



Hangman Creek Watershed 2011 Livestock Inventory

Nonpoint Source Pollution

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Spokane Conservation District

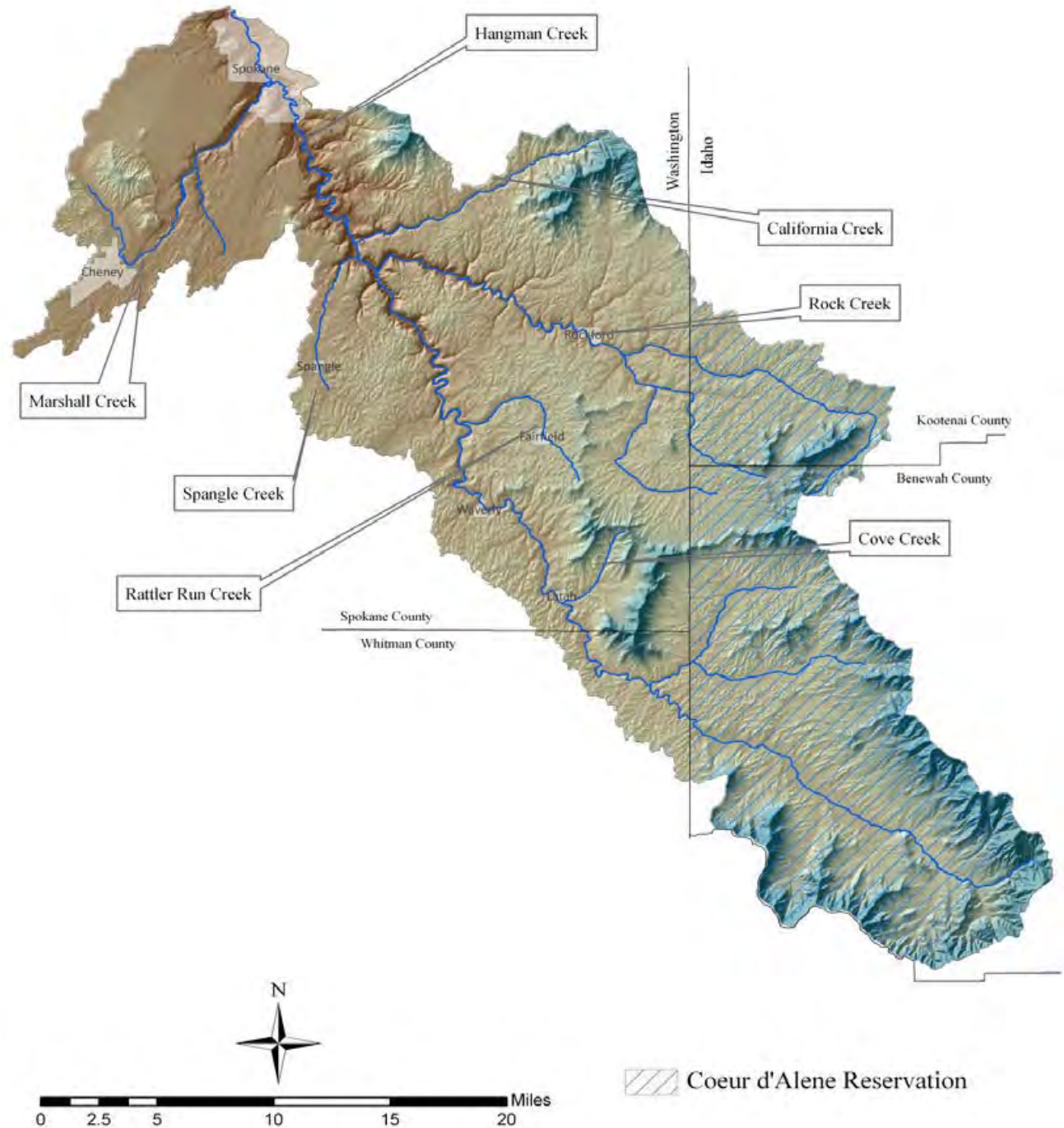
- WA State CDs are similar to CA Resource CDs.
- We are the tool to implement projects at the landscape level to improve and protect water quality.
- Provide education and awareness.
- NPS pollution TMDL/implementation activities.

