

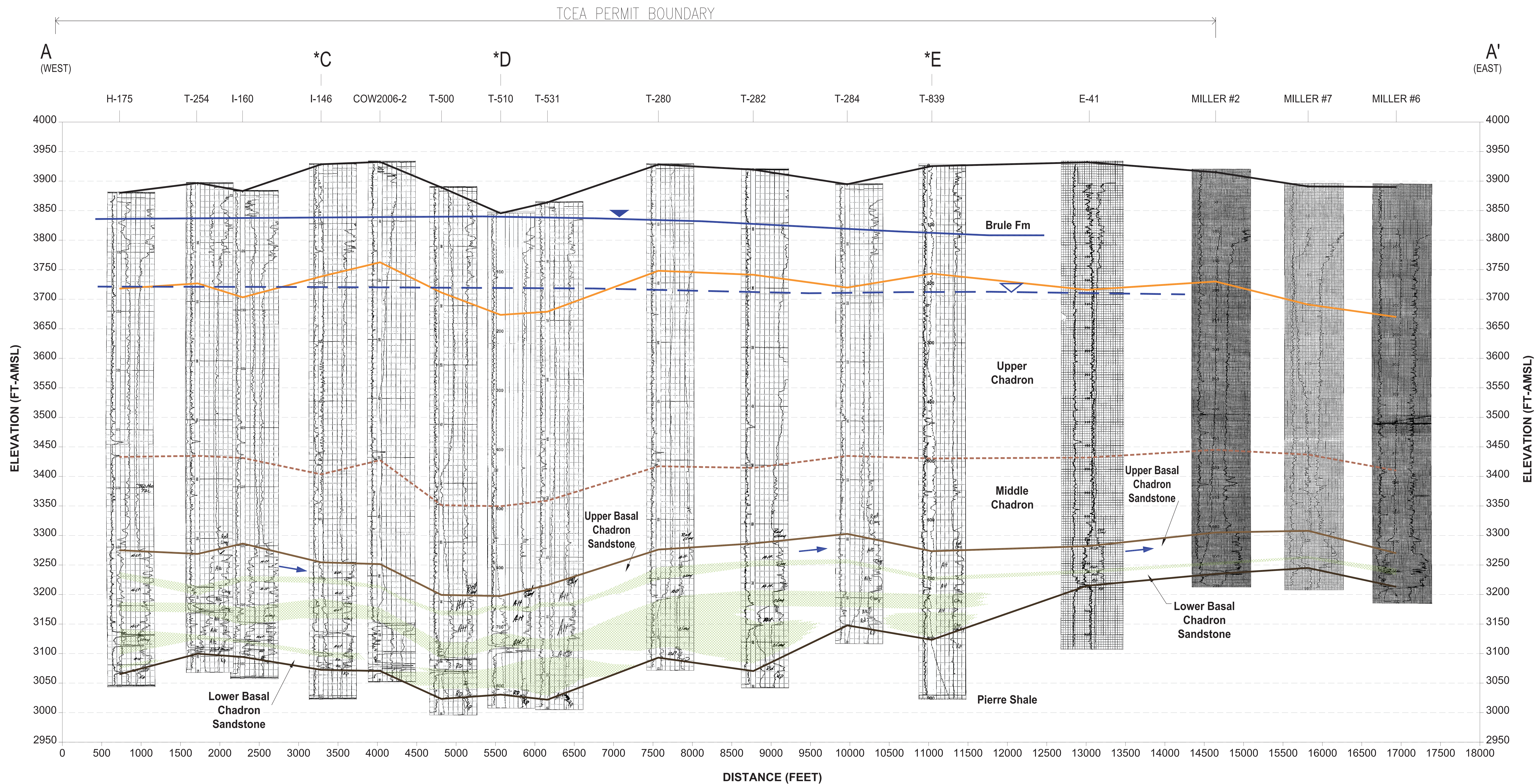
# Appendix X

Three Crow Expansion Area Cross Sections





PATH: K:\GBR Projects\CO001396 ThreeCrow\1 ACAD\e-transmit\XS\_AA.dwg LAYOUT: AE\_AA SAVED DATE/TIME: 3/27/2010 10:17 PM



