Selection and Ranking of Canals
in the Gulf Coast Irrigation Division
by
Expected Seepage and/or Other Types of Losses

APPENDIXES

Final Report

Submitted to the Lower Colorado River Authority

September 10, 2013
APPENDIX A

Copies of All Forms/Data Sheets Developed and Used in Study
Details on the GIS Project/Database Created for Study
GENERAL SURVEY FORM

Date: ___________  Evaluator: ________________

Identify on map when needed (scale 1:25,000)

GENERAL QUESTIONS

1- Which are non-ag turnouts?
2- Turnout flow measurement (method, equipment, etc.)
3- Canal maintenance schedule (vegetation removal, dredging, repairs)
4- Traffic (machinery, human, animal)
5- Compacted layer close to canal

CANAL TECHNICAL INFORMATION

6- Flow and seepage measurement locations, methods, reasons, etc.
7- Construction date and method (including methods to reduce seepage)
8- Canal capacity
9- Canals dimensions, etc.

OTHER SOURCES

Parsons data

10- How good is this data?
11- Canal ID
12- Flows
13- Canal depth, water depth, water width, etc.
14- Structures

TWDB

15- Water table depth

1. General Survey Form 1.1

Figure A-1. General Survey Form
HEAD SURVEY FORM

Date: __________  Evaluator: ___________________________ Pick Month: ___________________________

Head problem is defined as: "Having insufficient volume and/or water pressure at the field outlet"
Identify irrigated area and related canals on a map (scale 1:25,000)

RATING

Canal segment ID
Command Area ID

A) How often the problems occur? (FREQUENCY)
1) During peak periods
   0. Never
   1. Sometimes
   2. Often
   3. Always
2) During non peak periods
   0. Never
   1. Sometimes
   2. Often
   3. Always

B) Why are the head problems occurring? (CAUSE)
1) Heavy demand on all irrigation district
2) Heavy demand on the specific canal segment
3) Structural problems
   a) Insufficient canal size or capacity
   b) Slope or elevation
   c) Fluctuating canal levels
   d) Structures modified from original design
   e) Seepage
   f) Vegetation in canal
   g) Damage in the canal
4) Other (please specify)
   a) Farmer management problems
   b) Insufficient allocation
   c) District management problems

C) What is the SEVERITY of the head problems?
   0. Minor (does not affect crop yield)
   1. Moderate (minor crop yield reduction)
   2. Severe (major crop yield reduction)

2. Head Survey Form 1.0

Figure A-2a. Head Survey Form, Page 1
HEAD SURVEY FORM

Date: __________ Evaluator: _______________ Pick Month: _______________

DESCRIPTION

1. Normal operating depth (ft)
2. Freeboard
   0. Yes
   1. No
3. Use frequency
   0. Daily
   1. Weekly
   2. Monthly
   3. Seasonally
4. Frequency of water fluctuation (change in depth)
   0. Hourly
   1. Daily
   2. Weekly
   3. Monthly
   4. Seasonally
5. Ability to maintain a stable water depth
   0. Excellent
   1. Fair
   2. Poor

Additional notes

2. Head Survey Form 1.0

Figure A-2b. Head Survey Form, Page 2
SEEPAGE SURVEY FORM

Date: ___________  Evaluator: _______________  Pick Month: _______________

Seepage problem is defined as: “Having suspected seepage loss”
Identify on map (scale 1:25,000)

Location ID ___

<table>
<thead>
<tr>
<th>Suspected cause of seepage</th>
<th>Severity</th>
<th>Description (Why)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Minor</td>
<td>Moderate</td>
</tr>
<tr>
<td>1. Soil type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Construction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Maintenance schedule (grass)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Maintenance schedule (dredging)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Damage upper bank</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Damage bottom/lower bank</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Vegetation upper bank</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Vegetation bottom/lower bank</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Vegetation across canal bank</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Holes upper bank</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Holes bottom/lower bank</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Leaking turnout</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Water table depth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Pipe line (gas)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Disposal pits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Depth of canal</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Seepage Survey Form 1.2

