



590 & 9878: Drawdown from current location = 0.63 ft  
Drawdown from proposed location = 3.13 ft  
Net drawdown = **2.5 ft**

3121: Drawdown from current location = 0.61 ft  
Drawdown from proposed location = 4.83 ft  
Net drawdown = **4.2 ft**

3762: Drawdown from current location = 0.38 ft  
Drawdown from proposed location = 3.89 ft  
Net drawdown = **3.5 ft**

6421 & 8550: Drawdown from current location = 0.39 ft  
Drawdown from proposed location = 3.39 ft  
Net drawdown = **3.0 ft**

Domestic 6-31-32: Drawdown from current location = 0.62 ft  
Drawdown from proposed location = 3.30 ft  
Net drawdown = **2.7 ft**

Domestic 7-31-32: Drawdown from current location = 0.45 ft  
Drawdown from proposed location = 5.83 ft  
Net drawdown = **5.4 ft**

Net drawdown exceeds the drawdown allowance of 3.5 ft for wells authorized under water right numbers 17733 and 3121, and the domestic well located in section 7-31-32. Critical well analysis is necessary on those wells.

**Critical Well Evaluation:**

**17733:**

Water Column = 182 ft

DP = 5.03 ft

DE = 57.3 ft (Water level decline from 2020 through 2045 based upon GMD3 model)

DD = 24.61 ft (S = 0.224, T = 129,041 ft<sup>2</sup>/day, Q = 1184 gpm, tp = 76 days, efficiency = 70%)

DT = 86.9 ft

Economic Drawdown Constraint (EDC) = 182 ft \* 0.4 = 72.8 ft

Physical Drawdown Constraint (PDC) = 182 ft – 60 ft = 122 ft

The EDC is more conservative than the PDC, so the maximum allowable drawdown is 72.8 ft. Total drawdown of 86.9 ft is greater than the maximum allowable drawdown, so this well is **critical**.

**3121:**

Water Column = 182 ft

DP = 4.23 ft

DE = 58.6 ft

DD = 5.01 ft (S = 0.1602, T = 65,081 ft<sup>2</sup>/day, Q = 118 gpm, tp = 176 days, efficiency = 70%)

DT = 67.8 ft

Economic Drawdown Constraint (EDC) = 182 ft \* 0.4 = 72.8 ft

Physical Drawdown Constraint (PDC) = 182 ft – 60 ft = 122 ft

The EDC is more conservative than the PDC, so the maximum allowable drawdown is 72.8 ft. Total drawdown of 67.8 ft is less than the maximum allowable drawdown, so this well is **not critical**.