Notes:

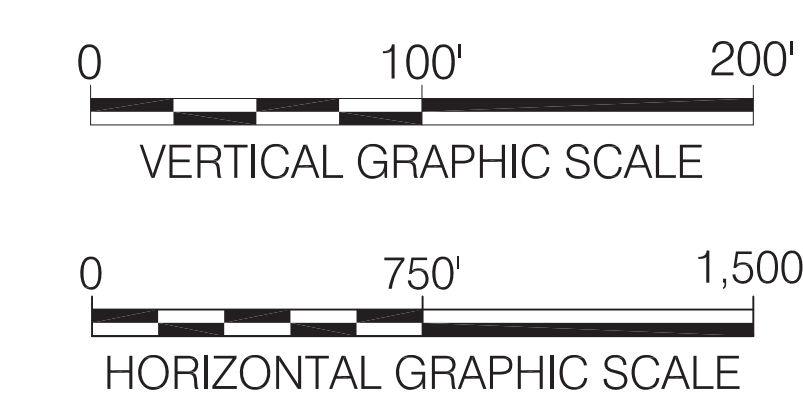
- 1) Geologic units that underlie the Pierre Shale are not shown.
- 2) For locations where the Upper/Middle Chadron Fm was not observed in e-logs, the contact between the Upper Chadron Fm and the Middle Chadron Fm was extrapolated based on known occurrence, and is shown as dashed lines.

\* Letter indicates location of intersecting cross-section lines shown on Figure 4.

Legend:

- Topographic Surface
- Top of Upper Chadron
- Top of Middle Chadron
- Top of Basal Chadron Sandstone
- Interbedded Clay
- Top of Pierre Shale

- Water Table (Brule Fm) - 1/22/10 & 2/08/10
- Potentiometric Surface (Basal Chadron Sandstone) - 1/22/10
- Groundwater Flow Direction



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**FIGURE 5a**  
**THREE CROW STRUCTURAL**  
**CROSS-SECTION: A-A'**