Figure A-3. Seepage Survey Form
### Field Seepage Survey Form

**1) Operating Water Level (write on picture)**

**2) Bottom Canal Level (write on picture)**

**3) Drainage ditch depth (write on picture)**

**4) Current Water Level (choose on picture)**

**5) Bank Size**

0. Wide (driveway = 12 ft = 4 steps)
1. Narrow (driveway = 6 ft = 2 steps)
2. Very narrow (walk = 3 ft = 1 step)

**6) Sediment**

0. Low or none
1. Medium (some inches)
2. High (> 1 foot)

**Bank Slope**

0. Good
1. Moderate
2. Poor

**Erosion**

0. Good
1. Moderate
2. Poor

**Animal Holes**

0. None
1. Some
2. Strong

A. Crawfish
B. Alligator
C. Gopher
D. Varmint
E. Armadillo
F. Nutria

<table>
<thead>
<tr>
<th>Weeds/Extra grass</th>
<th>13) Bottom</th>
<th>14) Upper</th>
<th>15) Outer</th>
</tr>
</thead>
<tbody>
<tr>
<td>0. None</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Some</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Strong</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Cane</td>
<td>OPTIONAL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Arundo</td>
<td>OPTIONAL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Anando ver</td>
<td>OPTIONAL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. Typha</td>
<td>OPTIONAL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E. Cahaba Lily</td>
<td>OPTIONAL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F. Cowitch</td>
<td>OPTIONAL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G. Poison ivy</td>
<td>OPTIONAL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H. Juncos</td>
<td>OPTIONAL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>J. Flat sedge</td>
<td>OPTIONAL</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Trees**

0. None
1. Some
2. Strong

A. Tallow
B. Willow
C. Bay bush
D. Huckleberry

<table>
<thead>
<tr>
<th>Gates/Lateral conditions</th>
<th>16) Bot</th>
<th>17) Upp</th>
<th>18) Out</th>
</tr>
</thead>
<tbody>
<tr>
<td>0. Good (no leak)</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Moderate (possible leak)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Poor (evident leak)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Visible seepage**

0. None
1. Some (moist soil/little standing water)
2. Strong (standing/running water)

<table>
<thead>
<tr>
<th>Visible general conditions (seepage control)</th>
<th>19)</th>
<th>20)</th>
<th>21)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1. Good</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Fair</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>3. Poor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Serious Problems</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Figure A-4a. Field Seepage Survey Form, Page 1

APPENDIX A
FIELD RATING FORM (EARTHEN CANAL) – With water coordinator

Guess causes of seepage
- Major:
- Minor:

Other notes

Identify on map (include aerial, canals, structures, seepage segment and ID):  
S = seepage point;  D = drainage pipe crossing;  P = other pipe crossing (ex. gas, oil);  
# = Picture #; ......

MAP

4_Canal Evaluation Field Forms_draft5

5/14/2013

Figure A-4b. Field Seepage Survey Form, Page 2
### Table A-1 – Detail of changes made to GIS. If not specified, working scale is 1:10,000