Facts

- 441,000 ac.
- 275,000 ac. of dryland agriculture
- 222 miles of perennial streams

Issues

- Major changes in vegetation
- Altered hydrology
- Easily erodible soils
- Human Impacts



Some Older Technology



Typical Livestock Concerns





Livestock Assistance Programs

Cost-Share Assistance

- Off-creek watering
- Riparian buffers
- Fencing
- Education/awareness
- Grants/other sources





2011 TMDL Completion

- Fecal Coliform Bacteria
 - (10% or less exceed 200 colonies/100ml)
 - 17 listed stream segments
- Temperature
 - 18 listed stream segments
- Turbidity (suspended sediment)
 - 4 listed stream segments

Fecal Coliform

- Non-Point Source Target Load reductions
 - 19 reaches of 50% to 92%
- Six small WWTP in watershed with discharge to Hangman Creek and tributaries.
 - Three WWTPs (57% to 80% reductions)

What is the real non-point issue?

- Livestock versus wildlife
- Septic systems?
- Storms versus everyday levels
- “Shotgun” approach?

- Need better idea of livestock operations
 - Size, location
 - Number
 - Actual water quality concern?

2011 Livestock Inventory

Purpose

- Accounting of operations
 - Type/size/location
- Watershed influence
 - Water quality
- Avoid pointing direct fingers

Inventories

- Summer/winter – changes?
- Drive watershed – every road (WA only)
 - Yes, every single one
- Develop inventory form
 - Animals, site conditions, potential for impairment of WQ.



Inventory Form

Data collected – drive by only

- # of animals
- Class of animals
- Livestock access to creek
- Water flow path
- BMPs present/absent
- Type of operation
- Pasture conditions
- Proximity to stream
- Riparian buffers
- Wetland present/accessible
- Storm event issue

Inventories

- Collect data
- Excel Spreadsheet
- Develop maps (2 ways)
 - Kriging method – geostatistical method that makes contour lines by establishing predictability of values between locations (shading)
 - Sub-watershed map based on cumulative watershed impact value/# of operations

Example



Livestock Results

- Summer Inventory
 - 2286 animals
 - 347 operations
- Winter Inventory
 - 2071 animals
 - 305 operations
- Operations by size
 - Small (5 or less) 296
 - Medium (6 – 20) 60
 - Large (> 20) 18
- Operations by size
 - Small (218)
 - Medium (74)
 - Large (13)
- Entire watershed and by sub-watershed

Watershed Influence Results

- Values assigned per operation/questions
- Values additive for overall score
- 11 = low impact
- 54 = high impact
- Develop maps
 - Kriging (contouring)
 - Sub-watershed (averaging)
- Prioritize areas for assistance

Livestock Inventory

Total # of Operations with animals : 305

Total # of Animals Counted: 2071

Animal totals by class:

Cow: 763

Horse: 870

Goat: 38

Chicken: 44

Sheep: 68

Llama: 46

Other: 242

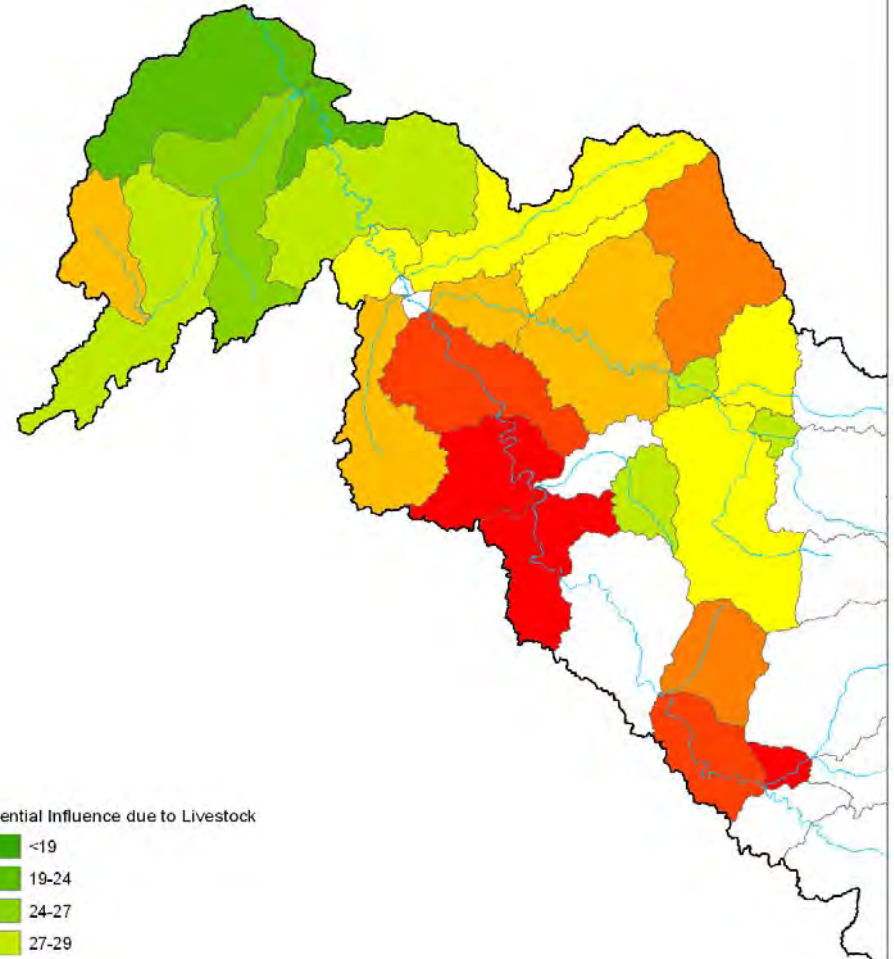
Operations by size:

