<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE &amp; NO</th>
<th>SAMPLE LENGTH (IN)</th>
<th>DESCRIPTION</th>
<th>USE SYMBOL</th>
<th>MEASURED CONSISTENCY (TSI)</th>
<th>REMARKS</th>
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<tr>
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<tr>
<td>3</td>
<td>S-1</td>
<td>6</td>
<td>Medium Stiff</td>
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<td></td>
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<tr>
<td>4.5</td>
<td>S-1</td>
<td>5</td>
<td>Mixed colors of brown, black graphite (silty clay) graphite approximately 5%</td>
<td></td>
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</tr>
<tr>
<td>6</td>
<td>S-2</td>
<td>5</td>
<td>Soft</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Medium gray graphitic</td>
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<td></td>
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<tr>
<td>7.5</td>
<td>S-3</td>
<td>8</td>
<td>Medium Stiff</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Graphitic clay, grading silty fine sand, yellow-brown</td>
<td></td>
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</tr>
<tr>
<td>10.5</td>
<td>S-4</td>
<td>8</td>
<td>Very Stiff</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Graphitic clay grading to light yellow brown silt and clay</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>As Above, foliations apparent in cross section</td>
<td></td>
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**NOTES**
Elevations and coordinates obtained by Land Survey Consultants, Inc. on April 9, 1986.

**No data collected**

FRED C. HART ASSOCIATES, INC.
## Visual Classification of Soils

<table>
<thead>
<tr>
<th>Depth</th>
<th>Sample</th>
<th>Blows on Sampler (No.)</th>
<th>Recovery (In.)</th>
<th>Description</th>
<th>USCS Symbol</th>
<th>Measured Consistency</th>
<th>Remarks</th>
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<tbody>
<tr>
<td>15</td>
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<td>10</td>
<td>18</td>
<td>Very Stiff</td>
<td>-</td>
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<td>Damp</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10</td>
<td>12</td>
<td>Graphitic clay matrix containing white veins with garnet and yellow-brown decomposed rock fragments</td>
<td>-</td>
<td>-</td>
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<tr>
<td>16.5</td>
<td>S-6</td>
<td>9</td>
<td>18</td>
<td>Stiff</td>
<td>-</td>
<td>-</td>
<td>Damp</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7</td>
<td>9</td>
<td>Less graphitic than above, foliations and minerals of almost completely decomposed mica schist, visible in cross section, contact at 8° with yellow-brown clay and silt, foliations visible in some of graphitic clay</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td></td>
<td></td>
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<tr>
<td>19.5</td>
<td>S-7</td>
<td>7</td>
<td>18</td>
<td>Very Stiff</td>
<td>-</td>
<td>-</td>
<td>Damp</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8</td>
<td>17</td>
<td>Greenish gray highly decomposed mica schist foliations and garnet visible</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-</td>
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<td></td>
</tr>
<tr>
<td>22.5</td>
<td>S-8</td>
<td>8</td>
<td>17</td>
<td>Very stiff, graphitic clay</td>
<td>-</td>
<td>-</td>
<td>Moist</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12</td>
<td>17</td>
<td>Decomposed mica schist foliations and some minerals (garnet) still recognizable, colors mixed: black, brown and yellow-brown, Yellow-brown decomposed rock fragments and white clay veins (decomposed feldspars)</td>
<td>-</td>
<td>-</td>
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<td>24</td>
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<td>-</td>
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<td></td>
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<td>25.5</td>
<td>S-9</td>
<td>9</td>
<td>17</td>
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<td>-</td>
<td>-</td>
<td>Damp</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Graphitic clay, no foliations apparent</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>28.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>28.5</td>
<td>S-10</td>
<td>12</td>
<td>17</td>
<td></td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**

- Graphitic clay = 50-30%
- Rock Fragments = 50-70%

Fred C. Hart Associates, Inc.

AR300788
**VISUAL CLASSIFICATION OF SOILS**

**PROJECT NUMBER:** H082  
**PROJECT NAME:** Geotechnical Evaluation - Modern Landfill  
**BORING NUMBER:** HC-33  
**COORDINATES:** N231,384.99 E2,324,544.59  
**DATE:** 04/06/86  
**ELEVATION:** 530.1  
**GWL: Depth**  
**DATE STARTED:** 04/06/86  
**DATE COMPLETED:** 04/09/86  
**ENGINEER/GEOLOGIST:** K. Interval  
**INTERVAL:** Depth [In]  
**DATE/TIMESTAMP:** Depth Date/Time

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE NO.</th>
<th>BLOWS ON 16&quot; SAMPLER</th>
<th>RECOVERY (In)</th>
<th>DESCRIPTION</th>
<th>USCS SYMBOL</th>
<th>MEASURED CONSISTENCY (TSF)</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>S-10</td>
<td>9</td>
<td>18&quot;</td>
<td>Very stiff  Foliated graphitic clay, approximately 75% and decomposed rock as above approximately 25%</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>31.5</td>
<td>S-11</td>
<td>7</td>
<td>18&quot;</td>
<td>Very stiff  Foliated graphitic clay as above, with trace rock fragments, as above</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>S-12</td>
<td>10</td>
<td>18&quot;</td>
<td>Very stiff  Foliated graphitic clay with little decomposed rock fragments</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>34.5</td>
<td>S-13</td>
<td>13</td>
<td>18&quot;</td>
<td>Very stiff  Near vertical foliated graphitic clay with some decomposed rock fragments, as above</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>40.5</td>
<td>S-14</td>
<td>9</td>
<td>17&quot;</td>
<td>Very stiff  Near vertical foliated graphitic clay with little decomposed rock fragments</td>
<td>-</td>
<td>-</td>
<td>Increase in percentage of rock fragments from 33 to 40.5 feet</td>
</tr>
</tbody>
</table>

**NOTES**

FRED C. HART ASSOCIATES, INC.

AR300789
### Visual Classification of Soils

**Project Number:** H082  
**Project Name:** Geotechnical Evaluation - Modern Landfill  
**Boring Number:** HC-33  
**Coordinates:** N231,384.99  
**Elevation:** 530.1  
**GWL:** Depth - Date/Time -  
**Date:** 04/06/86  
**Date Started:** 04/06/86  
**Date Completed:** 04/09/86  
**Engineer/Geologist:** K. Interval  
**Drilling Methods:** Hollow Stem Auger with 2" I.D. Split Spoon

<table>
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<th>Depth (Ft)</th>
<th>Sample Type No.</th>
<th>Bloomson Sampler 1</th>
<th>Recovery (In)</th>
<th>Description</th>
<th>USCS Symbol</th>
<th>Measured Consistency (TSI)</th>
<th>Remarks</th>
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</thead>
<tbody>
<tr>
<td>45</td>
<td>S-15</td>
<td>10</td>
<td>18&quot;</td>
<td>Medium stiff</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>12</td>
<td></td>
<td>Reddish-gray silty clay with some decomposed rock fragments.</td>
<td></td>
<td></td>
<td>Water encountered at 45.5 feet (wet spoon material at top)</td>
</tr>
<tr>
<td>46.5</td>
<td>S-15</td>
<td>12</td>
<td>18&quot;</td>
<td>Stiff</td>
<td></td>
<td></td>
<td>Damp</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20</td>
<td></td>
<td>Foliated graphitic clay with some decomposed rock fragments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>48</td>
<td>S-16</td>
<td>11</td>
<td>15&quot;</td>
<td></td>
<td></td>
<td></td>
<td>Damp</td>
</tr>
<tr>
<td></td>
<td></td>
<td>13</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>49.5</td>
<td>S-16</td>
<td>11</td>
<td>15&quot;</td>
<td></td>
<td></td>
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<td>13</td>
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<tr>
<td></td>
<td></td>
<td>14</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>51</td>
<td>S-17</td>
<td>12</td>
<td>15&quot;</td>
<td>Very stiff</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>12</td>
<td></td>
<td>Foliated graphitic clay, as above with little decomposed rock fragments, most rock fragments occur at 11&quot; to 15&quot; from bottom of spoon</td>
<td></td>
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<tr>
<td>52.5</td>
<td>S-17</td>
<td>17</td>
<td>15&quot;</td>
<td></td>
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</tr>
<tr>
<td>54</td>
<td>S-18</td>
<td>13</td>
<td>16&quot;</td>
<td>Very stiff</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>12</td>
<td></td>
<td>Foliated graphitic clay and rock decomposed to clay (also shows foliations and some mineralization)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>16</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>55.5</td>
<td>S-18</td>
<td>10</td>
<td>15&quot;</td>
<td>As Above</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>12</td>
<td></td>
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<td></td>
<td></td>
<td>14</td>
<td></td>
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**Notes:**
<table>
<thead>
<tr>
<th>Depth, Ft.</th>
<th>Sample Type &amp; No</th>
<th>Blows</th>
<th>Sampler Recovery, In.</th>
<th>Description</th>
<th>USCS Symbol</th>
<th>Measured Consistency (TSI)</th>
<th>Remarks</th>
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</thead>
<tbody>
<tr>
<td>60</td>
<td>S-20</td>
<td>11</td>
<td>10</td>
<td>Very stiff</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>17</td>
<td>15</td>
<td>Vertically foliated graphitic clay with trace vertically foliated decomposed rock lamination (as above)</td>
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<td></td>
</tr>
<tr>
<td>61.5</td>
<td>S-21</td>
<td>10</td>
<td>8</td>
<td>Very stiff</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>11</td>
<td>15</td>
<td>Vertically foliated graphitic clay with some yellow-brown decomposed rock</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>63</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>64.5</td>
<td>S-22</td>
<td>9</td>
<td>11</td>
<td>Very stiff</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>14</td>
<td>17</td>
<td>Foliated graphite with trace decomposed rock</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>66</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>67.5</td>
<td>S-23</td>
<td>10</td>
<td>12</td>
<td>Stiff</td>
<td>-</td>
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</tr>
<tr>
<td></td>
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<td>16</td>
<td>16</td>
<td>Dark gray vertically foliated clay with trace decomposed rock fragments and a 2&quot; layer of reddish brown sand</td>
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<td>-</td>
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<td>70.5</td>
<td>S-24</td>
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<td>-</td>
<td>-</td>
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<td></td>
<td></td>
<td>18</td>
<td>17</td>
<td>Dark gray vertically foliated clay with trace rock fragments also 1&quot; layer of rock fragments</td>
<td>-</td>
<td>-</td>
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<td>75</td>
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**Notes**: FRED C. HART ASSOCIATES, INC.
## Visual Classification of Soils