**Domestic 7-31-32:**

Water Column = 100 ft

DP = 5.39 ft

DE = 55.8 ft

DT = 61.2 ft

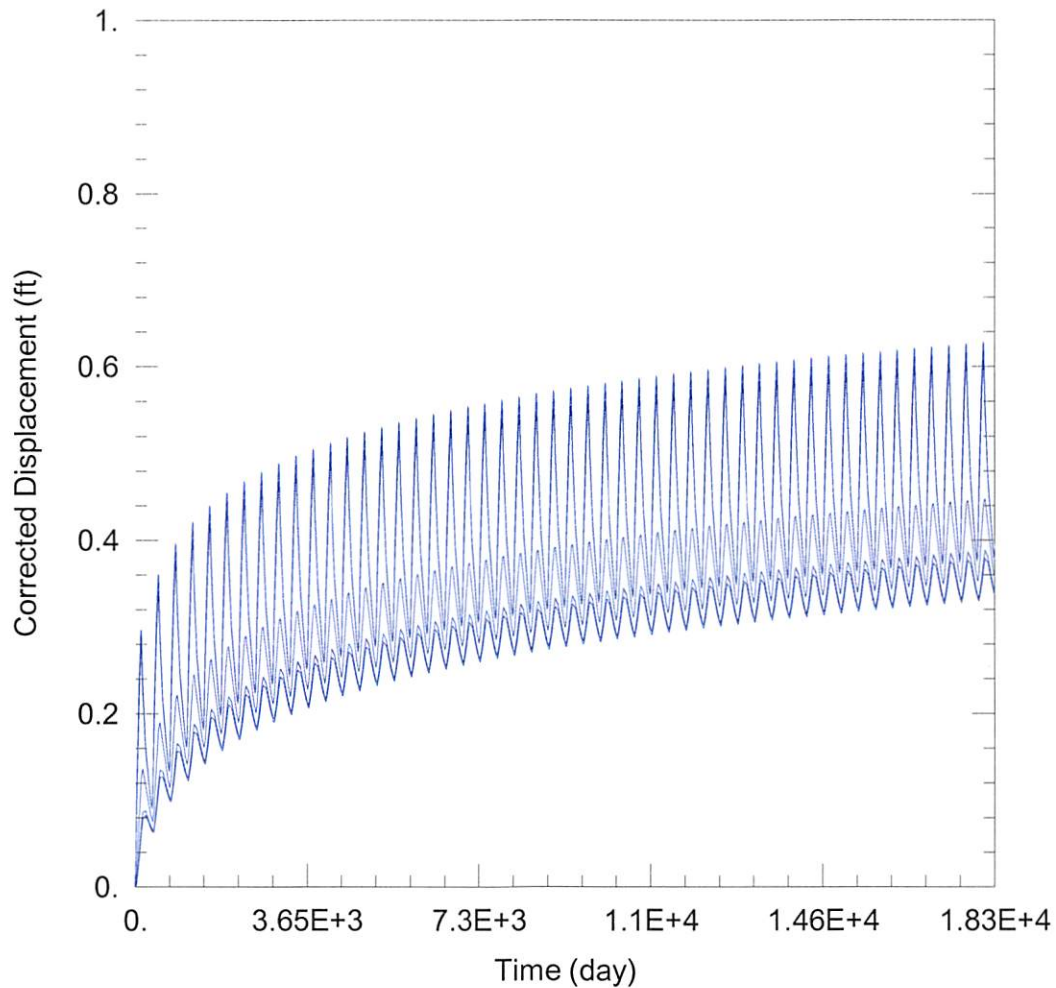
Economic Drawdown Constraint (EDC) = 100 ft \* 0.4 = 40 ft

Physical Drawdown Constraint (PDC) = 100 ft – 20 ft = 80 ft

The EDC is more conservative than the PDC, so the maximum allowable drawdown is 40.0 ft. Total drawdown of 61.2 ft is greater than the maximum allowable drawdown, so the well is **critical**.

**Conclusion:**

The well authorized under water right number 17733 and the domestic well located in section 7-31-32 have been identified as critical wells. No driller's log is available for the well under water right number 17733, so the evaluation assumed the well was drilled to a depth at the top of the shale on the driller's log at the proposed location. The domestic well in section 7-31-32 is 44 years old and could be redrilled deeper. It is likely that drilling a new well to the depth of shale would remedy any issue with access to water at this well location. Overall net effects on all nearby wells are less than 3.5 ft if the proposed well is limited to a rate of 1100 gpm and a quantity of 875 AF. Therefore, GMD3 staff recommends approval of the application subject to the applicant agreeing to a limit of 1100 gpm and a quantity of 875 AF. This limitation would not be permanent and would only apply to the proposed well location.



WELL TEST ANALYSIS

Data Set: C:\Users\trevora\Documents\2020\_moves\459\_9878\459\_9878 Current.aqt  
 Date: 01/16/20 Time: 16:06:04

PROJECT INFORMATION

Company: GMD 3  
 Project: 459 & 9878  
 Location: Seward County  
 Test Well: 459 & 9878

WELL DATA

Pumping Wells

| Well Name  | X (ft) | Y (ft) |
|------------|--------|--------|
| 459 & 9878 | -12260 | 184029 |