Small (less than or equal to 5 animals):
218

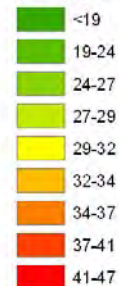
Medium (between 5 and 20 animals):
74

Large (greater than 20): 13

Winter 2011 Livestock Inventory

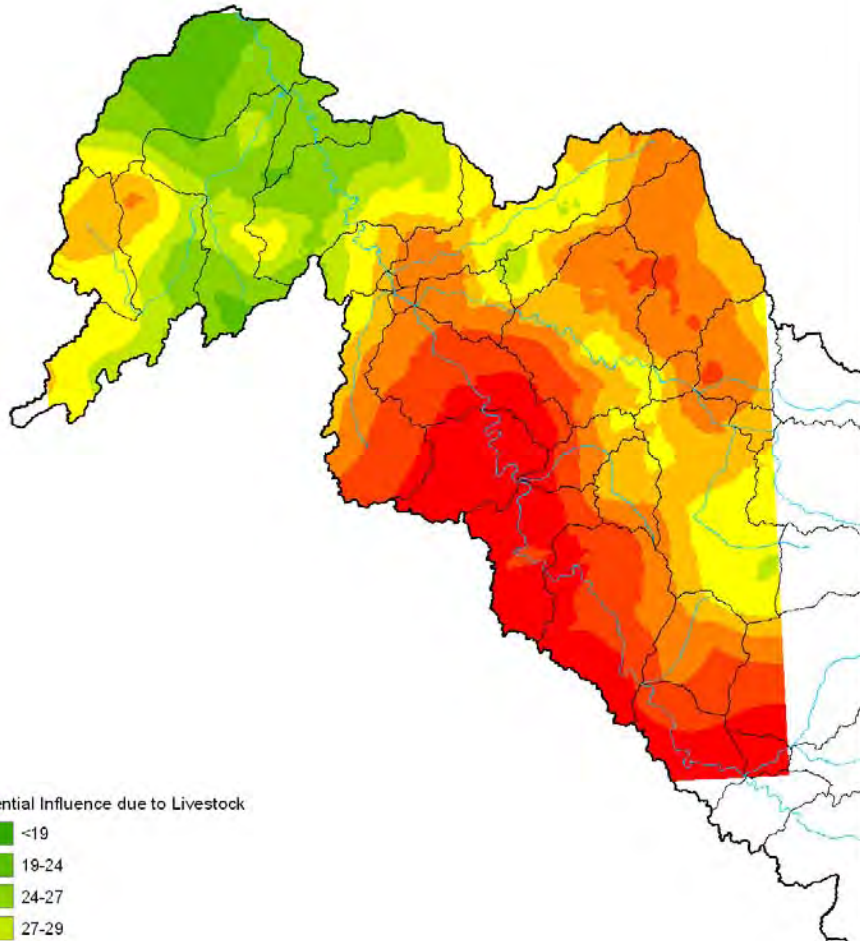


Potential Influence due to Livestock



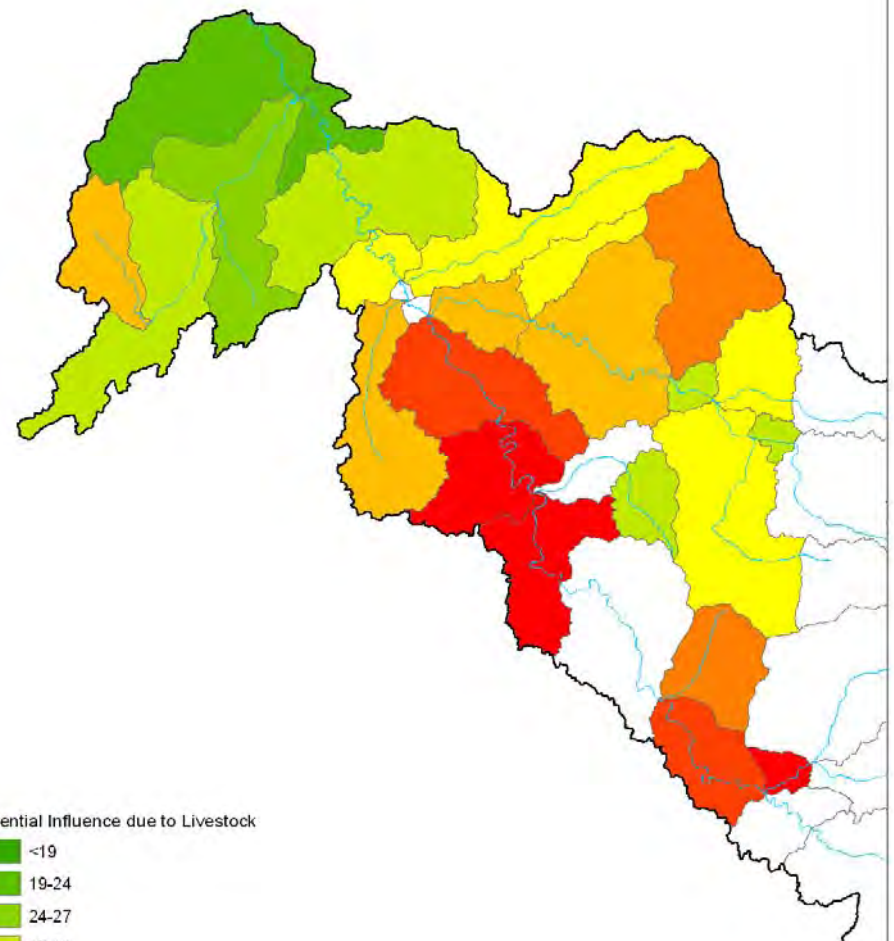