<table>
<thead>
<tr>
<th>TYPE</th>
<th>SHAPE FILE (*.shp)</th>
<th>SOURCE AND ATTRIBUTES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>POLYLINE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design_fields_mod</td>
<td>LCRA_AGCON.mdb\fields\design_fields + column “area_ha”, only GC</td>
<td>Modification of LCRA_AGCON.mdb\fields\design_fields: only GC; split in irrigation coordinators “command areas” based on nodes IDs and column “nodes IDs”, for easy analysis of irrigated area; added column &quot;Name&quot; (text 50) and added names of personnel working on each area, and added column “Section” (text 20)</td>
</tr>
<tr>
<td>fields_ca</td>
<td></td>
<td>Download and modification from STATSGO general soil for all Texas: = soil downloads\gsmsoil_tx\gsmsoil_tx\spatial\gsmsoilmu_a_tx.shp + select polygons intersecting Gulf Coast canals + join to soil downloads\Soil_GENERAL.xlsx + export new shapefile</td>
</tr>
<tr>
<td>gsmsoilmu_a_tx_select</td>
<td></td>
<td>Modification of LCRA_AGCON.mdb\fields\design_fields: only GC; split in irrigation coordinators “command areas” based on nodes IDs and column “nodes IDs”, for easy analysis of irrigated area; added column &quot;Name&quot; (text 50) and added names of personnel working on each area, and added column “Section” (text 20)</td>
</tr>
<tr>
<td>head_Survey</td>
<td></td>
<td>Download and modification from STATSGO general soil for all Texas: = soil downloads\gsmsoil_tx\gsmsoil_tx\spatial\gsmsoilmu_a_tx.shp + select polygons intersecting Gulf Coast canals + join to soil downloads\Soil_GENERAL.xlsx + export new shapefile</td>
</tr>
<tr>
<td>historical_Fields_mod</td>
<td></td>
<td>Modification of LCRA_AGCON.mdb\fields\design_fields: only GC; split in irrigation coordinators “command areas” based on nodes IDs and column “nodes IDs”, for easy analysis of irrigated area; added column &quot;Name&quot; (text 50) and added names of personnel working on each area, and added column “Section” (text 20)</td>
</tr>
<tr>
<td>soilMatagorda</td>
<td></td>
<td>Download and modification from SURGO for Matagorda County: = soil downloads\soils_2034663_01\soil_tx321\soil_tx321\spatial\soilmu_a_tx321.shp + select polygons intersecting Gulf Coast canals + join to \soil downloads\Soil_321(mATAGORDA)R.xlsx + export new shapefile</td>
</tr>
<tr>
<td>soilWharton</td>
<td></td>
<td>Download and modification from SURGO for Matagorda County: = soil downloads\soils_2034664_01\soil_tx481\soil_tx481\spatial\soilmu_a_tx481.shp + select polygons intersecting Gulf Coast canals + join to \soil downloads\Soil_481(wHARTON)R.xlsx + export new shapefile</td>
</tr>
<tr>
<td>finesandyloam(0-20).shp</td>
<td></td>
<td>New polyline to identify canals with only fine sandy loam texture between 0 and 20 inches of depth: intersect all finesandyloam_321(M)*.shp</td>
</tr>
<tr>
<td>finesandyloam_321(M)</td>
<td></td>
<td>New polyline to identify fine sandy loam soils in the Matagorda County, in layer 0-6 inches only: intersect new shp\soilMatagorda.shp (only 0-6 in layer fine sandy loam soils) + new shp\segments_mod.shp</td>
</tr>
<tr>
<td>finesandyloam_321(M)14</td>
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<td>New polyline to identify fine sandy loam soils in the Matagorda County, in layer 9-14 inches only: intersect new shp\soilMatagorda.shp (only 9-14 in layer fine sandy loam soils) + new shp\segments_mod.shp</td>
</tr>
<tr>
<td>finesandyloam_321(M)20</td>
<td></td>
<td>New polyline to identify fine sandy loam soils in the Matagorda County, in layer 14-20 inches only: intersect new shp\soilMatagorda.shp (only 14-20 in layer fine sandy loam soils) + new shp\segments_mod.shp</td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>----</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>finesandyloam_321(M)9</td>
<td>New polyline to identify fine sandy loam soils in the Matagorda County, in layer 6-9 inches only: intersect new shp\soilMatagorda.shp (only 6-9 in layer fine sandy loam soils) + new shp\segments_mod.shp</td>
<td></td>
</tr>
<tr>
<td>finesandyloam_481(W)</td>
<td>New polyline to identify fine sandy loam soils in the Wharton County, in layer 0-6 inches only: intersect new shp\soilWharton.shp (only 0-6 in layer fine sandy loam soils) + new shp\segments_mod.shp</td>
<td></td>
</tr>
<tr>
<td>finesandyloam_481(W)9</td>
<td>New polyline to identify fine sandy loam soils in the Wharton County, in layer 6-9 inches only: intersect new shp\soilWharton.shp (only 6-9 in layer fine sandy loam soils) + new shp\segments_mod.shp</td>
<td></td>
</tr>
<tr>
<td>Major_rivers</td>
<td>Download from TNRIS (20120910): MajorRivers_dd83.shp</td>
<td></td>
</tr>
<tr>
<td>Driving</td>
<td>New polyline to display routes taken to seepage locations; drawing scale up to 1:50,000</td>
<td></td>
</tr>
<tr>
<td>ponding_2005</td>
<td>Modification of LCRA_AGCON.mdb\canals: Selected segments based on LCRA 2005 ponding test report appendix B, and cut Senkryk location to match report map; deleted most columns and added column &quot;seep_05_ID&quot; (text 50) to join tabular data</td>
<td></td>
</tr>
<tr>
<td>road</td>
<td>Download from TNRIS (20120910): TxDOT_Roadway_Q3.gdb\TXDOT_RDWY_LN, only GC</td>
<td></td>
</tr>
<tr>
<td>roads_mod</td>
<td>Modification of LCRA_AGCON.mdb\roads: only GC</td>
<td></td>
</tr>
<tr>
<td>seepage_2006</td>
<td>Modification of &quot;LCRA Canal segments.shp&quot; (shape file received from LCRA on November 2011): Extracted segments based on 2006 flow measurement report; added column “Seep2006ID” (text 5) with IDs used in report; corrected start and ending points based on the report appendix and the 2006 upstream and downstream measurements points shape file; working at a scale 1:5,000</td>
<td></td>
</tr>
<tr>
<td>segments_mod</td>
<td>Modification of LCRA_AGCON.mdb\CANALS\Segments to represent all information obtained with surveys, field visits, and received hard copy maps: All work conducted at scale 1:25,000. Nodes feature class has not been modified. Code for “Head_ID” and “Seep_ID” is ABCD, where A=map number based on fields_ca.shp classification, BCC=code given by LCRA personnel (B=survey type (H=head, S=Seepage), CC=progressive number or letter). Modified segment in area 5 as indicated on survey map. Prolonged 152 by cutting adjacent segment to include new seeping area identified on 2013 05 02, and modified new record accordingly (seepage = 1, Seep_ID_LX). Kept only GC Division part. Added columns: “Cow” (short integer) to add info about cow traffic and damage (0=normal, 1=high with damage to banks). “Dredge” (short integer) to add info about recent canal dredging (0=dredging conducted not recently, 1=dredging conducted within the past 2 years). “Head_ID” (text 5) to identify Head Survey segments ID (most of Head ID segments are just...</td>
<td></td>
</tr>
</tbody>
</table>
estimated, as they were not identified on map as specified in the column “Notes”).
"Seep_ID *" (text 5) to identify Seepage Survey segments ID (on hydraulic right, *RX, and on
hydraulic left, *LX).
"Seepage" (short integer) to identify Seepage Survey segments with some seepage (0=no, 1=yes).
"Notes" to add any other remark.
"Use2013" (short integer), to identify segments that will likely be used to deliver water in 2013
(0=no, 1=yes); in 2013 water will be pumped once a day or a week, and not maintained at a
constant level as when water is delivered for rice farms.
"Owner" (short integer and filled information based on pictures of maps taken at the GC Division
main office, Bay City, including splitting segments when needed (0=ownership, 1=easement,
2=uncertain, 3=private); maps have only 0-2 rating, therefore "3=private" is obtained as
result; in maps some segments are not clear; maps do not cover the entire network, and in
few cases we guessed the class.
“canaluse” (short integer), to include information received as maps on 20130502, and edit
segments (cut, add) accordingly to precisely (scale 1:25000) color segments (0 = every four
years, 1 = every three years, 2 = every two years, 3 = every year, 4 = daily use).
"indepth" (short integer), to identify priority for detailed seepage analysis within seepage
locations (ponding, soil texture, soil infiltration) (0=low priority, 1=moderate priority, 2=high
priority, 3=very high priority, 4=all other canal segments).
"prior13Jun" (short integer), to identify priority for in depth analysis such as ponding test (0=canal
segments non visited, 1=high priority [=in depth "high" and "very high", =2 and 3], 2=priority
level 2 [=in depth "moderate", =1], 3=priority level 3 [selection of in depth "low", =0],
4=other canal segments that likely have non-seepage losses [rest of in depth "low", =0]).
Created for reporting in June 2013 for assistance in identifying canals where it is feasible to
do in depth analysis.
"Seep_ID” (text 10) to create an easy-to-read map for reporting in June 2013. This ID is created
merging Left and Right side IDs given during seepage surveys and changing "S" with ".",therefore it does not correspond to the surveys’ results; in one case the seepage ID and the
priority ID are definitely different (2.4 is supposed to be only on hydraulic left, while hydraulic
right should be 2.3).

