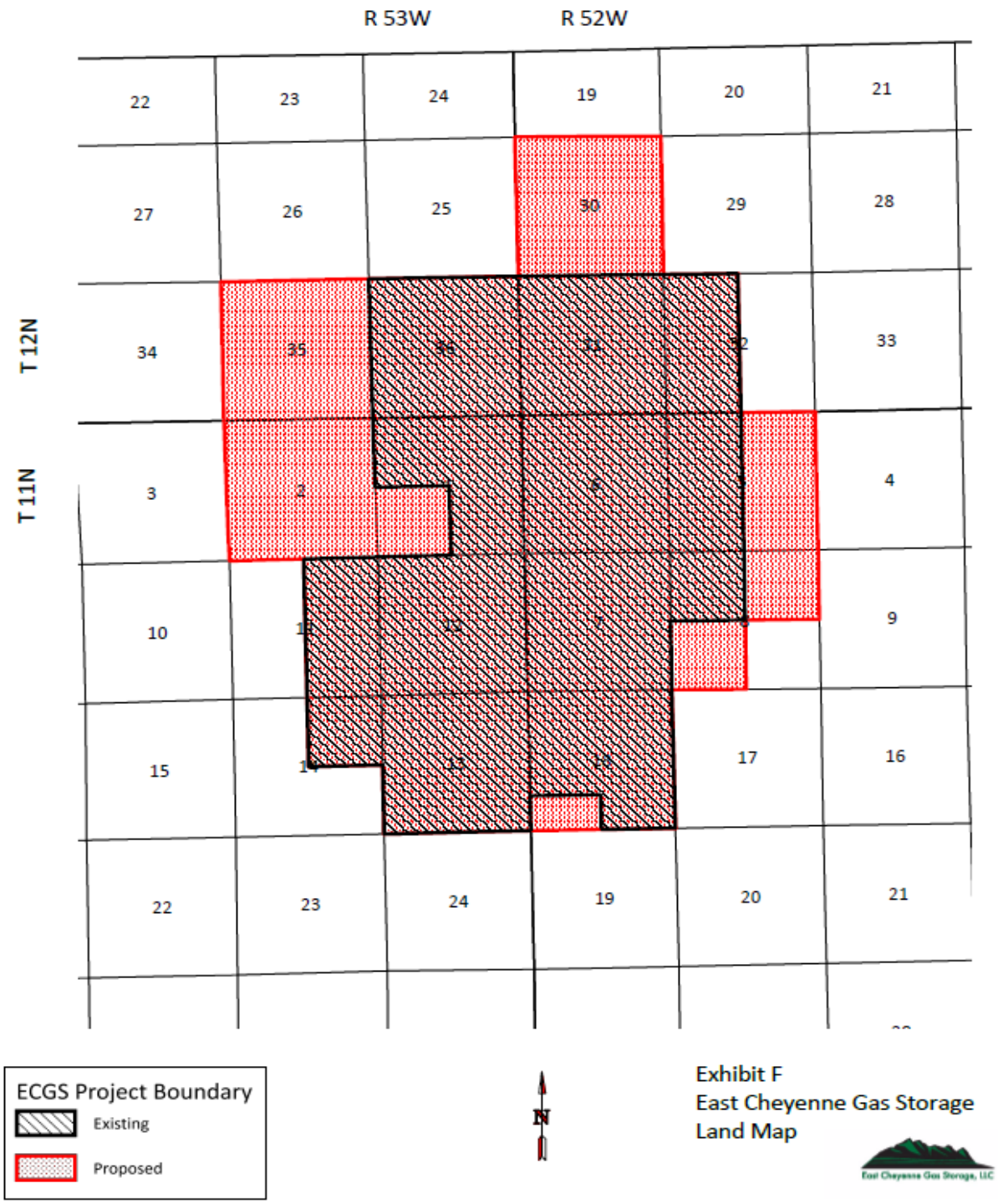
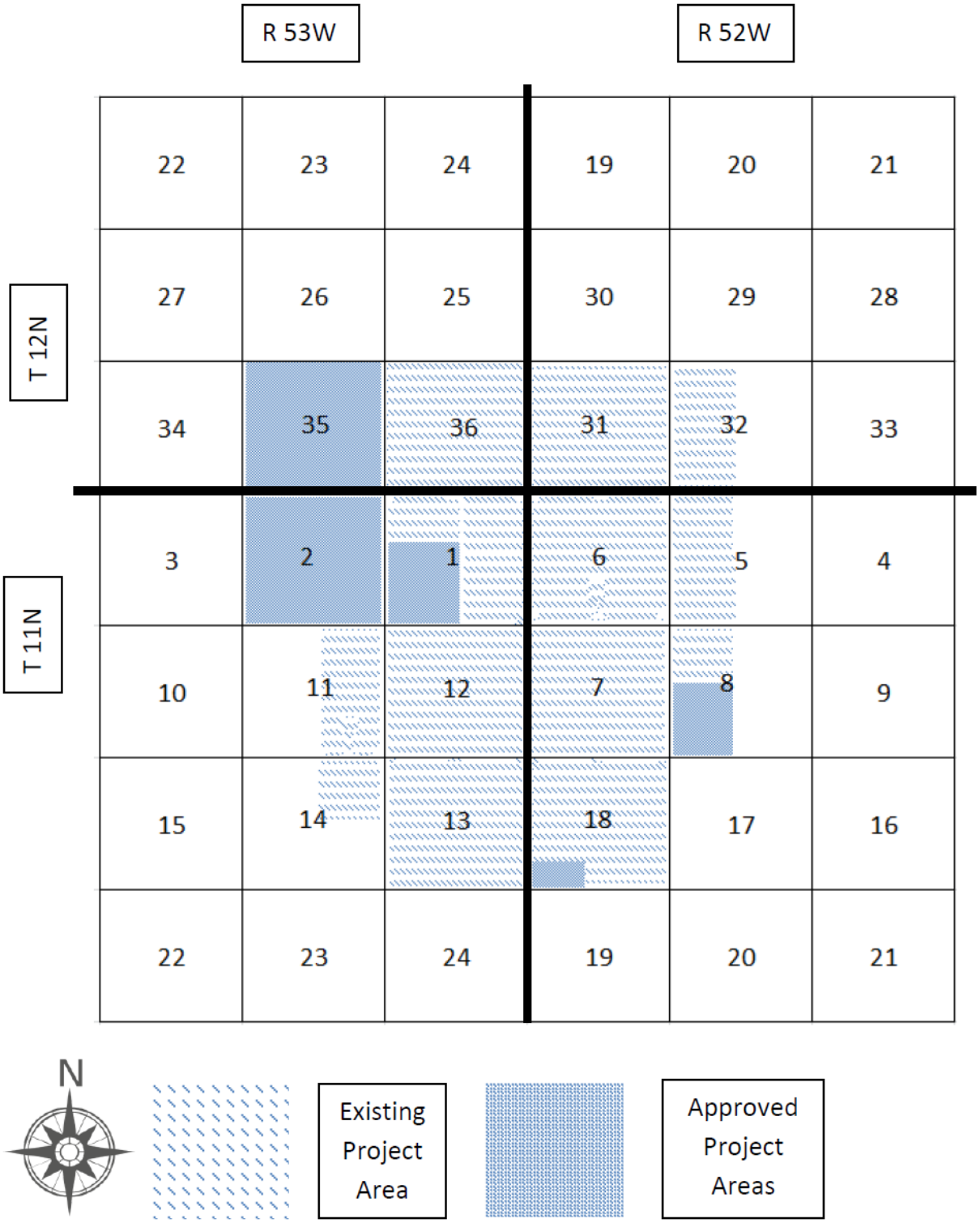
(C) East Cheyenne is required to file revised tables that reflect the reservoir boundaries authorized in this order, as depicted on Attachment 2.

By the Commission.

(S E A L)

Nathaniel J. Davis, Sr.,
Deputy Secretary.

Attachment 1: Proposed Boundary Expansion



Attachment 2: Approved Boundary Expansion