CARTER RUN, GREAT RUN, THUMB RUN, AND DEEP RUN
TMDL IMPLEMENTATION PLAN DEVELOPMENT

Virginia Department of Conservation and Recreation
Rappahannock-Rapidan Regional Commission
Engineering Concepts, Inc.

STEERING COMMITTEE MEETING
August 2, 2005

DEVELOPMENT TASKS
- Stakeholder involvement
  - Public meetings
  - Working groups – agricultural, governmental, and residential
  - Steering committee
- TMDL review and needs analysis
- Implementation actions
  - Identification & quantification
    - Agricultural
    - Residential
  - Cost / benefit analysis
    - Agricultural
    - Residential
- Establish milestones and create timeline
- Develop tracking and monitoring plans

REVIEW OF TMDL DEVELOPMENT
- Impairment description
- Watershed characteristics
- Water quality monitoring
- Water quality modeling performed
- Sources considered
- Allocations specified

AGRICULTURAL BMPS
- Data layers
  - Watershed boundaries – TMDL reports
  - Streams – USGS National Hydrology Dataset
  - Aerial photography - Virginia Geographic Information Network
  - Confined animal feeding operations - DCR
  - Existing best management practices – DCR
  - Farm tracts - Farm Service Agency
  - Parcels – Fauquier County

SEPARATING BMP TYPES
- Types
  - Direct deposition
  - Land-based
  - Thumb Run and Deep Run
    - Partitioned bacteria loadings
    - Direct loading from livestock and horses
    - Land-based loadings to pasture and cropland
  - Carter Run and Great Run
    - No source partitioning
    - Bacteria source assessment spreadsheet developed by the Biological Systems Engineering Department at Virginia Tech
    - Populations and distribution factors entered into spreadsheet
    - Spreadsheet output describing directly deposited loads will be subtracted from the TMDL-prescribed reductions, applying the identified reduction percentage and considering die-off
    - Balance of load allocation will be assumed to originate from land-based loads for each source

STREAM EXCLUSION SYSTEMS
- Clip data layers to subwatershed
- Tag stream layer for continuous and intermittent streams
- Create 35' buffer around continuous streams
- Join buffer and land use layers
- Intersect buffer/land use layer with streams
- Overlay buffer/land use stream layer on orthophotography layer
- Overlay existing BMPs and CAFO layers
- Update stream layer
- Overlay updated stream layer on FSA tract data
- Determine average characteristics of BMPs installed in region
- Translate stream fencing to exclusion systems
PRELIMINARY STREAMSIDE FENCING SUMMARY

<table>
<thead>
<tr>
<th>Impairment</th>
<th>Continuous Stream Length (miles)</th>
<th>Stream Through Pasture (miles)</th>
<th>Potential Livestock Exclusion Fencing Needed (miles)</th>
<th>Current Livestock Exclusion Fencing Needed (miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thumb Run</td>
<td>28.9</td>
<td>17.4</td>
<td>27.8</td>
<td>24.3</td>
</tr>
<tr>
<td>Carter Run</td>
<td>48.8</td>
<td>15.5</td>
<td>23.4</td>
<td>23.4</td>
</tr>
<tr>
<td>Great Run</td>
<td>23.9</td>
<td>12.6</td>
<td>19.7</td>
<td>19.7</td>
</tr>
<tr>
<td>Deep Run</td>
<td>26.4</td>
<td>3.1</td>
<td>4.3</td>
<td>4.3</td>
</tr>
</tbody>
</table>

LAND-BASED AGRICULTURAL BMPS

- Calculate land-based reductions resulting from exclusion buffers installed
- Identify additional BMPs with associated efficiency
- Summarize acreage per FSA tract needing treatment
- Divide tract acreage by acres treated per BMP to determine number and type of BMP
**RESIDENTIAL BMPS**

- Number of corrective actions listed in TMDL report
  - Straight pipes
  - Failing septic systems
- BMP scenarios
  - Identification through septic tank pump-outs
  - Corrective options
    - Minor repairs
    - Replace with traditional septic system
    - Replace with alternative septic system

**NEXT STEPS**

- Second steering committee meeting
  - Translate streamside fencing into exclusion systems
  - Land-based agricultural BMP analysis
  - Verify BMP quantification results with agencies and agricultural working group
  - Residential BMP scenarios
  - Calculate technical assistance and education needed
- Third steering committee meeting
  - Cost analysis
  - Establish milestones and create timeline
  - Develop tracking and monitoring plans
  - Further analysis to aid implementation