Units of influence are unitless. Please see report for more details.

Winter 2011 Livestock Inventory Areas of Highest Improvement Potential



Units of influence are unitless. Please see report for more details.

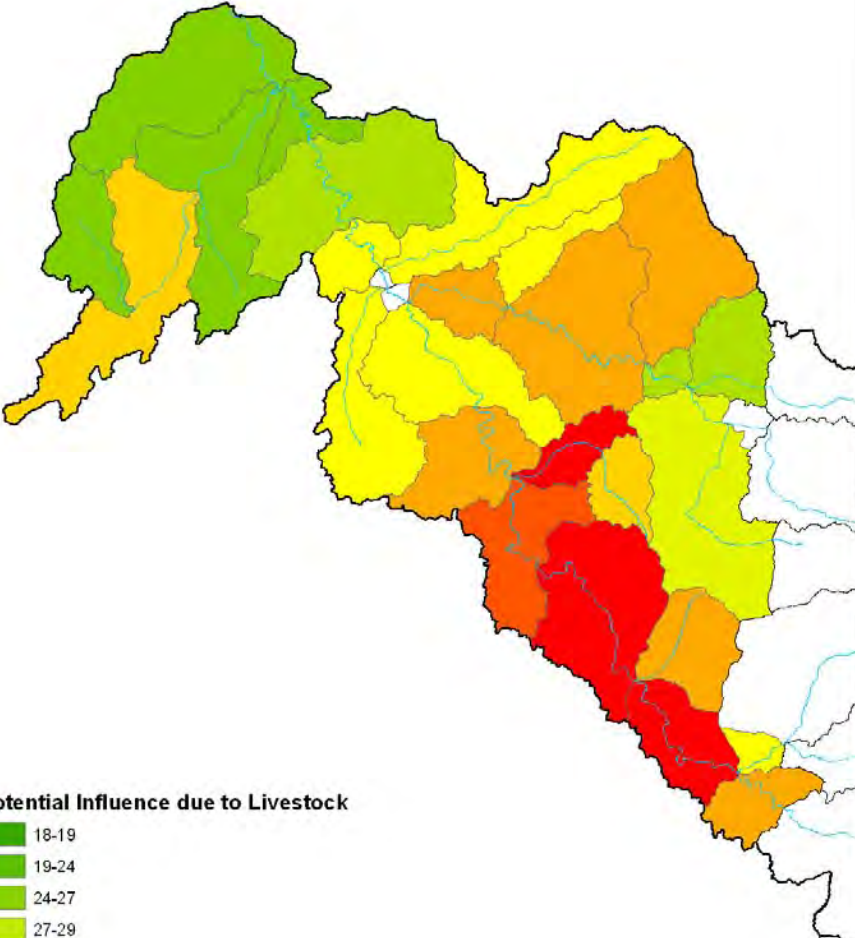
Winter 2011 Livestock Inventory Areas of Highest Improvement Potential