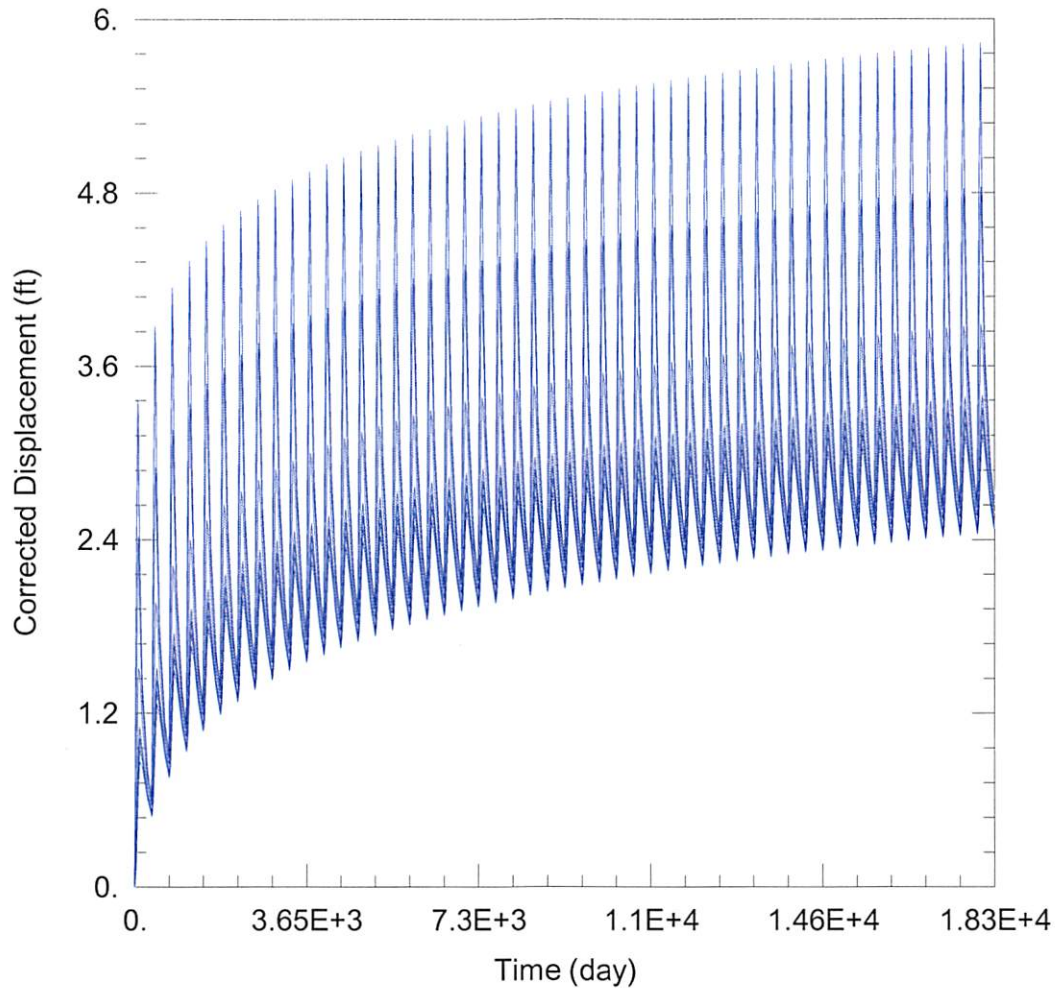
Observation Wells

| Well Name                 | X (ft) | Y (ft) |
|---------------------------|--------|--------|
| □                         | -12260 | 184029 |
| □ <u>17733</u>            | -13642 | 181506 |
| □ <u>9878</u>             | -14896 | 185104 |
| □ <u>590 &amp; 9878</u>   | -13951 | 186098 |
| □ <u>3121</u>             | -9444  | 183735 |
| □ <u>3762</u>             | -8880  | 178871 |
| □ <u>6421 &amp; 8550</u>  | -14813 | 178675 |
| □ <u>Domestic 6-31-32</u> | -10821 | 186367 |
| □ <u>Domestic 7-31-32</u> | -10284 | 179788 |

SOLUTION

Aquifer Model: Unconfined

Solution Method: Theis



### WELL TEST ANALYSIS

Data Set: C:\Users\trevora\Documents\2020\_moves\459\_9878\459\_9878 Proposed.aqt  
 Date: 01/16/20 Time: 16:05:56

### PROJECT INFORMATION

Company: GMD 3  
 Project: 459 & 9878  
 Location: Seward County  
 Test Well: 459 & 9878

### WELL DATA

#### Pumping Wells

| Well Name  | X (ft) | Y (ft) |
|------------|--------|--------|
| 459 & 9878 | -11378 | 181665 |

#### Observation Wells

| Well Name                 | X (ft) | Y (ft) |
|---------------------------|--------|--------|
| □                         | -11378 | 181665 |
| □ <u>17733</u>            | -13642 | 181506 |
| □ <u>9878</u>             | -14896 | 185104 |
| □ <u>590 &amp; 9878</u>   | -13951 | 186098 |
| □ <u>3121</u>             | -9444  | 183735 |
| □ <u>3762</u>             | -8880  | 178871 |
| □ <u>6421 &amp; 8550</u>  | -14813 | 178675 |
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Aquifer Model: Unconfined

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