**Project Number:** H082  
**Boring Number:** HC-33  
**Coordinates:** N231°364.99  
**Elevation:** 530.1  
**Engineer/Geologist:** K. Interval  
**Drilling Methods:** 6" Hollow Stem Auger with 2" Split Spoon

<table>
<thead>
<tr>
<th>Depth</th>
<th>Sample Type &amp; No.</th>
<th>Blows per Sampler</th>
<th>Recovery</th>
<th>Description</th>
<th>USCS Symbol</th>
<th>Measured Consistency</th>
<th>Remarks</th>
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</thead>
<tbody>
<tr>
<td>75</td>
<td>S-25</td>
<td>10</td>
<td>15&quot;</td>
<td>Stiff</td>
<td></td>
<td></td>
<td>Damp</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15</td>
<td></td>
<td>Dark greenish-gray foliated clay with some decomposed foliated rock</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>76.5</td>
<td></td>
<td>26</td>
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</tr>
<tr>
<td>78</td>
<td>S-26</td>
<td>22</td>
<td>15&quot;</td>
<td>Very stiff</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>25</td>
<td></td>
<td>Green gray, non-plastic foliated clay with trace yellow-brown decomposed rock</td>
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<td>79.5</td>
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<td>44</td>
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<td>81</td>
<td>S-27</td>
<td>15</td>
<td>15&quot;</td>
<td>Medium stiff</td>
<td></td>
<td></td>
<td>Moist</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12</td>
<td></td>
<td>Very dark gray, horizontally foliated, slightly plastic clay</td>
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<td></td>
</tr>
<tr>
<td>82.5</td>
<td></td>
<td>17</td>
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<td></td>
<td></td>
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<tr>
<td>84</td>
<td>S-28</td>
<td>18</td>
<td>16&quot;</td>
<td>Very stiff</td>
<td></td>
<td></td>
<td>Dry</td>
</tr>
<tr>
<td></td>
<td></td>
<td>18</td>
<td></td>
<td>Very dark gray clay with dark olive green foliations, also trace rock (quartz)</td>
<td></td>
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</tr>
<tr>
<td>85.5</td>
<td>66/5&quot;</td>
<td>66</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>87</td>
<td>S-29</td>
<td>33</td>
<td>16&quot;</td>
<td>Very stiff</td>
<td></td>
<td></td>
<td>Dry</td>
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<td></td>
<td></td>
<td>56</td>
<td></td>
<td>Very dark gray clay with little pyrite throughout also with little rock fragments</td>
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</tr>
<tr>
<td>88.5</td>
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<td>77</td>
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<td>90</td>
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**Measurement:** 530.1 ft

**Geotechnical Evaluation - Modern Landfill**

**Date Started:** 04/06/86  
**Date Completed:** 04/09/86

**FRED C. HART ASSOCIATES, INC.**

**AR300792**
**Visual Classification of Soils**

**Project Number:** H082  
**Boring Number:** HC-33  
**Elevation:** 530.1  
**Engineer/Geologist:** K. Interval  
**Drilling Methods:** 6" Hollow Stem Auger with 2" I.D. Split Spoon

<table>
<thead>
<tr>
<th>Depth (ft.)</th>
<th>Sample Type &amp; No.</th>
<th>Blows on Sampler per 6&quot;</th>
<th>Recovery (In.)</th>
<th>Description</th>
<th>USCS Symbol</th>
<th>Measured Consistency</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>90</td>
<td>S-30</td>
<td>13</td>
<td>15&quot;</td>
<td>As above, but no rock fragments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>91.5</td>
<td></td>
<td>12</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>27</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>93</td>
<td></td>
<td></td>
<td></td>
<td>Hard</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>94.5</td>
<td>S-31</td>
<td>103</td>
<td>2&quot;</td>
<td>Olive green and yellow-brown silt with trace sand vertically foliated and pieces of siltstone</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>S-32</td>
<td>24</td>
<td>18&quot;</td>
<td>Hard</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>13</td>
<td></td>
<td>Orange-brown silty clay with trace sand, orange and mafic layers oriented along cleavage plane</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>26</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>103</td>
<td>S-33</td>
<td>42</td>
<td>18&quot;</td>
<td>Hard</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>26</td>
<td></td>
<td>Orange and gray layered silty clay with trace sand, layers oriented along cleavage plane</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>28</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Hard dark red-brown silty sand, clasts are angular, non-calcareous siltstone (can be broken with fingers)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:** During first few feet, circulation water is black (water that was sitting hole). At approximately 2' down, water turns brown-orange. After 1 foot, black again. Brown circulation water probably reflects approximately 1 foot more competent siltstone saprolite.

**Fred C. Hart Associates, Inc.**
**Visual Classification of Soils**

**Project Name:** Geotechnical Evaluation - Modern Landfill

**Boring Number:** HC-33

**Elevation:** 530.1

**Engineer/Geologist:** M. Findlay

**Drilling Methods:** 6" Hollow Stem Auger with 2" I.D. Split Spoon

<table>
<thead>
<tr>
<th>Depth (ft.)</th>
<th>Blows on sampler per ft.</th>
<th>Recovery (In)</th>
<th>Description</th>
<th>Measured Consistency</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>105</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>106</td>
<td>14</td>
<td>18</td>
<td>Hard Orange and gray layered silty sand and clay (approximately 40%), trace angular cobble size quartz fragments, colored layers oriented along cleavage plane</td>
<td>-</td>
<td>Moist</td>
</tr>
<tr>
<td>107.5</td>
<td>13</td>
<td>26</td>
<td>Hard Orange and gray layered sandy clay with trace silt, orange and gray and trace intermittent yellow and green layers and trace mica are oriented along cleavage</td>
<td>-</td>
<td>Damp to Moist</td>
</tr>
<tr>
<td>109</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>110.5</td>
<td>22</td>
<td>18</td>
<td>Coring - no recovery</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Although competent bedrock has not yet been encountered, the decision to core was made because of high blow counts and likelihood of obtaining a good recovery of material.

**Notes:**

FRED C. HART ASSOCIATES, INC.

AR300794
VISUAL CLASSIFICATION OF SOIL AND ROCK

PROJECT NUMBER: H082  
FIELD ENG/Geo.: M. Findlay  
PROJECT NAME: Geotechnical Evaluation - Modern Landfill  
APPROX. ELEV.: 530.1  
CORE SIZE: NX  
BORING NO.: HC-33  
DATE: 04/08/86

DRILLING METHOD: 6" Hollow Stem Auger/Wire-Line Rock Coring  
DATE STARTED: 04/06/86  
DATE COMPLETED: 04/09/86

Casing Information

<table>
<thead>
<tr>
<th>Size</th>
<th>Depth</th>
<th>Actual Time</th>
<th>Depth</th>
<th>Actual Time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No data collected</td>
<td></td>
<td>No data collected</td>
<td></td>
</tr>
</tbody>
</table>

Groundwater Level Data

<table>
<thead>
<tr>
<th>Size</th>
<th>Depth</th>
<th>Actual Time</th>
<th>Depth</th>
<th>Actual Time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No data collected</td>
<td></td>
<td>No data collected</td>
<td></td>
</tr>
</tbody>
</table>

Coring Information

<table>
<thead>
<tr>
<th>Run Number</th>
<th>Depth</th>
<th>% Recovery</th>
<th>% Mud</th>
<th>Description</th>
<th>Joint Spacing</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>S-36</td>
<td>120.3</td>
<td>10</td>
<td>28</td>
<td>Hard</td>
<td></td>
<td>Moist</td>
</tr>
<tr>
<td></td>
<td>121.8</td>
<td>18&quot;</td>
<td></td>
<td>Light orange-brown silty clay with very thin green and black colored layers oriented with cleavage</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>123</td>
<td>14</td>
<td></td>
<td>As Above</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S-37</td>
<td>124.5</td>
<td>18&quot;</td>
<td>38</td>
<td>As Above</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>128</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CS-38</td>
<td>1.8</td>
<td>26</td>
<td>14</td>
<td>130-133' Hard blue-gray argillaceous dolomite, very thin lenses of sand are oriented along cleavage, slightly broken</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>135</td>
<td>130</td>
<td></td>
<td>131-133' Abrupt contact into a highly weathered argillaceous &quot;dolomitic&quot; from which all dolomite has been leached, severely weathered and pitted orange layers and very thin shale layers oriented along cleavage, broken</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

FRED C. HART ASSOCIATES, INC.

