Memorandum

TO: The Files

FROM: Adrian K. Long, Civil Engineer (Field Engineer), BuRec

DATE: April 24, 1973

SUBJECT: Groundwater Conditions under Twenty Seven Acres of Land situated in the Vicinity of the S10.7 Lateral Headworks Structure at Station 10+717 on the Shamalan Canal - Owner: Moharud Bin, Parcel No. 202

On August 31, 1971 construction was started on the Shamalan S10.7 Lateral with the excavation of the Shamalan Canal By-pass channel to facilitate the construction of the check drop and headworks structure located at the Station 10+717 on the Shamalan Canal. This by-pass channel traversed part of the above land on the desert side of the canal which was backfilled upon completion of the headworks structure. This new structure includes a new turnout and replaces the old Basharan Jui which was served by the concrete flume which crosses the Shamalan Canal at Station 10+550. When this new Basharan turnout was put into operation the old Basharan Jui that traversed the desert side of the small triangular piece of land, located upstream from the new S10.7 Lateral, was cut down and the right-of-way for this lateral was smoothed and made part of this triangular piece of ground. The amount of land involved varied from 5 to 7 meters in width and was 195 meters in length and amounts to about 0.6 jiribs which results in an increase in land area.

This land was only smoothed and not leveled as may have been assumed by the land owner from the way he tried to irrigate it as one field. This practice resulted in ponded water on part of the land situated adjacent to the Shamalan Canal and caused poor production on the entire piece. The owner of this land thought that the poor yield was caused by high groundwater levels under the land that resulted from the raised water surface elevation in the Shamalan Canal due to the construction of the new headworks structure.

Gravelly subsurface conditions in this area, which were encountered and observed during the construction of the new headworks structure, indicated that drainage problems shouldn't develop in this area provided proper irrigation practices were used. In order to substantiate this assumption a total of 12 auger holes were sunk at various points within the boundaries of the parcel of land in question, 5 of which were in the small triangular piece of land previously mentioned. The two attached sketch maps give the location of the holes together with the depth of the hole and the depth below the ground surface, to the groundwater surface, if any was encountered. The depth of these holes was limited to 1.81 - 1.85 meters, the effective length of the auger used. Note that although the water surface in the Shamalan Canal was approximately 0.50 meters above the ground surface and holes 1, 3 and 5, in the triangular piece were only about 10 - 12 meters from the edge of the water in the canal, there was no groundwater encountered within 1.60 - 1.73 meters.
below the ground surface. Rock in the hole prevented the attainment of 1.85 meter depth. I feel confident that no water would have been encountered at 1.85 meter depth due to the moisture conditions of the soil encountered at 1.60 - 1.73 meters below the ground surface.

The results of this investigation verifies the assumption that drainage problems should not develop in this area if proper irrigation practices are followed. Also the land owner has reverted to basin type irrigation practices on this triangular piece of land in 1973 and the wheat crop that was on the land on April 21, 1973 looked fairly good except a narrow strip close to the Shamalan Canal bank which has had water standing on it periodically for considerable lengths of time during this growing season.

Enclosures:

cc: A. G. Shuja, Head Engrg. & Tech. Dept./HAVA
M. Kormali, Dir. Gen., Land Development & Planning Div./HAVA
Md., Payenda, Agricultural and Rural Development Dept.,/HAVA
D. Levinton, Assistant Director/AU, HAVR
SHAMALAN S10.7 LATERAL

Bashiran Lateral Service Area

Depth to water on triangular parcel of land near Sta. 19.01000

S10.7 LAT. AND BETWEEN STA. 19 + 560 + 10+ T10 ON THE RIGHT SIDE OF SHAMALAN CANAL.

SCALE: 1" = 20 m

<table>
<thead>
<tr>
<th>Hole No.</th>
<th>Depth (m)</th>
<th>Condition</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 1</td>
<td>1.65</td>
<td>Wet</td>
<td>No water</td>
</tr>
<tr>
<td>No. 2</td>
<td>1.84</td>
<td>Wet</td>
<td>No water, gravel, rock</td>
</tr>
<tr>
<td>No. 3</td>
<td>1.73</td>
<td>Wet</td>
<td>No water, gravel, rock</td>
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<tr>
<td>No. 4</td>
<td>1.70</td>
<td>Wet</td>
<td>No water, gravel, rock</td>
</tr>
<tr>
<td>No. 5</td>
<td>1.60</td>
<td>Wet</td>
<td>No water, gravel, rock</td>
</tr>
</tbody>
</table>

Owner: Muhammad Din
Parcel No. 202