PROJECT: CO001396

MAPPED BY: JC

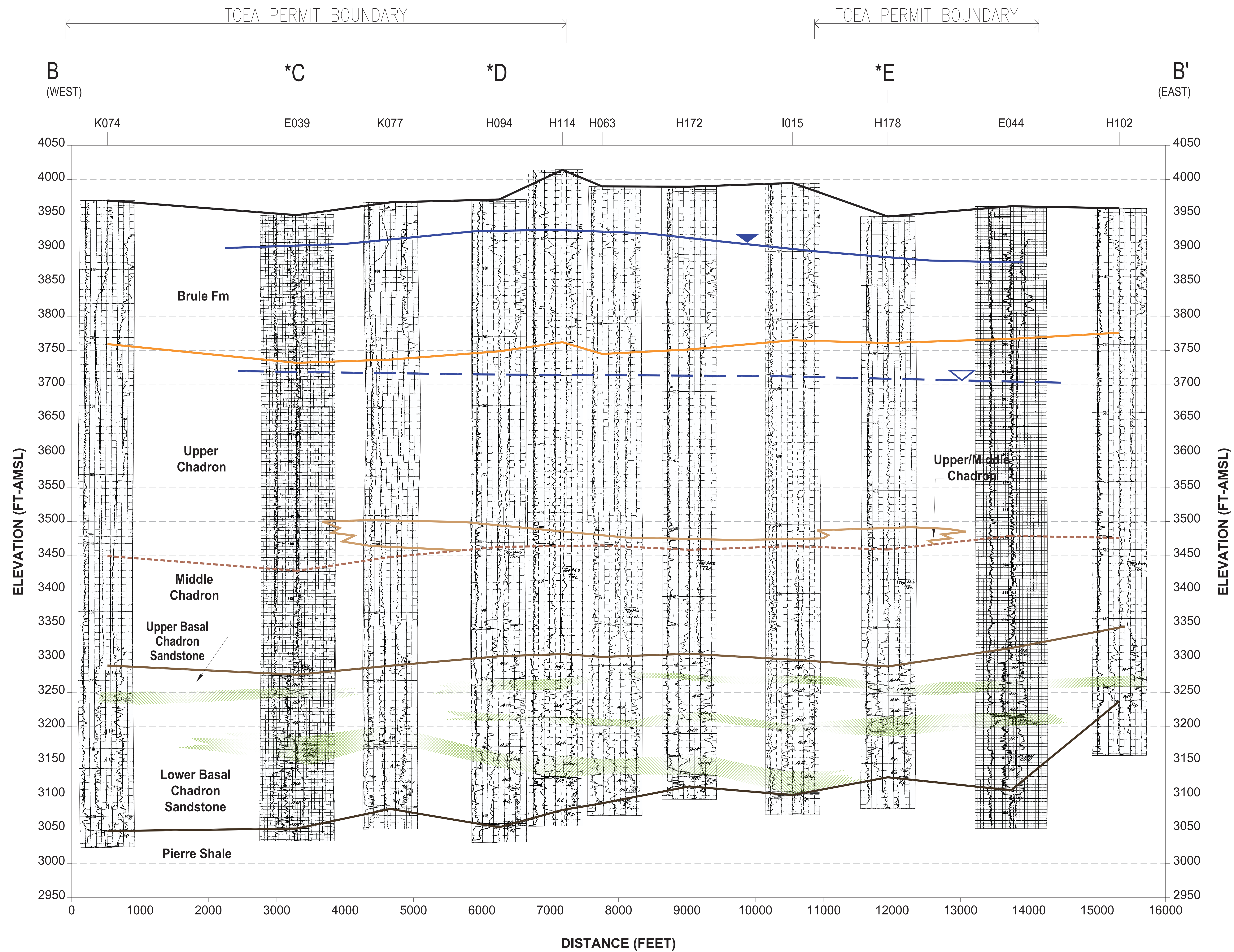
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PATH: K:\CGR\_P\Projects\CO001396\_ThreeCrow\1\_ACAD\Drawings\BB.dwg LAYOUT: AE\_BB SAVED DATE/TIME: 3/27/2010 10:41 PM



Notes:

- 1) Geologic units that underlie the Pierre Shale are not shown.
  - 2) For locations where the Upper/Middle Chadron Fm was not observed in e-logs, the contact between the Upper Chadron Fm and the Middle Chadron Fm was extrapolated based on known occurrence, and is shown as dashed lines.
- \* Letter indicates location of intersecting cross-section lines shown on Figure 4.

Legend:

- |  |                                |  |  |
|--|--------------------------------|--|--|
|  | Topographic Surface            |  | Water Table (Brule Fm) - 1/22/10                                     |
|  | Top of Upper Chadron           |  | Potentiometric Surface (Basal Chadron Sandstone) - 1/22/10 & 2/08/10 |
|  | Top of Upper/Middle Chadron    |  | Groundwater Flow Direction   |
|  | Top of Middle Chadron          |  |  |
|  | Top of Basal Chadron Sandstone |  |  |
|  | Interbedded Clay               |  |  |
|  | Top of Pierre Shale            |  |  |
- 0 100' 200'  
VERTICAL GRAPHIC SCALE  
0 1,000' 2,000'  
HORIZONTAL GRAPHIC SCALE



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FIGURE 5b  
THREE CROW STRUCTURAL  
CROSS-SECTION: B-B'