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Summer 2011 Livestock Inventory

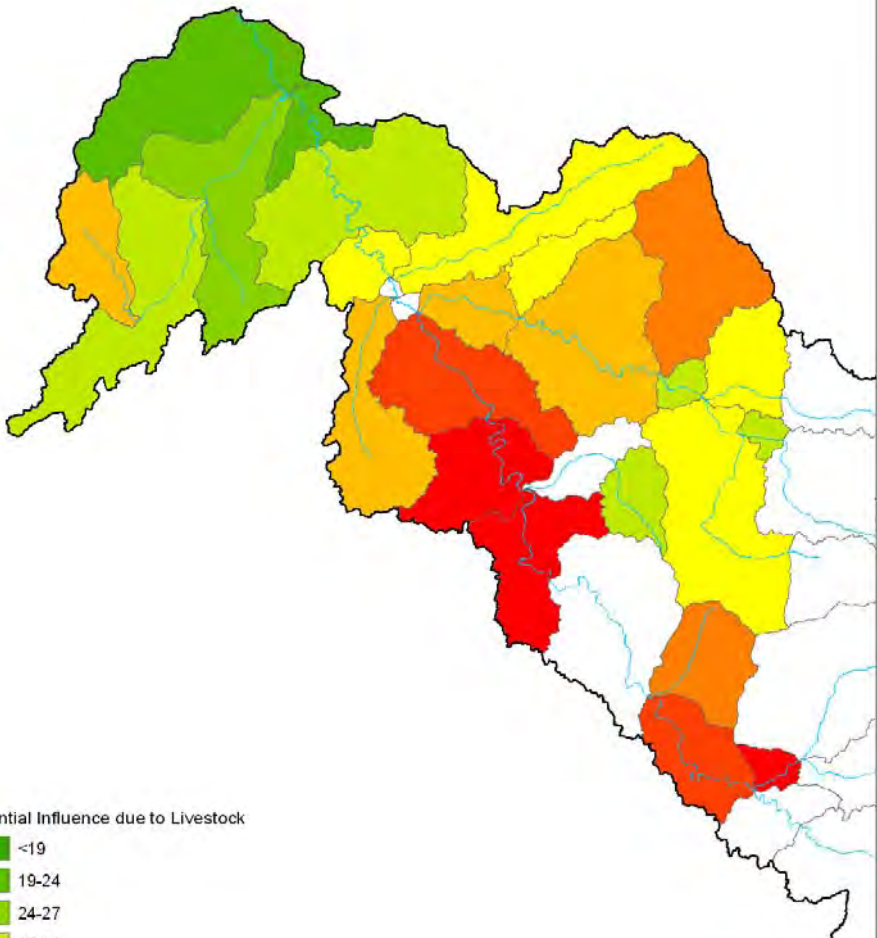
Areas of Highest Improvement Potential



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Winter 2011 Livestock Inventory