AR300795
## Visual Classification of Rock

**Project Number**: H082  
**Field Eng./Geo.**: M. Findlay  
**Page**: 10 of 10  
**Project Name**: Geotechnical Evaluation - Modern Landfill  
**Boring No.**: HC-33  
**Approx. Elev.**: 530.1  
**Core Size**: NX  
**Date**: 04/09/86  
**Drilling Method**: Standard Coring  
**Date Started**: 04/06/86  
**Date Completed**: 04/09/86  

### Casing Information

<table>
<thead>
<tr>
<th>Size</th>
<th>Depth (Ft)</th>
<th>% Recovery</th>
<th>% Rod</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS-39</td>
<td>2.0</td>
<td>120</td>
<td>28</td>
</tr>
<tr>
<td>CS-40</td>
<td>3.0</td>
<td>80</td>
<td>37</td>
</tr>
<tr>
<td>CS-41</td>
<td>7.8</td>
<td>97</td>
<td>69</td>
</tr>
<tr>
<td></td>
<td>145</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>148</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Groundwater Level Data

<table>
<thead>
<tr>
<th>Size</th>
<th>Depth (Ft)</th>
<th>% Recovery</th>
<th>% Rod</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| No data collected |

### Casings

<table>
<thead>
<tr>
<th>Run Number</th>
<th>Depth</th>
<th>% Recovery</th>
<th>% Rod</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS-39</td>
<td>135</td>
<td>120</td>
<td>28</td>
</tr>
<tr>
<td>CS-40</td>
<td>137.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CS-41</td>
<td>140</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Description

- **133-135'**: Hard blue-gray argillaceous dolomite, very thin lenses of sand oriented along cleavage, broken to slightly broken
- **135-137'**: Massive
- **137-137.5'**: Broken to slightly broken
- **138.9 horizontal fracture, quartz crystals on fracture face**
- **138.9-139':** Wedge-shaped zone of dolomitic brown sandstone oriented with cleavage, very weathered
- **139.2-0.75 cm thick lens of gray, dolomitic siltstone, oriented with cleavage, very weathered - on face of dolomite on either side of lens is muscovite mica**
- **139.5-140'**: Very broken
- **142-149':** Medium gray, fewer orange and mafic colored lenses of sand, less weathered, massive
- **Drilled to 150', unable to retrieve last 2'**
- **Bottom of Boring at 148'**

120% recovery is because during last run, not all of the core was retrieved.
BORING NO. HC-34
## VISUAL CLASSIFICATION OF SOILS

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE NO.</th>
<th>SAMPLE TYPE</th>
<th>BLOWSON 6&quot; SAMPLER</th>
<th>MEASURED CONSISTENCY</th>
<th>DESCRIPTION</th>
<th>USCS SYMBOL</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>S-1</td>
<td></td>
<td>6</td>
<td></td>
<td>Medium Stiff</td>
<td>-</td>
<td>Damp</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>9</td>
<td></td>
<td>Gray clayey silt with trace sand, trace graphite</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>1.5</td>
<td>S-2</td>
<td></td>
<td>7</td>
<td></td>
<td>Stiff</td>
<td>-</td>
<td>Damp</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>9</td>
<td></td>
<td>Brown sandy silt with trace clay, little (approximately 15%) very fine mica oriented along cleavage, orientation evident</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>4.5</td>
<td>S-3</td>
<td></td>
<td>5</td>
<td></td>
<td>Stiff</td>
<td>-</td>
<td>Moist</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td></td>
<td>Black-brown sandy silt with trace clay, some (approximately 25%) angular rock fragments (black siltstone)</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>9.6</td>
<td>S-4</td>
<td></td>
<td>3</td>
<td></td>
<td>Medium Stiff</td>
<td>-</td>
<td>Moist</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td></td>
<td>Orange-brown sandy silt with trace clay, some (approximately 25%) angular rock fragments (black siltstone)</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**NOTES**

Samples from 4.5 - 71' are a highly weathered clayey, very fine-grained sandstone — a phyllitic sandstone saprolite

Elevations and coordinates obtained by Land Survey Consultants, Inc. on April 9, 1986.

FRED C. HART ASSOCIATES, INC.
### VISUAL CLASSIFICATION OF SOILS

<table>
<thead>
<tr>
<th>DEPTH: FT.</th>
<th>SAMPLE TYPE &amp; NO.</th>
<th>BLOWEONS SAMPLER PL</th>
<th>SOIL RECOVERY (in.)</th>
<th>DESCRIPTION</th>
<th>MEASURED CONSISTENCY [TSF]</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>16.5 S-5</td>
<td>1</td>
<td>14&quot;</td>
<td>Very soft Brown-black silty clay with trace sand and some (approximately 20%) nodular black siltstone, fragments</td>
<td>-</td>
<td>Wet</td>
</tr>
<tr>
<td>18</td>
<td>18 S-6</td>
<td>2,3,4</td>
<td>0&quot;</td>
<td>No Recovery Soft to medium stiff Brown clayey silt with little (approximately 15%) sand, cleavage slightly evident</td>
<td>-</td>
<td>Wet</td>
</tr>
<tr>
<td>21</td>
<td>22.5 S-7</td>
<td>3</td>
<td>-</td>
<td>Medium stiff Brown clayey silt with trace sand, cleavage slightly evident</td>
<td>-</td>
<td>Wet</td>
</tr>
<tr>
<td>24</td>
<td>27 S-8</td>
<td>2</td>
<td>-</td>
<td>As above</td>
<td>-</td>
<td>Wet</td>
</tr>
<tr>
<td>28.5</td>
<td>30 S-9</td>
<td>4</td>
<td>-</td>
<td>Stiff Orange-brown silty sand with trace clay</td>
<td>-</td>
<td>Wet</td>
</tr>
</tbody>
</table>

**NOTES**

FRED C. HART ASSOCIATES, INC.
<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample No.</th>
<th>Boreholes on Sampler</th>
<th>Recovery (In)</th>
<th>Description</th>
<th>Measured Consistency (ISF)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>31.5</td>
<td>S-10</td>
<td>12</td>
<td>16</td>
<td>Very stiff&lt;br&gt;Gray silty clay with trace sand, orange and mafic colored zones&lt;br&gt;along cleavage orientation, trace very fine mica crystals and trace mafic highly weathered materials</td>
<td>-</td>
<td>Moist</td>
</tr>
<tr>
<td>33</td>
<td>S-10</td>
<td>12</td>
<td>19</td>
<td>Orange-brown clayey silt with trace sand, cleavage not as evident&lt;br&gt;Stiff&lt;br&gt;Orange-brown sandy silt with trace clay, some (approximately 30%) more competent rock fragments (can be broken with fingers), fragments are platy - cleavage orientation, highly weathered mafic minerals on cleavage planes</td>
<td>-</td>
<td>Moist to wet</td>
</tr>
<tr>
<td>34.5</td>
<td>S-11</td>
<td>7</td>
<td>18</td>
<td>As Above&lt;br&gt;Mafic highly weathered minerals on cleavage planes</td>
<td>-</td>
<td>Moist</td>
</tr>
<tr>
<td>36</td>
<td>S-11</td>
<td>7</td>
<td>18</td>
<td>As Above&lt;br&gt;Mafic highly weathered minerals on cleavage planes</td>
<td>-</td>
<td>Moist</td>
</tr>
<tr>
<td>37.5</td>
<td>S-12</td>
<td>5</td>
<td>10</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>39</td>
<td>S-12</td>
<td>5</td>
<td>12</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>40.5</td>
<td>S-13</td>
<td>4</td>
<td>12</td>
<td>Medium stiff&lt;br&gt;As above, cleavage evident, highly weathered mafic minerals on cleavage planes</td>
<td>-</td>
<td>Moist</td>
</tr>
<tr>
<td>42</td>
<td>S-13</td>
<td>4</td>
<td>12</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>43.5</td>
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<td>0</td>
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<td>-</td>
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</tr>
<tr>
<td>45</td>
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<td></td>
<td>0</td>
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<td>-</td>
</tr>
</tbody>
</table>

**NOTES**

FRED C. HART ASSOCIATES, INC.
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE &amp; NO.</th>
<th>BLOWS ON SAMPLE PER IN.</th>
<th>RECOVERY (IN.)</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>45</td>
<td>-</td>
<td>1/18&quot;</td>
<td>0</td>
<td>Stiff Orange-brown clayey silt with trace sand, cleavage evident, mafic and orange colored zones along cleavage face</td>
</tr>
<tr>
<td>46.5</td>
<td>S-15</td>
<td>5</td>
<td>12&quot;</td>
<td>Moist Orange-brown clayey silt with trace sand, cleavage evident, mafic minerals on cleavage face</td>
</tr>
<tr>
<td>48</td>
<td>5</td>
<td>11</td>
<td></td>
<td>Approximately 49' while roller bitting drillers report material is much softer</td>
</tr>
<tr>
<td>49.5</td>
<td>S-16</td>
<td>WOT* 6&quot;</td>
<td>14&quot;</td>
<td>Wet to moist Gray-green clayey siltstone</td>
</tr>
<tr>
<td>51</td>
<td>11/6&quot;</td>
<td>50/1&quot;</td>
<td></td>
<td>Wet Very soft - saprolite Green-gray silty sandstone with some (approximately 25%) clay, weathered mica and mafic minerals on cleavage faces, highly weathered and broken, grading into a very soft orange-brown silty sand with some clay, cleavage evident, wet, very broken</td>
</tr>
<tr>
<td>52.5</td>
<td>Recovered</td>
<td>28% Recov. RQD 0%</td>
<td></td>
<td>hard again at 59' - resume coring Orange-brown sandy silt with some clay, mafic and green layers along cleavage Medium stiff Green-gray silty sandstone with some clay, mafic minerals and orange-brown layers along cleavage</td>
</tr>
</tbody>
</table>