PROJECT: CO001396

MAPPED BY: JC

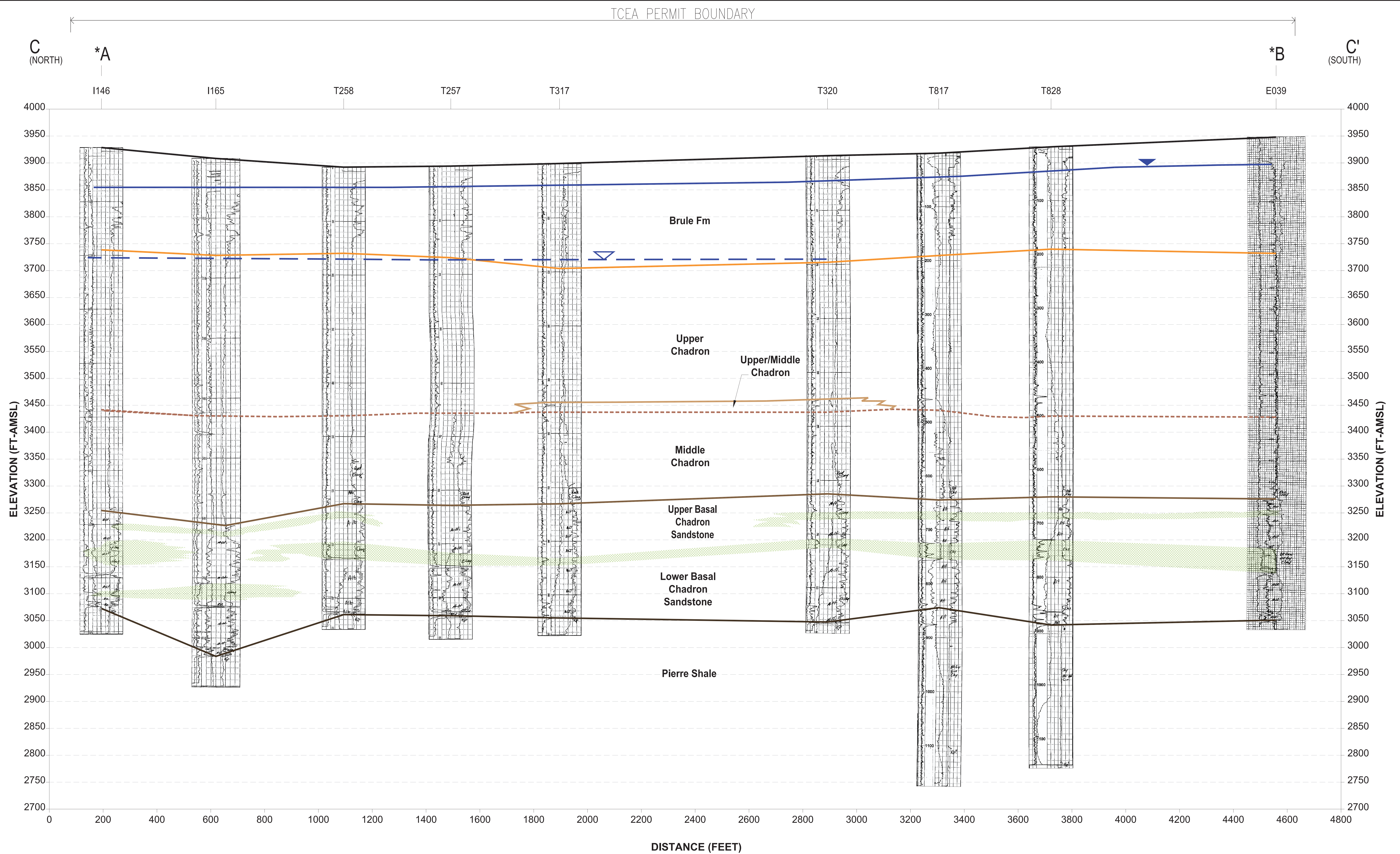
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PATH: K:\CGR\_P\Projects\CO001396\_ThreeCrow\1\_ACAD\e-transmits\CC.dwg LAYOUT: AE CC SAVED DATE/TIME: 3/24/2010 5:08 PM

