METHODS OF USING COLORADO CLAYS FOR SEALING CANALS AND PONDS

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This is one of three progress reports relating to the investigations of Colorado clays for sealing of canals and ponds. The other two progress reports are:


This 3-year study will be terminated July 1, 1963, except for limited follow-up evaluation of field trial installations.

During the past 3 years, 131 clay installations in canals and ponds have been evaluated. These may be broken down as follows:

<table>
<thead>
<tr>
<th>Area</th>
<th>Ponds</th>
<th>Canals</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Colorado1</td>
<td>45</td>
<td>73</td>
<td>118</td>
</tr>
<tr>
<td>Western Colorado</td>
<td>13</td>
<td>16</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td>58</td>
<td>89</td>
<td>147</td>
</tr>
</tbody>
</table>

1Including San Luis Valley

Four general methods of installation (or combinations thereof) have been used in the field installations:

1. Wash-in — The clay is washed into the water at the head-end of the canal. The flowing canal water carries the clay down the canal and into the leaky materials.

2. Multiple-dam — This is a wash-in method, but differs from the first method in that the clay, is washed into the water from dams of clay spaced at intervals through the canal reach being sealed.

3. Buried membrane — The canal or pond section is over-excavated to at least six-inches depth. The clay is then placed as a thin layer or membrane. It is then covered with excavated material and gravel or rock.

4. Mixed layer — The canal or pond section is smoothed but not over-excavated. The clay is placed as a thin layer on the area to be sealed. It is then worked into the top 3-4-inches of the underlying soil with a harrow, disc, etc. The resulting mixture is packed with a roller.

Clay may be washed into place from upstream end of canal section being sealed (as above).

— or from dams of clay spaced regularly in reach of canal being sealed (as above).

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The evaluations indicate that:

1. In rocky and gravelly materials, the sealing results with Colorado clays generally have been excellent.

2. In sandy to silty materials, the sealing results with Colorado clays have ranged from a few in the excellent grouping to mostly fair to poor (main problem—short life of sealing).

3. The value of benefits (value of water saved, increased crop production, etc.) during the first two years after installation has commonly exceeded the cost of the clay installation. Surprisingly, this includes some installations of short life.

Dams of clay spaced closely in canal may be spread and mixed into subsoil with V-ditcher, as shown above.

For additional information relating to methods of using clay for sealing canals and ponds, refer to:


2. Sealing Rocky Ditches with Clay (or Bentonite). Revised Circular 203-A.¹

3. Sealing Farm Ponds and Reservoirs with Bentonite. Circular 206-A

¹Available at Bulletin Room of Colorado State University, and from many Extension Service (or County Agent) offices throughout Colorado.

Clay can also be used to seal farm ponds with mixed layer method or buried membrane method.