NOTES

*WOT = Weight of Tools

FRED C. HART ASSOCIATES, INC.
# VISUAL CLASSIFICATION OF ROCK

**PROJECT NUMBER**: H082  
**FIELD ENG./GEO.**: M. Findlay  
**PROJECT NAME**: Geotechnical Evaluation - Modern Landfill  
**BORING NO.**: HC-34  
**APPROX. ELEV.**: 533.3  
**CORE SIZE**: NX  
**DATE**: 04/03/86  
**DATE STARTED**: 04/02/86  
**DATE COMPLETED**: 04/04/86

## CASING INFORMATION

<table>
<thead>
<tr>
<th>RUN NUMBER</th>
<th>DEPTH (FT)</th>
<th>% RECOVERY</th>
<th>% ROD</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS-19</td>
<td>60</td>
<td>0.58</td>
<td>12</td>
</tr>
<tr>
<td>CS-20</td>
<td>64</td>
<td>3.2</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>71.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CS-21</td>
<td>72</td>
<td>3.1</td>
<td>51</td>
</tr>
</tbody>
</table>

## GROUNDWATER LEVEL DATA

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very soft Brown gray clayey sandstone with silt, highly weathered and fractured - saprolite, trace mica and mafic minerals oriented with cleavage, wet, very broken</td>
</tr>
<tr>
<td>Very soft Green gray silty sandstone, very highly weathered and fractured, mafic minerals and mica crystals, oriented along cleavage, very broken</td>
</tr>
<tr>
<td>Abrupt contact into red-brown silty sandstone, same as above, more heavily fractured and weathered</td>
</tr>
<tr>
<td>Abrupt contact into hard blue-gray sandy, silty dolomite, very fine crystalline, mafic minerals and sand oriented along cleavage plane at 80°</td>
</tr>
<tr>
<td>More (approximately 20%) sand lenses recrystallized calcite along fractures</td>
</tr>
</tbody>
</table>

## CASING INFORMATION

<table>
<thead>
<tr>
<th>RUN NUMBER</th>
<th>DEPTH (FT)</th>
<th>% RECOVERY</th>
<th>% ROD</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS-19</td>
<td>60</td>
<td>0.58</td>
<td>12</td>
</tr>
<tr>
<td>CS-20</td>
<td>64</td>
<td>3.2</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>71.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CS-21</td>
<td>72</td>
<td>3.1</td>
<td>51</td>
</tr>
</tbody>
</table>

## REMARKS

- Poor recovery because of the high degree of weathering. Next core sample will be done more quickly and with less water in an attempt to get a better recovery.
- Driller reports drilling harder at 71.2' likely contact of dolomite.

FRED C. HART ASSOCIATES, INC.
## Visual Classification of Rock

**Project Number:** HD82  
**Field Eng./Geo:** M. Findlay  
**Page:** 6 of 7  
**Project Name:** Geotechnical Evaluation - Modern Landfill  
**Boring No.:** HC-34  
**Approx. Elev.:** 533.3  
**Core Size:** NX  
**Date:** 04/04/86  
**Drilling Method:** Coring  
**Coordinates:** N231,488.89, E2,324,933.39  
**Date Started:** 04/02/86  
**Date Completed:** 04/04/86

### Casings Information

<table>
<thead>
<tr>
<th>Run Number</th>
<th>Depth (ft)</th>
<th>Recovery (ft)</th>
<th>% Recovery</th>
<th>Description</th>
</tr>
</thead>
</table>
| CS-21      | 3.1        | 51            | 37         | Hard  
Blue-gray sandy dolomite, easily 
fractures along cleavage faces  
(approximately 50 - 55° from hor-
izontal) mafics pitted along 
cleavage oriented fracture face, 
weathered, slightly broken |
| S-22       | 80.2       | 22            | 4/6        | Orange-brown silty sand with some  
(approximately 35%) clay and rock 
fragments (broken with fingers)  
Brown-orange silty sand with trace  
clay - vertical orientation of 
large-grained angular, non-calcareous 
sand grains and very fine-grained 
sand to silt |
| S-23       | 81.23      | 6/6           | 6/12       | At 80.2 abrupt contact at approximatel, 
60 - 65° from horizontal orange-brown 
highly weathered silty sandstone with 
trace clay to blue-gray sandy dolomite  
Somewhat gradational contact into brown 
calcareous sandstone, mica on cleavage 
faces (82')  
Gradational contact into blue-gray 
sandy dolomite  
Calcite precipitation  
Zone of red-brown calcareous silt with 
timey dolomite (87.5')  
Abrupt contact into medium hard, dark 
grey micaceous dolomitic, very fine-
grained sandstone, highly weathered, 
mica oriented along cleavage planes, 
broken (80')  
Modular Orange seams (87-88') |

### Remarks

- At approximately 77.5 - 78' material gets softer. Stopped and pulled core
- Driller reports that 80 - 81' spoon actually penetrated the hole at an angle, when coring started bit was at 80.2'

WOT = Weight of Tools

FRED C. HART ASSOCIATES, INC.
### Visual Classification of Rock

#### Geotechnical Evaluation - Modern Landfill

**Project Number:** HC-34  
**Field Eng./Geo:** M. Findlay  
**Approx. Elev.:** 533.3  
**Drilling Method:** Coring  
**Core Size:** NX  
**Coordinates:** N231,488.89 E2,324,933.39  
**Date Started:** 04/02/86  
**Date Completed:** 04/04/86  
**Date:** 04/04/86

#### Casing Information

<table>
<thead>
<tr>
<th>Size</th>
<th>Depth</th>
<th>Actual Time</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>92.5</td>
<td>6.2</td>
<td>62%</td>
</tr>
</tbody>
</table>

#### Groundwater Level Data

<table>
<thead>
<tr>
<th>Size</th>
<th>Depth</th>
<th>Actual Time</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>92.5</td>
<td>6.2</td>
<td>62%</td>
</tr>
</tbody>
</table>

#### Joint Spacing

<table>
<thead>
<tr>
<th>Run Number</th>
<th>Depth (Fe)</th>
<th>Recovery (Fe)</th>
<th>% Rod</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS-25</td>
<td>92.5</td>
<td>6.2</td>
<td>62%</td>
<td>Highly weathered and fractured (91.0-92.5')</td>
</tr>
<tr>
<td>CS-26</td>
<td>4.6</td>
<td>62%</td>
<td>17%</td>
<td>Less severely weathered, grading into hard blue-gray sandy dolomite, massive (92.5-93.5')</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td></td>
<td></td>
<td>Vertical fracture along cleavage orientation with precipitated pyrite and calcite (95')</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Grading into medium hard dolomitic very fine-grained, phyllitic sandstone, highly weathered, broken (95.0-100')</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Bottom of boring at 100.0 feet</td>
</tr>
</tbody>
</table>

**FRED C. HART ASSOCIATES, INC.**
BORING NO. HC-35
**VISUAL CLASSIFICATION OF SOILS**

<table>
<thead>
<tr>
<th>DEPTH (ft.)</th>
<th>SAMPLE TYPE &amp; NO</th>
<th>BLOWS/ON</th>
<th>RECOVERY (in.)</th>
<th>DESCRIPTION</th>
<th>USCS SYMBOL</th>
<th>MEASURED CONSISTENCY (TSF)</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>S-1</td>
<td>5</td>
<td>18</td>
<td>Medium stiff</td>
<td></td>
<td></td>
<td>Damp</td>
</tr>
<tr>
<td>1.5</td>
<td></td>
<td>7</td>
<td></td>
<td>Reddish brown clayey silt with little rock fragments (very coarse)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>S-2</td>
<td>7</td>
<td>13</td>
<td>As above</td>
<td></td>
<td></td>
<td>Damp</td>
</tr>
<tr>
<td>4.5</td>
<td>S-3</td>
<td>2</td>
<td>10</td>
<td>Soft</td>
<td></td>
<td></td>
<td>Wet</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>1</td>
<td>10</td>
<td>Medium brown clayey silt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.5</td>
<td></td>
<td>1</td>
<td>10</td>
<td>Wet</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>S-4</td>
<td>1</td>
<td>5</td>
<td>Medium Stiff</td>
<td></td>
<td></td>
<td>Wet, no recovery on first attempt, sample taken on second attempt is disturbed</td>
</tr>
<tr>
<td>10.5</td>
<td></td>
<td>1</td>
<td>5</td>
<td>Medium brown silt and very coarse sand</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td>1</td>
<td>1</td>
<td>Very soft</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>S-5</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTES**

All of the unconsolidated material from the surface to 228' is a highly weathered clayey, very fine-grained sandstone - a phyllitic sandstone saprolite.

Elevations and coordinates obtained by Land Survey Consultants, Inc. on April 9, 1986

*No data collected.

FRED C. HART ASSOCIATES, INC.  