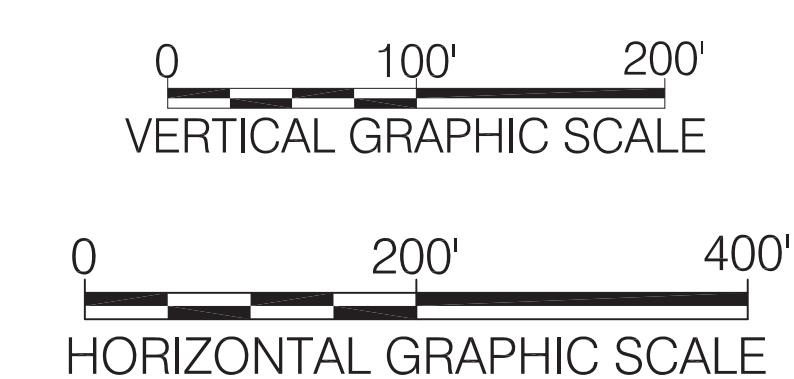


Notes:

- 1) Geologic units that underlie the Pierre Shale are not shown.
  - 2) For locations where the Upper/Middle Chadron Fm was not observed in e-logs, the contact between the Upper Chadron Fm and the Middle Chadron Fm was extrapolated based on known occurrence, and is shown as dashed lines.
- \* Letter indicates location of intersecting cross-section lines shown on Figure 4.

Legend:

- |  |                                |  |  |
|--|--------------------------------|--|--|
|  | Topographic Surface            |  | Water Table (Brule Fm) - 1/22/10                                     |
|  | Top of Upper Chadron           |  | Potentiometric Surface (Basal Chadron Sandstone) - 1/22/10 & 2/08/10 |
|  | Top of Upper/Middle Chadron    |  |  |
|  | Top of Middle Chadron          |  |  |
|  | Top of Basal Chadron Sandstone |  |  |
|  | Interbedded Clay               |  |  |
|  | Top of Pierre Shale            |  |  |



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**FIGURE 5c**  
**THREE CROW STRUCTURAL**  
**CROSS-SECTION: C-C'**

