Memorandum

Date: March 12, 2019

To: Bill Schalliol – St. Joseph County
Jessica Clark – St. Joseph County

Copy: Eric Neagu – Antero Group
Jared Huss – Lawson-Fisher / Town of New Carlisle

From: Roschyk, Jeremy

Re: Indiana Enterprise Center – Hydrogeological Background Analysis
Summary Update

Peerless Midwest, Inc. has completed the Hydrogeological Background Analysis (attached) for the core
development area of the Indiana Enterprise Center project, in accordance with the amended scope
approved on August 8, 2018.

The extensive study includes the review and analysis of available reports, databases, well
documentation, mapping, etc., in addition to the estimation of safe yield estimates of groundwater
within the core development area.

A summation of the report findings are presented in the following table:

<table>
<thead>
<tr>
<th>Aquifer System</th>
<th>Kankakee</th>
<th>Valparaiso Outwash Apron</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated Domestic Well Withdrawals (mgd)</td>
<td>0.09</td>
<td>0.01</td>
<td>0.10</td>
</tr>
<tr>
<td>Current High Capacity Well Production, Average (mgd)</td>
<td>2.3</td>
<td>0.6</td>
<td>2.9</td>
</tr>
<tr>
<td>Irrigation Well Withdrawals, Low (mgd) *</td>
<td>6.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Irrigation Well Withdrawals, High (mgd) *</td>
<td>12.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimated Current CDA Groundwater Withdrawal, Low (mgd)</td>
<td>8.7</td>
<td>0.6</td>
<td>9.3</td>
</tr>
<tr>
<td>Estimated Current CDA Groundwater Withdrawal, High (mgd)</td>
<td>15.2</td>
<td>0.6</td>
<td>15.7</td>
</tr>
<tr>
<td>SJEC Groundwater Withdrawl at Buildout (mgd)</td>
<td>12.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aquifer Safe Yield (mgd)</td>
<td>44.2</td>
<td>4.8</td>
<td>49.0</td>
</tr>
<tr>
<td>Remaining Aquifer Capacity, Low (mgd) **</td>
<td>16.6</td>
<td>4.2</td>
<td>20.9</td>
</tr>
<tr>
<td>Remaining Aquifer Capacity, High (mgd) **</td>
<td>23.1</td>
<td>4.2</td>
<td>27.3</td>
</tr>
</tbody>
</table>

* Only 3-6 months out of the year

** Note that the calculated remaining capacity includes current high capacity well withdrawal (Town of New
Carlisle, I/N Tek-Kote, SJEC), so the remaining aquifer capacity would apply just to new development within
the CDA.
The report findings indicate that the aquifer systems (Kankakee and Valparaiso Outwash Apron) within the boundaries of the Core Development Area (CDA) can provide total safe yield of 49.0 million gallons per day (mgd). This means that 49.0 mgd of groundwater can be pumped, just from within the boundaries of the CDA, without depletion of the aquifers' storage reservoir.

Existing groundwater withdrawal rates (includes full anticipated buildout of SJEC) within the CDA range between 21.7 and 28.1 mgd, which results in the remaining aquifer safe yield capacity of 20.9 to 27.3 mgd.

The following supporting Figures from the Hydrogeological Background Analysis are included with this summary:

- **Figure 1 – Economic Planning Areas**
  - Identifies the study limits of the CDA

- **Figure 2 – Drainage Divides & Streams**
  - Identifies drainage basin boundaries and potentiometric surface contours (i.e. approximate groundwater elevation) in relation to the CDA

- **Figure 3 – Aquifer Systems & Drainage Divides**
  - Identifies the drainage basin boundaries and aquifer system boundaries in relation to the CDA

- **Figure 4 – Aquifer Systems & Domestic Wells**
  - Identifies the aquifer system boundaries in relation to the CDA and domestic wells (100 gpm or less) as identified in the IDNR Water Well Record database.

- **Figure 5 – Aquifer Systems & High Capacity Wells**
  - Identifies the aquifer system boundaries in relation to the CDA and IDNR registered Significant Water Withdrawal wells (70 gpm or more) including industrial, irrigation and public supply wells.

- **Figure 6 – Hydrogeological Cross Section**
  - West to east hydrogeologic cross section (identified by the black 'A-A' line in Figure 3), as was created for the New Carlisle Wellhead Protection Area Update
FIGURE 3

MAP FEATURES

- State Line
- County Line
- Planning Study Area
- Core Development Area
- Incorporated Area
- Hilltop Aquifer Aquifer System
- Kankakee Aquifer System
- Lacustrine Plain
- Maxinkuckee Moraine Aquifer System
- Nappanee Aquifer System
- Valparaiso Outwash Apron Aquifer System
- St. Joseph Aquifer System and Tributary Valleys Aquifer System
- Valparaiso Moraine Aquifer System
- Cross-Section

AQUIFER SYSTEMS & DRAINAGE DIVIDES

Donohue & Associates, Inc.

SO: 32354  Drawn by: MLF  Date: 09/11/18

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Feet

New Carlisle

Southeastern Lake Michigan Basin

Southwestern Lake Michigan Basin

Southeastern Lake Michigan Basin

Upper Illinois Basin