AR300806
<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Type</th>
<th>Bore Depth</th>
<th>Weight of Rods</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>S-6</td>
<td></td>
<td>25.9</td>
<td></td>
<td>Split spoon samples were attempted from 25.9 to 28.9 feet. There was good indication, while driving the spoons, that the spoon was pushed out of line. (i.e., the spoon was bent and ruined on the sampling of S-10).</td>
</tr>
<tr>
<td>S-7</td>
<td></td>
<td>22.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>23.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S-8</td>
<td></td>
<td>23.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S-9</td>
<td></td>
<td>23.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S-10</td>
<td></td>
<td>23.4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Split spoon samples were attempted from 25.9 to 28.9 feet. There was good indication, while driving the spoons, that the spoon was pushed out of line. (i.e., the spoon was bent and ruined on the sampling of S-10).
## Visual Classification of Rock

### Geotechnical Evaluation - Modern Landfill

**Project Number**: H082  
**Field Eng./Geo.**:  
**K. Interval**:  
**Page 3 of 4**

**Project Name**: Geotechnical Evaluation - Modern Landfill  
**Boring No.**: HC-35  
**Approx. Elev.**: 511.4  
**Core Size**: NX  
**Date**: 04/08/86  
**Drilling Method**: Diamond Bit Coring  
**Date Started**: 04/08/86  
**Date Completed**: 04/08/86

### Casing Information

<table>
<thead>
<tr>
<th>Run Number</th>
<th>Depth (ft)</th>
<th>Recovery (%)</th>
<th>% Rod</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS-11</td>
<td>30.0</td>
<td>5.2</td>
<td>82</td>
<td>62</td>
</tr>
<tr>
<td></td>
<td>32.6</td>
<td></td>
<td></td>
<td>Very hard greenish-gray dolomite with some sand, some calcite on high angle cleavage planes, slightly weathered, slightly broken</td>
</tr>
<tr>
<td>CS-12</td>
<td>36.6</td>
<td>3.7</td>
<td>91</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Very hard sandy gray dolomite with quartz and muscovite, borken</td>
</tr>
<tr>
<td>CS-13</td>
<td>42.6</td>
<td>5.8</td>
<td>96</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Hard, foliations visible, slightly borken</td>
</tr>
<tr>
<td>CS-14</td>
<td>45</td>
<td>2.4</td>
<td>100</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Broken</td>
</tr>
</tbody>
</table>

### Groundwater Level Data

| No data collected |

---

**Remarks**

**FRED C. HART ASSOCIATES, INC.**

**AR300808**
### Geotechnical Evaluation - Modern Landfill

#### Project Information
- **Project Number**: H082
- **Field Eng./Geo.**: K. Interval
- **Project Name**: Geotechnical Evaluation - Modern Landfill
- **Approx. Elev.**: 511.4
- **Core Size**: NX
- **Drilling Method**: Diamond Bit Coring
- **Coordinates**: N231,284.31 E2,323,647.59
- **Boring No.**: HC-35
- **Date Started**: 04/08/86
- **Date Completed**: 04/08/86
- **Date**: 04/08/86

#### Casing Information

<table>
<thead>
<tr>
<th>Size</th>
<th>Depth</th>
<th>Actual Time</th>
<th>Depth</th>
<th>Actual Time</th>
<th>Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Groundwater Level Data

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very hard greenish-gray sandy dolomite, recrystallized calcite on high angle fractures, slightly broken</td>
</tr>
</tbody>
</table>

#### Joint Spacing

- **Maximum**: 14.6"  
- **Minimum**: 10"  
- **Average**: 12.3"  
- **Remarks**: Bottom of boring at 47.0 feet

---

FRED C. HART ASSOCIATES, INC.
Modern Landfill
Well W-2

8" steel casing
5.5'

Yellowish-green silty clay
Buff weathered phyllite and quartz

Highly micaceous blue-green phyllite and quartz veins

Drilling Began: March 1, 1984
Drilling Completed: March 1, 1984
Total Depth: 73'
Elevation, Top of Casing: 559.44'
Elevation, Ground Surface: 557.5'
Screened Interval: Open Hole 5.5 to 73' below grade
Open Rock Hole Elevation: 552.0' - 484.5'
SWL Elevation (Date): 546.31' (7/17/84)
Drilling Method: Air Rotary

Vertical Scale
1" = 10'

TD 73'
Geologic and Well Construction Log

Modern Landfill
Well W-6

- Medium brown soil.
- Brown-green to olive-brown weathered phyllite; quartz fragments.
- Pale to medium green phyllite with quartz; water-bearing zone at 36'.

Vertical Scale
1" = 10'

Casing packed, grouted, backfilled, covered, thermometer recorded, and photographed.
Geologic and Well Construction Log

Modern Landfill
Well W-6 Cont'd.

6" Open Rock Hole — Pale to medium green phyllite with quartz; water-bearing zone at 36'.

Total Yield 1/4 to 1/2 gpm.

Drilling Began: 6/11/84
Drilling Completed: 6/11/84
Total Depth: 98'
Elevation, Top of Casing: 576.48'
Elevation, Ground Surface: 574.5'
Screened Interval: 34' to 98' (open rock hole)

Open Rock Hole Elevation: 540.5' - 476.5'
SWL Elevation (Date): 568.13' (7/17/84)
Drilling Method: Air Rotary

r.e. wright associates, inc.  AR300812
Geologic and Well Construction Log
Modern Landfill
Well W-14

Red-brown saprolite with rock fragments.

Weathered olive phyllite; water-bearing zone at 26' to 27' and 57' to 62'.

Greenish-gray and olive phyllite with weathered zones; water-bearing zones at 82' and 112'.

Backfill

10" Steel Casing

Grout

6" Steel Casing

Vertical Scale
1" = 10'

Casing cut 8" below ground surface, covered and tamped with soil, staked and photographed.
Geologic and Well Construction Log
Modern Landfill
Well W-14 Cont'd.

Drilling Began: 7/9/84
Drilling Completed 7/10/84
Total Depth: 123'
Elevation, Top of Casing: 547.11'
Elevation, Ground Surface: 545.6'

Greenish-gray and olive phyllite with weathered zones; water-bearing zones at 82' and 112'

10" hole well yield = 2 gpm.

Vertical Scale
1' = 10'

Total Yield 3 gpm.

Drilling Method: Air Rotary
Geologic and Well Construction Log

Modern Landfill
Well W-15

Red-brown soil

Reddish-brown saprolite with zones of weathered phyllite.

Water-bearing zones at 47', 58', and 62'.

Weathered phyllite.

10" hole well yield = 15-20 gpm.

Greenish-gray and bluish-green phyllite, water-bearing zone at 120' to 121'.

Backfill

10" Steel Casing

6" Open Rock Hole

6" Steel Casing

Volcanic Grout

Grout

6" Steel Casing

Vertical Scale

1" = 10'

r.c. wright associates, inc.
Geologic and Well Construction Log
Modern Landfill
Well W-15 Cont'd.

Greenish-gray and bluish-green phyllite, water-bearing zone at 120' to 121'.

Greenish-gray and bluish-green phyllite, water-bearing zone at 120' to 121'.

Vertical Scale
1" = 10'

Drilling Began: 7/11/84
Drilling Completed: 7/11/84
Total Depth: 200'
Elevation, Top of Casing: 598.60'
Elevation, Ground Surface: 596.6'
Screened Interval: 78' to 200' (open rock hole)
Open Rock Hole Elevation: 518.6'
SWL Elevation (Date): 564.16' (3/29/85)
Drilling Method: Air Rotary
Geologic and Well Construction Log
Modern Landfill
Well W-16

Casing cut, covered and tamped with soil
staked and photographed

Cement Grout

Fill - Trash and garbage
Dark red silt and fine to medium gravel.

6" Steel Casing

Medium to dark grayish to olive green phyllite. Some weathered zones. Water-bearing zone 91' - 93'.

well materials not removed, refer to well abandonment form for further details

Drilling Began: 2/7/85
Drilling Completed: 2/7/85
Total Depth: 175'
Elev., TOC: 649.51'
Elev., G.S.: 646.5'
Screened Interval: Open Rock Hole 37'-175'
Open Rock Hole Elevation: 609.5'-471.5'
WL Elevation (Date): 598.47' (2/18/85)
Drilling Method: Air Rotary

Total Yield - 0.07 gpm

Vertical Scale 1"=20'
Geologic and Well Construction Log

Modern Landfill
Well W-17

Casing cut below ground surface covered and tamped with soil, staked and photographed

Cement Grout

Fill - Trash and garbage

6" Steel Casing

Well materials (casing) not removed from hole, refer to well abandonment form for further details

Medium to dark olive to grayish green phyllite, a few weathering zones.

Drilling Began: 2/8/85
Drilling Completed: 2/8/85
Total Depth: 125'
Elev., TOC: 648.06'
Elev., G.S.: 646.1'
Screened Interval: Open Rock Hole 38' - 125'
Open Rock Hole Elevation: 608.1' - 521.1'
SWL Elevation (Date): 525.04' (2/18/85)
Drilling Method: Air Rotary

Total Yield - <1/4 gpm
<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 12</td>
<td>Cement Grout</td>
</tr>
<tr>
<td>12 - 18</td>
<td>6&quot; Steel Casing</td>
</tr>
<tr>
<td>18 - 172</td>
<td>Water-bearing zones at 65' - 70' (0.25 gpm) and 137' - 140' (1.25 gpm)</td>
</tr>
</tbody>
</table>

Geologic and Well Construction Log
Modern Landfill
Well W-18

Casing cut below ground surface, covered and capped with soil, staked and photographed.

Casing not removed, refer to well abandonment form for further details.

Total Yield: 1.5 gpm

Vertical Scale 1" = 20'
Drilling Began: 1/24/85
Drilling Completed: 1/24/85
Total Depth: 172'
Elevation TOC: 598.23'
Elevation G.S.: 596.9'

Screened Interval: Open Rock Hole 18' - 172'
SWL Elevation (Date): 559.31 (3/24/86)
Drilling Method: Air Rotary
Open Rock Hole Elevation: 578.9' - 424.9'
Geologic and Well Construction Log
Modern Landfill
Well W-19

Casing cut below ground surface, covered and tamped
with soil, stacked and photographed

Brown clay soil.

Casing not removed, refer to well
Abandonment form for further
details

Tan and Greenish gray weathered
phyllite. Water-bearing zone
at 57-59' (3 gpm)

Bluish green to bluish gray
phyllite. Water-bearing zones
at 91' (1 gpm) and 129-134'
(1 gpm)

Drilling Began: 1/25/85
Drilling Completed: 1/25/85
Total Depth: 147'
Elev., TOC: 597.91'
Elev., G.S.: 596.2'
Screened Interval: Open Rock Hole 18'-147'

Open Rock Hole Elevation: 578.2'-449.6'
SWL Elevation (Date): 558.64' (3/24/86)
Drilling Method: Air Rotary

Total Yield - 5 gpm

Vertical Scale 1" = 20'
Geologic and Well Construction
Modern Landfill
Well W-20

Orange brown clay soil.