PROJECT: CO001396

MAPPED BY: JC

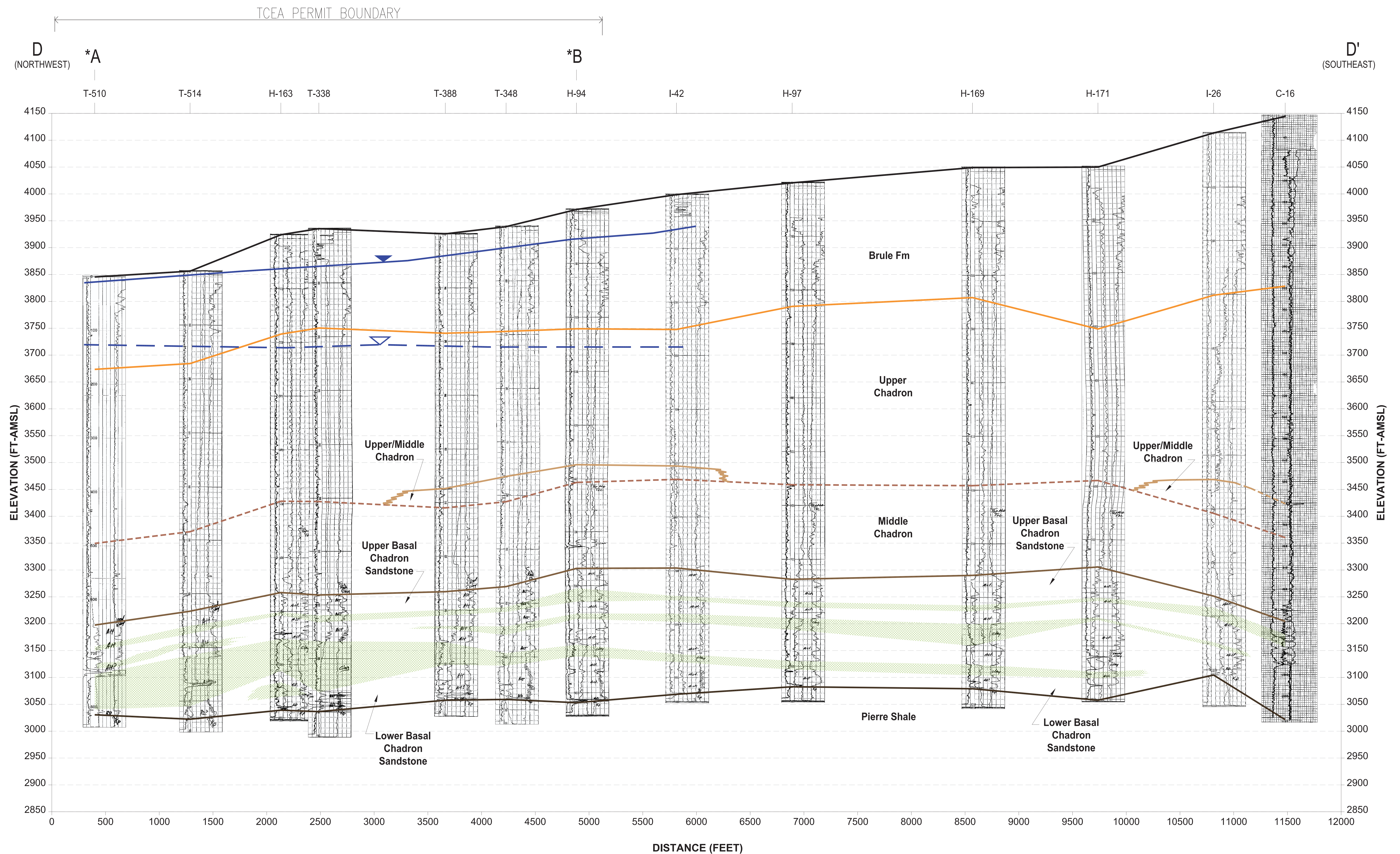
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PATH: K:\CGR\_P\Projects\CO001396\_ThreeCrow\1\_ACAD\e-transmit\XS\_DD.dwg LAYOUT: AE SAVED DATE/TIME: 3/27/2010 10:48 PM

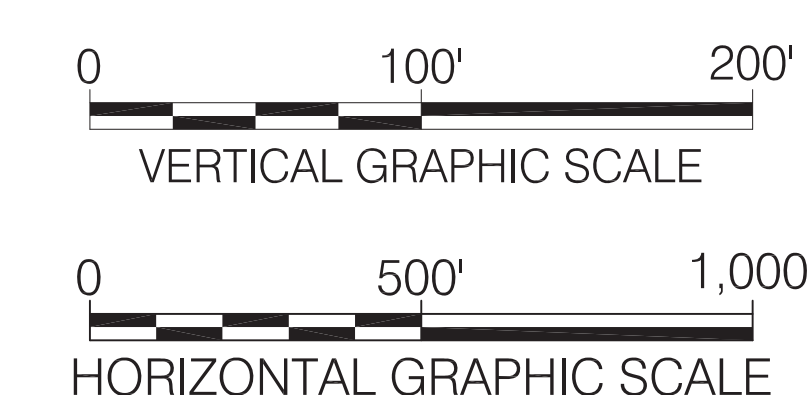


Notes:

- 1) Geologic units that underlie the Pierre Shale are not shown.
  - 2) For locations where the Upper/Middle Chadron Fm was not observed in e-logs, the contact between the Upper Chadron Fm and the Middle Chadron Fm was extrapolated based on known occurrence, and is shown as dashed lines.
- \* Letter indicates location of intersecting cross-section lines shown on Figure 4.