<table>
<thead>
<tr>
<th>POINT</th>
<th>GWDB_well_location_GC</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Download from Texas Water Development Board (TWDB) Groundwater Database (GWDB). UPDATED November 2012. GWDB_well_location.shp = Groundwater well locations. Intersected GWDB_well_location with Gulf Coast data frame</td>
</tr>
<tr>
<td>GWDB_well_location_LCRA_fields</td>
<td>New points obtained by intersecting GWDB_well_location with LCRA_AGCON.mdb\design_fields</td>
</tr>
<tr>
<td>GWDB_well_location_LCRA_fields_1mile</td>
<td>New points obtained by intersecting GWDB_well_location with LCRA_AGCON.mdb\design_fields (+ 1 mile radius search)</td>
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<tr>
<td>check_structures_mod</td>
<td>Modification of LCRA_AGCON.mdb\CANALS\Check_structures: added information received</td>
</tr>
<tr>
<td>Table Cell</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>-------------</td>
</tr>
<tr>
<td>pictures</td>
<td>Pictures and movies location for all field visits at scale 1:2,000; <em>approximate location</em> in column “Notes” means that the location might be wrong by several meters unless specified differently into brackets. Added field &quot;pic&quot; (text, 50) with relative path locations to pictures (&quot;projects\proj_pics&quot; folder) to enable hyperlink to pictures.</td>
</tr>
<tr>
<td>pump_stations_mod</td>
<td>Modification of LCRA_AGCON.mdb\Pump_stations: modified as indicated during survey with LCRA personnel 20130305-19. Kept only GC Division part. added column “ShortName” (text20) to add short names of pump stations.</td>
</tr>
<tr>
<td>spill</td>
<td>Modification of LCRA_AGCON.mdb\CANALS\Canal_Survey to identify spill locations as suggested by Terri McKinley + deleted all other columns but “SUB_DIST” and “Site_Name”.</td>
</tr>
<tr>
<td>turnout_NoAg</td>
<td>Modification of LCRA_AGCON.mdb\LCRA_AGCON.mdb\Turnouts_Metered: selected only 2 turnouts as indicated in survey 3/5, and added column “Notes” for received information.</td>
</tr>
</tbody>
</table>
APPENDIX B