Cement Grout
6" Steel Casing

Tan to olive weathered phyllite. Water-bearing zone at 61-65' (1 gpm)

Bluish green phyllite. Water-bearing zone at 141' (0.5 gpm)

Total Yield = 1.5 gpm

Drilling Began: 1/24/85
Drilling Completed: 1/25/85
Total Depth: 152'
Elev., TOC: 603.58'
Elev., G.S.: 601.7'

Screened Interval: Open Rock Hole 18'-152'
Open Rock Hole Elevation: 583.7'-449.7'
SWL Elevation (Date): 561.85' (3/24/86)
Drilling Method: Air Rotary

AR300823
Modern Landfill
Well W-22

Light to medium brown sandy silt. Some clay and fine gravel.

Brown, highly weathered sandstone

Medium to dark gray fine-grained sandstone. Some weathered zones. Water-bearing zones at 30' (1 gpm) and 41' (1 gpm)

Total Yield - 2 gpm

Drilling Began: 2/6/85
Drilling Completed: 2/6/85
Total Depth: 75'
Rev., TOC: 537.01
Elev., G.S.: 534.9'

Screened Interval: Open rock hole 18' - 75'
SWL Elevation (Date): 530.18' (3/24/86)
Drilling Method: Air Rotary
Open Rock Hole Elevation: 516.9'-459.9'
Geologic and Well Construction Log
Modern Landfill
Well W-24

Cement Grout

6" Steel Casing

Orange brown clay soil.

Brown, reddish brown and yellowish brown saprolite.

Reddish to yellowish brown highly weathered phyllite.

Olive weathered phyllite.

Bluish green phyllite with some weathered olive phyllite.

Water-bearing zones at 32' and 41'-43' (2.25 gpm) and 50' and 56-57.5' (22.75 gpm)

Bluish green phyllite.

Total Yield - 25 gpm

Drilling Began: 1/30/85
Drilling Completed: 1/30/85
Total Depth: 72'
Elev., TOC: 590.17'
Elev., G.S.: 588.3'

Screened Interval: Open Rock Hole 25'-72'
Open Rock Hole Elevation: 563.3'-516.3'
SWL Elevation (Date): 577.84' (2/18/85)
Drilling Method: Air Rotary

AR300825
Geologic and Well Construction Log
Modern Landfill
Well W-25

8" Steel Protector Casing
Cement Grout

6" PVC Casing

6" Johnson PVC Well Screen
Morie Sand
Caved Formation

Orange brown to brownish yellow clayey soil.

Reddish brown saprolite and weathered phyllite.
Water-bearing zone 10' - 25' (7 gpm).

Reddish brown weathered phyllite.
Water-bearing zone at 32' (8 gpm)

Bluish green phyllite.
Total Yield - 15 gpm

Vertical Scale 1" = 10'

Drilling Began: 1/28/85
Drilling Completed: 1/29/85
Total Depth: 48'
Elev., TOC: 584.31'
Elev., G.S.: 582.6'

Screened Interval: 24'-44'
Screen Elevation: 558.6'-538.6'
SWL Elevation (Date): 573.48' (2/18/85)
Drilling Method: Air Rotary
Geologic and Well Construction Log of Geomoni
Modern Landfill
Well W-26

Orange clay soil
Dark gray clay and silt and highly weathered siltstone and shale

Bluish-gray medium to fine crystalline weathered dolomite

Void. Water bearing zone at 43-50' (100 gpm).
Light, medium, and dark gray, fine to medium crystalline dolomite with some argillaceous dolomite
Water bearing zone at 66-67' (2.0 gpm)
Water bearing zone at 76-78' (4.7 gpm)

Water bearing zone at 108' (0.4 gpm)

Water bearing zone at 123-148' (7.9 gpm)
Light, medium and dark gray fine-grained dolomitic sandstone or sandy dolomite with some dark grayish-brown fine-grained sandstone
Water bearing zone at 150-160' (2.0 gpm)

Water bearing zone at 173-200' (5.2 gpm)

Drilling Began: 6/11/85
Drilling Completed: 6/14/85
Total Depth: 200'
Elev., TOC: 523.27'
Elev., C.S.: 522.5'
Screen Elev., (78'): 453.5'-462.5'
Screen Elev., (136'): 404.5'-383.5'
Screen Elev., (199'): 347.5'-322.5'
SWL Elev. (78') (Date): 519.34' (3/24/86)
SWL Elev. (136') (Date): 519.19' (3/24/86)
SWL Elev. (199') (Date): 519.14' (3/24/86)
Drilling Method: Air Rotary
Geologic and Well Construction Log
Modern Landfill
Well W-26 (S)

6" Steel Casing
Cement Grout
5'

Orange-brown clay soil
Tan silty, clayey soil with some rock fragment

23'

Dark gray clayey, silty soil and dark gray highly weathered siltstone

30'

Dark gray weathered siltstone

Dark gray, weathered, argillaceous, dolomite. Water bearing zone 33' (10 gpm)

35'

Void. Water bearing zone at 35-48' (90 + gpm)

48'

Total Yield = 100+ gpm

Vertical Scale 1" = 10'

Drilling Began: 6/11/85
Drilling Completed: 6/11/85
Total Depth: 48'
Elev., TOC: 522.93'
Elev., G.S.: 522.6'

Screened Interval: Open Rock Hole 29.5' - 48'
SWL Elevation (Date): 520.10 (3/24/86)
Drilling Method: Air Rotary
Open Rock Hole Elevation: 493.1' - 494.6'
Geologic and Well Construction Log
Modern Landfill
Well W-26 (1)

13" Steel Casing
Cement Grout
6" Steel Casing

Light to dark brown clayey silt
Water bearing zone at 10' (20 gpm)
Dark brown weathered shale and soil

Dark gray, weathered siltstone
shale, and argillaceous dolomite
water-bearing zone at 45-50' (20 gpm)

Light gray and medium gray,
fine-crystalline, dolomitic
limestone and dolomite
Water bearing zone at 63-65' (20 gpm)

Water bearing zone at 140-141' (8 gpm)
Total Yield = 8 gpm

Drilling Began: 8/7/85
Drilling Completed: 8/12/85
Total Depth: 148'
Elev., TOC: 524.68'
Elev., G.S.: 522.9'

Screened Interval: Open Rock Hole 98' - 148'
SWL Elevation (Date): 519.23' (3/24/86)
Drilling Method: Air Rotary
Open Rock Hole Elevation: 424.9' - 374.9'
Geologic and Well Construction Log
Modern Landfill
Well W-26D

Vertical Scale 1" = 20'

<table>
<thead>
<tr>
<th>Depth in feet</th>
<th>Well Construction</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>10&quot; steel casing</td>
<td>Orange-brown gravelly silt.</td>
</tr>
<tr>
<td>10</td>
<td>Caved Formation</td>
<td>Dark brown gravelly silt and highly weathered siltstone.</td>
</tr>
<tr>
<td>20</td>
<td>6&quot; steel pipe</td>
<td>Void.</td>
</tr>
<tr>
<td>30</td>
<td>Grout between 10&quot; and outer hole</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>Grout between 6&quot; and 10&quot; steel pipe</td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>10&quot; hole</td>
<td>Medium gray, fine crystalline dolomite and phyllitic dolomite.</td>
</tr>
<tr>
<td>60</td>
<td></td>
<td>Medium gray, fine crystalline, nodula dolomite.</td>
</tr>
<tr>
<td>70</td>
<td></td>
<td>Medium gray, fine crystalline, nodula dolomite.</td>
</tr>
<tr>
<td>80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>90</td>
<td></td>
<td></td>
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<tr>
<td>100</td>
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<tr>
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<td>120</td>
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<tr>
<td>130</td>
<td></td>
<td></td>
</tr>
<tr>
<td>140</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Depth in feet | Well Construction | Description
--- | --- | ---
140- | 10" hole | Medium gray, fine crystalline, nodular dolomite with some argillaceous, slaty dolomite.
150- | Grout between 10" and outer hole | Light to medium gray, fine crystalline dolomite.
160- | 6" steel pipe | Light to medium gray to brownish-gray, fine crystalline, argillaceous and nodular dolomite.
170- | | White, light gray and medium gray, medium crystalline dolomite.
180- | | White, medium crystalline dolomite with some greenish-gray phyllite.
190- | 6" hole. | Dark greenish-gray chloritic phyllite and fine grained sandstone.
200- | Velocry Grout | Light to medium gray and greenish-gray slightly dolomitic, fine grained sandstone.
210- | | Dark above interbedded with sandy, fine crystalline dolomite.
220- | | Medium greenish-gray, sandy, fine crystalline dolomite.
230- | 3" Core | Vertical Scale 1" 20'
240- | | 
250- | | 
260- | Healed Grout 267 | 
268- | | 

*AR300831*
Geologic and Well Construction Log
Modern Landfill
Well W-26D Cont'd.