Legend:

- |  |                                |  |  |
|--|--------------------------------|--|--|
|  | Topographic Surface            |  | Water Table (Brule Fm) - 1/22/10 & 2/08/10                 |
|  | Top of Upper Chadron           |  | Potentiometric Surface (Basal Chadron Sandstone) - 1/22/10 |
|  | Top of Upper/Middle Chadron    |  | Groundwater Flow Direction                                 |
|  | Top of Middle Chadron          |  |  |
|  | Top of Basal Chadron Sandstone |  |  |
|  | Interbedded Clay               |  |  |
|  | Top of Pierre Shale            |  |  |



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**FIGURE 5d**  
**THREE CROW STRUCTURAL**  
**CROSS-SECTION: D-D'**

PROJECT: CO001396

MAPPED BY: JC

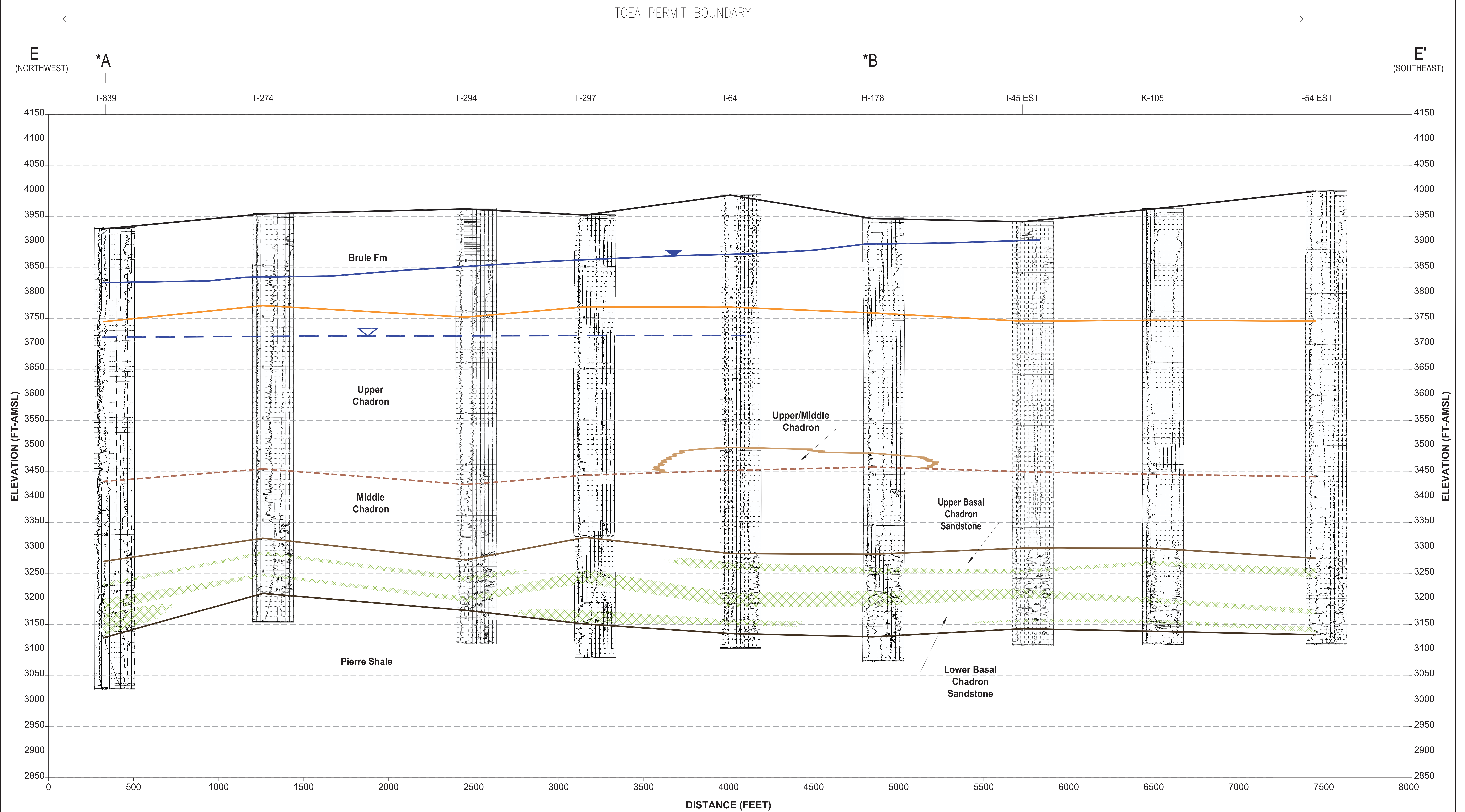
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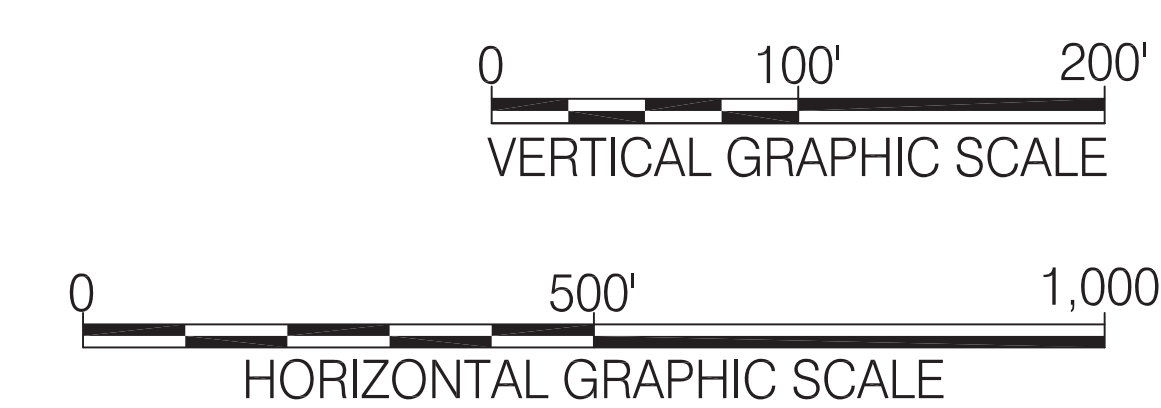


**Notes:**

- 1) Geologic units that underlie the Pierre Shale are not shown.
  - 2) For locations where the Upper/Middle Chadron Fm was not observed in e-logs, the contact between the Upper Chadron Fm and the Middle Chadron Fm was extrapolated based on known occurrence, and is shown as dashed lines.
- \* Letter indicates location of intersecting cross-section lines shown on Figure 4.

**Legend:**

- |  |                                |  |  |
|--|--------------------------------|--|--|
|  | Topographic Surface            |  | Water Table (Brule Fm) - 1/22/10                                     |
|  | Top of Upper Chadron           |  | Potentiometric Surface (Basal Chadron Sandstone) - 1/22/10 & 2/08/10 |
|  | Top of Upper/Middle Chadron    |  |  |
|  | Top of Middle Chadron          |  |  |
|  | Top of Basal Chadron Sandstone |  |  |
|  | Interbedded Clay               |  |  |
|  | Top of Pierre Shale            |  |  |



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**FIGURE 5e  
THREE CROW STRUCTURAL  
CROSS-SECTION: E-E'**

PROJECT: CO001396

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