GIS Maps, Images, List of Field Visits
Figure B-1. General soil map (Soil Groups) and distribution network.
Figure B-2. General soil map (Soil Units) and distribution network.
Figure B-3. Detailed soil map at 65-80 inches of depth, irrigation distribution network, and seepage locations.
Figure B-4. Head Survey: Normal canal operating depth
Figure B-5. Head Survey: Existence of a free board
Figure B-6. Head Survey: Frequency of water fluctuation in canal
Head Survey

Ability to maintain a stable water level

- Excellent
- Fair
- Poor

Figure B-7. Head Survey: Ability to maintain a stable water level
Figure B-8. Head Survey: Severity of head problems
Figure B-9a. Field Seepage Survey: form completed for location 1S4: First page
Figure B-9b. Field Seepage Survey: form completed for location 1S4: Second page
Figure B-10. Field Seepage Survey: A) Root system of *Arundo donax var versicolor*, B) Water coordinator flagging a seepage point (1S4)
Figure B-11. Completed GIS showing routes taken to seepage locations. Each star shows the location of photographs taken and embedded in the GIS.
Figure B-12. 2009 land use at LCRA in Gulf Coast Irrigation Division
Figure B-13. 2010 land use at LCRA in Gulf Cost Irrigation Division
Figure B-14. Map provided to us and showing land use in 2009 at LCRA Gulf Cost Irrigation Division in the West Sections. Map was scanned and geo-referenced.
Figure B-15. Map provided to us and showing land use in 2009 at LCRA Gulf Cost Irrigation Division in the North East Section. Map was scanned and geo-referenced.
Figure B-16. Map provided to us and showing land use in 2009 at LCRA Gulf Cost Irrigation Division in the South East Section. The map was scanned and geo-referenced
Figure B-17. Map provided to us and showing canal ownership at LCRA Gulf Cost Irrigation Division in the North West Section: Ownership in blue, easement to LCRA in green, uncertain in red. The map was scanned and geo-referenced.
Figure B-18. Map provided to us and showing canal ownership at LCRA Gulf Cost Irrigation Division in the South West Section: Ownership in blue, easement to LCRA in green, uncertain in red. The map was scanned and geo-referenced.
Figure B-19. Map provided to us and showing canal ownership at LCRA Gulf Cost Irrigation Division in the North East Section: Ownership in blue, easement to LCRA in green, uncertain in red. The map was scanned and geo-referenced.
Figure B-20. Map provided to us and showing canal ownership at LCRA Gulf Cost Irrigation Division in the lower North East Section and upper South East Section: Ownership in blue, easement to LCRA in green, uncertain in red. The map was scanned and geo-referenced.
Figure B-21. Map provided to us and showing canal ownership at LCRA Gulf Cost Irrigation Division in the South East Section: Ownership in blue, easement to LCRA in green, uncertain in red. The map was scanned and geo-referenced.
<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec 10</td>
<td>Initial visit and tour of selected areas of irrigation division</td>
</tr>
<tr>
<td>Mar 5</td>
<td>Visit with LRCA personnel at the Gulf Coast Irrigation Division (GC) Office, Lewis building, Bay City, Texas, to conduct a general survey and a reconnaissance field visit to representative locations, and to agree on how to fill the Head and Seepage Survey forms</td>
</tr>
<tr>
<td>Mar 19</td>
<td>Visit with LRCA personnel at the GC Office, Bay City, to collect and discuss Head Survey and Seepage Survey</td>
</tr>
<tr>
<td>Apr 3-4</td>
<td>Visit with LRCA personnel at the GC Office, Bay City, to conduct the field truth survey</td>
</tr>
<tr>
<td>May 1-2</td>
<td>Visit with LRCA personnel at the GC Office, Bay City, to conduct the Field Seepage Survey</td>
</tr>
<tr>
<td>July 24</td>
<td>Visit with LRCA personnel at the GC Office, Bay City, to complete the Field Seepage Survey</td>
</tr>
</tbody>
</table>