Drilling Began: 8/16/85
Drilling Completed: 3/13/86
Total Depth: 268.0'
Elevation, TOC: 524.25'
Elevation, G.S.: 523.0'

SWL Elevation (Date): 521.13' (3/24/86)
Drilling Method: Air Rotary and Rock Coreing
Open Rock Hole Elevation: 325.0'-255.0'
<table>
<thead>
<tr>
<th>Geoman Number</th>
<th>Screened Interval</th>
<th>Screen Elevation</th>
<th>SWL Elevation (Date)</th>
</tr>
</thead>
<tbody>
<tr>
<td>W-27(12)</td>
<td>4'-14'</td>
<td>542.7'-532.7'</td>
<td>542.34' (3/24/86)</td>
</tr>
<tr>
<td>W-27(39)</td>
<td>27'-40'</td>
<td>519.7'-506.7'</td>
<td>541.93' (3/24/86)</td>
</tr>
<tr>
<td>W-27(63)</td>
<td>55'-65'</td>
<td>491.7'-481.7'</td>
<td>541.71' (3/24/86)</td>
</tr>
<tr>
<td>W-27(142)</td>
<td>120'-145'</td>
<td>426.7'-401.7'</td>
<td>539.71' (3/24/86)</td>
</tr>
<tr>
<td>W-27(169)</td>
<td>150'-173'</td>
<td>396.7'-373.7'</td>
<td>537.84' (3/24/86)</td>
</tr>
</tbody>
</table>
Geologic and Well Construction Log
Modern Landfill
Well W-27 (1)

Casing cutoff, grouted to top, covered
with soil, tamped, staked and photographed

Orange-brown to very dark brown sand,
clayey silt and phyllite fragments

Light greenish-gray, highly weathered
phyllite, with some quartz. Water-
bearing zone at 18-23' (25 gpm)

White quartz and light greenish-gray
to brown weathered phyllite

Light greenish-gray to brown weathered
phyllite, with some quartz. Water-
bearing zone at 43' (20 gpm)

Light to dark greenish-gray to dark
bluish-green phyllite

Total Yield = <1/4 gpm

Vertical Scale 1" = 20'

Drilling Began: 7/24/85
Drilling Completed: 7/29/85
Total Depth: 130'
Elev., TOC: 549.95'
Elev., G.S.: 549.4'

Open Rock Interval: 80'-130'
Open Rock Elevation: 469.4'-419.4'
SWL Elevation (Date): 541.03' (3/24/36)
Drilling Method: Air Rotary

AR300834
Geologic and Well Construction Log
Modern Landfill
Well W-27 (D)

Covered with soil, staked, photographed.
Grout to surface

Light to medium brown sandy, clayey silt, with phyllite fragments

Light greenish-gray highly weathered phyllite. Water-bearing zone at 17-25' (5 gpm)

Bluish-green phyllite with some light greenish-gray to brown weathered phyllite. Water-bearing zone at 25-50' (35 gpm)

6" Steel Casing

Cement Grout

Volcanic Grout

Vertical Scale 1" = 40'

Total Yield = <1/4 gpm

Drilling Began: 7/31/85
Drilling Completed: 8/5/85
Total Depth: 230'
Elev., TOC: 550.92'
Elev., G.S.: 549.3'

Open Rock Interval: 180'-230'
Open Rock Elevation: 369.3'-319.3'
SWL Elevation (Date): 524.8' (3/24/86)
Drilling Method: Air Rotary
Modern Landfill
Well W-27 (S)

Orange-brown to very dark brown sand, clayey silt and phyllite fragments

Light to medium greenish-gray, highly weathered phyllite

Water bearing zone at 16-18' (25 gpm)

Light brownish to greenish-gray phyllite

Total Yield = 25 gpm

6" Steel Protector Pipe
Cement grout
Morie Sand
4" Schedule 40 PVC Pipe
10'

4" Schedule 40 PVC Screen

Vertical Scale 1" = 10'

Drilling Began: 7/24/85
Drilling Completed: 7/24/85
Total Depth: 30'
Elev., TOC: 550.67'

Elev., G.S.: 548.8'
Screened Interval: 8'-28'
Screen Elevation: 540.8'-520.8'
SWL Elevation (Date): 542.50' (3/24/86)
Drilling Method: Air Rotary

AR300836
Geologic and Well Construction Log of Geoman Well
Modern Landfill
Well W-28

- Reddish-orange clay soil.
- Tan, reddish-orange to grayish-tan saprolite with some highly weathered phyllite.
- Water bearing zone at 45-108' (3 gpm)
- Greenish-gray weathered phyllite.
- Bluish-green phyllite with some quartz.
- Dark green to bluish-green sandy phyllite with some quartz.

Drilling Began: 6/12/85
Drilling Completed: 6/13/85
Total Depth: 297'
Elev., G.S.: 618.6'
Drilling Method: Air Rotary
Total Yield: 3 gpm

<table>
<thead>
<tr>
<th>Geoman Number</th>
<th>Screened Interval</th>
<th>Screen Elevation</th>
<th>SWL Elevation (Date)</th>
</tr>
</thead>
<tbody>
<tr>
<td>W-28(62)</td>
<td>50'-64'</td>
<td>568.6'-554.6'</td>
<td>573.97' (3/24/86)</td>
</tr>
<tr>
<td>W-28(101)</td>
<td>86'-101'</td>
<td>532.6'-517.6'</td>
<td>573.83' (3/24/86)</td>
</tr>
<tr>
<td>W-28(244)</td>
<td>135'-244'</td>
<td>483.6'-374.6'</td>
<td>Not Available</td>
</tr>
</tbody>
</table>
Geologic and Well Construction Log
Modern Landfill
Well W-28 (1)

6" Steel Casing
Cement Grout

Medium brown, clayey silt

Reddish and yellowish-brown saprolite with some highly weathered phyllite

Volclay grout

Water bearing zone at 70-97' (226m)

Bluish-green and greenish-gray phyllite

Drilling Began: 8/5/85
Drilling Completed: 8/12/85
Total Depth: 180'
Elev., TOC: 619.80'
Elev., G.S.: 618.1'
Open Rock Interval: 130'-180'
Open Rock Elevation: 488.1'-438.1'
SWL Elevation (Date): 569.94'(3/24/86)
Drilling Method: AirRotary

180'
Vertical Scale 1" = 20'

Total Yield = <1/4 gpm

Casing cut-off, grout to surface, covered with soil, tamped, staked, photographed

AR300838
Geologic and Well Construction Log
Modern Landfill
Well W-28 (D)

Casing cut, grout to surface, covered w/soil
tamped, staked and photographed

10" Steel Casing
Cement Grout
6" Steel Casing

Medium brown gravelly silt
Reddish to yellowish-brown saprolite
with some highly weathered phyllite

Water-bearing zone at 70-100' (3 gp)
Brownish-gray weathered phyllite
Greenish-gray and bluish-green
phyllite

Total Yield = <1/4 gpm

Drilling Began: 8/12/85
Drilling Completed: 8/16/85
Total Depth: 280'
Elev., TOC: 620.23'
Elev., G.S.: 618.2'

Open Rock Interval: 230'-280'
Open Rock Elevation: 388.2'-388.2'
SWL Elevation (Date): 570.65' (3/24/86)
Drilling Method: Air Rotary
Geologic and Well Construction Log of Geomon Well
Modern Landfill
Well W-29

Drilling Begun: 6/10/85
Drilling Completed: 6/12/85
Total Depth: 200'
Elev., TOC: 563.80'

Geomon Number | Screened Interval | Screen Elevation | SWL Elevation (Date)
---------------|------------------|-----------------|---------------------
W-29(9)        | 4' - 11'         | 558.8' - 551.8' | 558.55' (3/24/86)   
W-29(30)       | 15' - 32'        | 547.8' - 530.8' | 561.76' (3/24/86)   
W-29(99)       | 91' - 104'       | 471.8' - 458.8' | 558.34' (3/24/86)   
W-29(147)      | 129.5' - 150'    | 433.3' - 412.8' | 561.93' (3/24/86)   

Elev., G.S.: 562.8'
Drilling Method: Air Rotary
Total Yield: 7 gpm
Geologic and Well Construction Log
Modern Landfill
Well W-29 (D)

Casing cut-off, grout to surface, covered w/soil, tamped, stacked, photographed

6" Steel Casing
Cement Grout

Orange-brown sandy clayey silt with weathered phyllite fragments
Greenish-gray highly weathered phyllite and soil
Light greenish-gray weathered phyllite to sandy weathered phyllite with some quartz

Dark greenish-gray phyllite

Light greenish-gray to dark bluish-green phyllite with some quartz

Water bearing zone at 101' (1/2 gpm)

Water bearing zone at 125-150' (5 gpm)

White quartz and light greenish-gray phyllite

Light to dark greenish-gray and dark bluish-green phyllite with some quartz

Total Yield = < 1/4 gpm

Drilling Began: 7/22/85
Drilling Completed: 7/25/85
Total Depth: 230'
Elev., TOC: 564.70'
Elev., G.S.: 563.0'

Open Rock Interval: 180'-230'
Open Rock Elevation: 383.0'-333.0'
SWL Elevation (Date): 562.03'
Drilling Method: Air Rotary
Geologic and Well Construction Log
Modern Landfill
Well W-29 (1)

Casing cut-off, covered with soil
tamped, staked and photographed

Orange-brown clayey silt, with phyllite fragments

Grayish-green highly weathered to weathered phyllite

Light to dark greenish-gray phyllite with some quartz

Light to dark greenish-gray phyllite to sandyphyllite with some quartz

Dark greenish-gray phyllite with some quartz

Total Yield = < 1/4 gpm

Drilling Began: 7/10/85
Drilling Completed: 7/22/85
Total Depth: 130'
Elev., TOC: 564.93'
Elev., G.S.: 564.4'

Open Rock Interval: 80'-130'
Open Rock Elevation: 484.4'-434.4'
SWL Elevation (Date): 558.48' (3/24/86)
Drilling Method: Air Rotary
Geologic and Well Construction Log
Modern Landfill
Well W-29 (S)

6" Steel Protector Pipe — 0'
Cement Grout — 0'
Bentonite Pellets — 4'
4" Schedule 40 PVC Pipe — 4'
Morie Sand — 7'
4" Schedule 40 PVC Screen —

Orange-brown, sandy, clayey silt, with many phyllite fragments
Orange-brown weathered phyllite
Greenish-gray phyllite, with some quartz and weathering

Greenish gray phyllite with some quartz
Total Yield = < 1/4 gpm

Vertical Scale 1" = 10'

Drilling Began: 7/17/85
Drilling Completed: 7/18/85
Total Depth: 30'
Elev., TOC: 565.58'
Elev., G.S.: 564.2'

Screened Interval: 8'-28'
Screen Elevation: 556.2'-536.2'
SWL Elevation (Date): 558.91' (3/24/86)
Drilling Method: Air Rotary
Geologic and Well Construction Log
Modern Landfill
Well W-52

Depth in feet

0-
8" Casing
Grout
4" Sch. 40 PVC Pipe

10-
8" o.d. hole
Bentonite Pellets

20-
4" Sch. 40 PVC Screen
Morie Sand

50-

60-

70-

75-

Vertical Scale 1" = 10'

Description
Dark brown clay-rich soil.
Silty/sandy saprolite and highly weathered sandstone.
Weathered, tan, medium grained sandstone.
Gray medium grained sandstone.
Drilling Began: 12/23/85
Drilling Completed: 1/19/86
Total Depth: 75'
Elevation TOC: 526.39'
Elevation G.S.: 524.1'
Drilling Method: Air Rotary

Screened Interval: 13' - 73'
Screen Elevation: 511.1'-451.1'
SWL Elevation (Date): 514.69' (3/24/86)
WBZ: 34' - 35' (1 gpm), 50' - 52' (1/2 gpm), 66' - 70' (1-1/2 gpm)
Total Yield: 3 gpm
Geologic and Well Construction Log
Modern Landfill
Well W-53

Drilling Began: 8/23/85
Drilling Completed: 8/23/85
Total Depth: 75'
Elev., TOC: 612.18'
Elev., G.S.: 610.8'

Screened Interval: 9'-49'
Screen Elevation: 601.8'-561.8'
SWL Elevation (Date): 605.58' (8/23/85)
Drilling Method: Air Rotary

Total Yield - 15 gpm

Reddish-brown clayey soil
Yellow and red saprolite
Water Bearing zone at 6-8' (3 gpm)

Reddish-brown and greenish-brown
Highly weathered phyllite
Water bearing zone at 8-24' (5 gpm)

Reddish-brown and grayish-green
weathered phyllite
Water bearing zone at 24-49' (7 gpm)

Vertical Scale 1" = 10'

Drilling Began: 8/23/85
Drilling Completed: 8/23/85
Total Depth: 75'
Elev., TOC: 612.18'
Elev., G.S.: 610.8'
Geologic and Well Construction Log
Modern Landfill
Well W-54

Well materials removed, grouted to surface, covered with soil, tamped, sealed and photographed.

Yellow-brown, red-brown, and orange-brown saprolite with many highly weathered phyllite fragments.

Water-bearing zone at 10-35' (20 gpm).

Red-brown highly weathered phyllite with much weathered quartz.

Water-bearing zone at 35-50' (5 gpm).

Total Yield = 25 gpm

Drilling Began: 6/25/85
Drilling Completed: 6/26/85
Total Depth: 50'
Elev., TOC: 631.02'
Elev., G.S.: 629.2'
Screened Interval: 18'-48'
Screen Elevation: 611.2'-581.2'
SWL Elevation (Date): 615.69' (7/22/85)
Drilling Method: Air Rotary
Geologic and Well Construction Log
Modern Landfill
Well W-55

Caved Formation

6" Steel Casing
Cement Grout

Red-orange soil and phyllite fragments

Greenish-gray and red-orange weathered phyllite

Greenish-gray to brown phyllite and weathered phyllite, and quartz

Volclay Grout

Bluish-green, highly micaceous phyllite and quartz

Water bearing zone at 50' (20 gpm)
Brown to greenish-gray, highly micaceous, weathered phyllite and quartz

Bluish-green, highly micaceous phyllite

Total Yield = 20 gpm

Vertical Scale 1'' = 10'

Drilling Begun: 6/13/85
Drilling Completed: 6/13/85
Total Depth: 73'
Elev., TOC: 658.19'
Elev., G.S.: 657.3'

Screened Interval: Open Rock Hole 12'-73'
Open Rock Hole Elevation: 638.3'-584.3'
SWL Elevation (Date): 624.11' (7/22/85)
Drilling Method: Air Rotary
Geologic and Well Construction Log
Modern Landfill
Well W-56

Depth in feet

Description

0-

10" Steel Protector Pipe

Orange-brown to red-brown clayey silt, with some rock fragments.

Grout

Light brown silt saprolite.

6" Sch. 40 PVC Pipe

12" o.d. hole

Bentonite Pellets

Morie Sand

6 Screen

Light gray, fine to medium grained, highly weathered phyllitic sandstone

Caved Formation

Light gray, fine to medium grained phyllitic sandstone.

Vertical Scale 1" = 10'
Drilling Began: 12/30/85
Drilling Completed: 12/30/85
Total Depth: 85'
Elevation TOC: 545.89'
Elevation G.S.: 543.8'

Screened Interval: 25' - 75'
Screen Elevation: 518.8' - 468.8'
SWL Elevation (Date): 524.43' (3/24/86)
WBZ: 25' - 75' (16 gpm)
Drilling Method: Air Rotary
Geologic and Well Construction Log
Modern Landfill
Well W-57

Drilling Began: 1/15/86
Drilling Completed: 1/21/86
Total Depth 62'
Elevation TOC: 533.01'
Elevation G.S.: 530.9'

Screened Interval: None
SWL Elevation (Date): 521.28' (3/24/86)
Drilling Method: Air Rotary
Total Yield: <0.25 gpm

Grouted to surface, covered with soil, tamped, sealed and photographed.

Medium brown, sandy, clayey silt with some phyllite.

Orange-brown very clayey silt, with some limestone and phyllite fragments.

Clayey silt filled void.

Vertical Scale 1" = 10'

8" o.d. hole
Caved Formation
6" Steel Pipe
Sensil Seal Grout
Bedrock
MODERN LANDFILL

Geologic and Well Construction Log
Well W-60

<table>
<thead>
<tr>
<th>in feet</th>
<th>Construction</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-</td>
<td>10&quot; steel casing</td>
<td>Phyllitic rock fragments and red clayey soil fill material.</td>
</tr>
<tr>
<td></td>
<td>6&quot; Sch. 40 PVC pipe Caved Formation</td>
<td>Seprolitic to highly weathered, fine-grained dolomitic sand. Micaceous phyllitic quartzite. Quartz and limonite after pyrite pseudomorphs present.</td>
</tr>
<tr>
<td>10-</td>
<td>12&quot; hole Morie #1 Sand</td>
<td>Interval 75'-80' highly iron stained. Water-bearing zone at 48' (30 gpm) and 75' (35 gpa).</td>
</tr>
<tr>
<td>30-</td>
<td>Q rock sand 6&quot; Sch. 40 PVC screen, continuous slot (.020-inch), glued joints Morie #1 sand</td>
<td></td>
</tr>
<tr>
<td>50-</td>
<td>10&quot; hole Silt and Morie #1 sand</td>
<td></td>
</tr>
</tbody>
</table>

Vertical Scale 1" = 20'

Drilling Began: 1/05/87
Drilling Completed: 1/16/87
Total Depth: 85'
Elevation, TOC: 553.13'
Elevation, Ground Surface: 551.6'

Screened Interval: 32.20' - 82.20'
Screen Elevation: 520.93' - 470.93'
SWL Elevation (Date): 522.37' (1/23/87)
Drilling Method: Cable tool
Total Yield: 65 gpm

r.e. wright associates, inc.

AR300852
Geologic and Well Construction Log

Modern Landfill
Well W-61

Casing cut, grouted to slurry, covered w/soil, tampered, sealed and photographed

<table>
<thead>
<tr>
<th>Depth in feet</th>
<th>Well Construction</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 10&quot; hole to 27'</td>
<td>10&quot; hole to 200'</td>
<td>Orange-brown, gravelly, clayey silt. Brownish-gray, highly weathered phyllite. Light brownish-gray to gray-green to dark green phyllite. Many small weathered zones. Some quartz.</td>
</tr>
<tr>
<td>10 - 6&quot; hole to 200'</td>
<td>6&quot; steel casing to 27'</td>
<td></td>
</tr>
<tr>
<td>20 - 0-27' Cement Grout</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30 -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40 -</td>
<td>Volclay Grout</td>
<td></td>
</tr>
<tr>
<td>50 -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60 -</td>
<td></td>
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<tr>
<td>70 -</td>
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<td>80 -</td>
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<tr>
<td>90 -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100 -</td>
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</tr>
</tbody>
</table>

Vertical Scale 1" = 20'
**Geologic and Well Construction Log**

**Modern Landfill**

**Well W-61 Cont'd.**

<table>
<thead>
<tr>
<th>Depth in feet</th>
<th>Well Construction</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 -</td>
<td>6&quot; hole to 200'</td>
<td>Dark green to blue-green to gray-green phyllite. Much quartz in spots.</td>
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</table>

Drilling Began: 6/25/85
Drilling Completed: 6/25/85
Total Depth: 200'
Well Development Completed: 6/25/85
Well Construction Completed: 6/25/85
Elevation, TOC: 697.6'
Elevation, G.S.: 689.6'

Open Rock Hole Elevation: 662.6'-489.6'
Open Rock Hole Interval: 27'-200'
Monitoring Tube: 6" Yield: 3/4 gpm
SWL Elevation (Date):
Drilling Method: Air rotary
Hole Diameter: 10"/6"