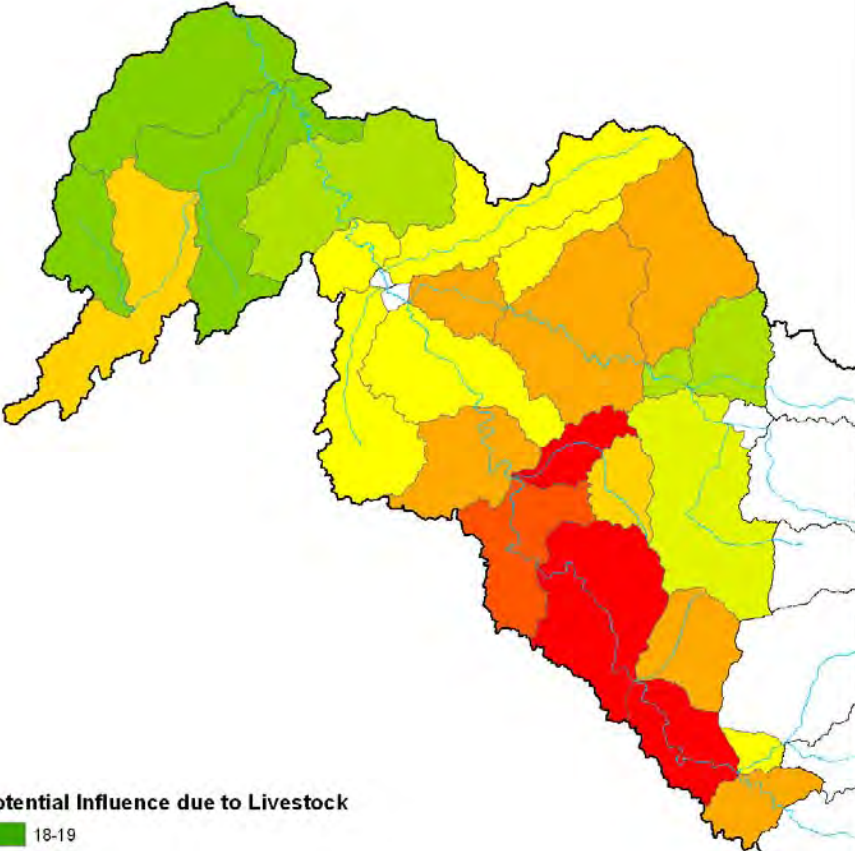
Areas of Highest Improvement Potential



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Summer 2011 Livestock Inventory

Areas of Highest Improvement Potential



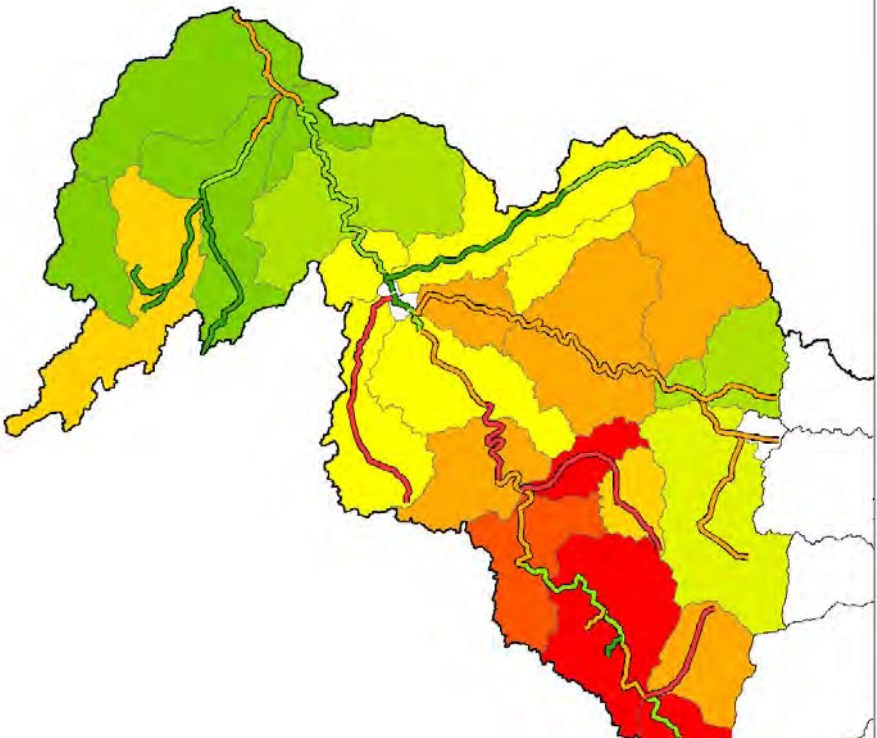
Potential Influence due to Livestock

- 18-19
- 19-24
- 24-27
- 27-29
- 29-32
- 32-34
- 34-37
- 37-40
- 40-46

Units of influence are unitless. Please see report for more details.

Summer 2011 Livestock Inventory

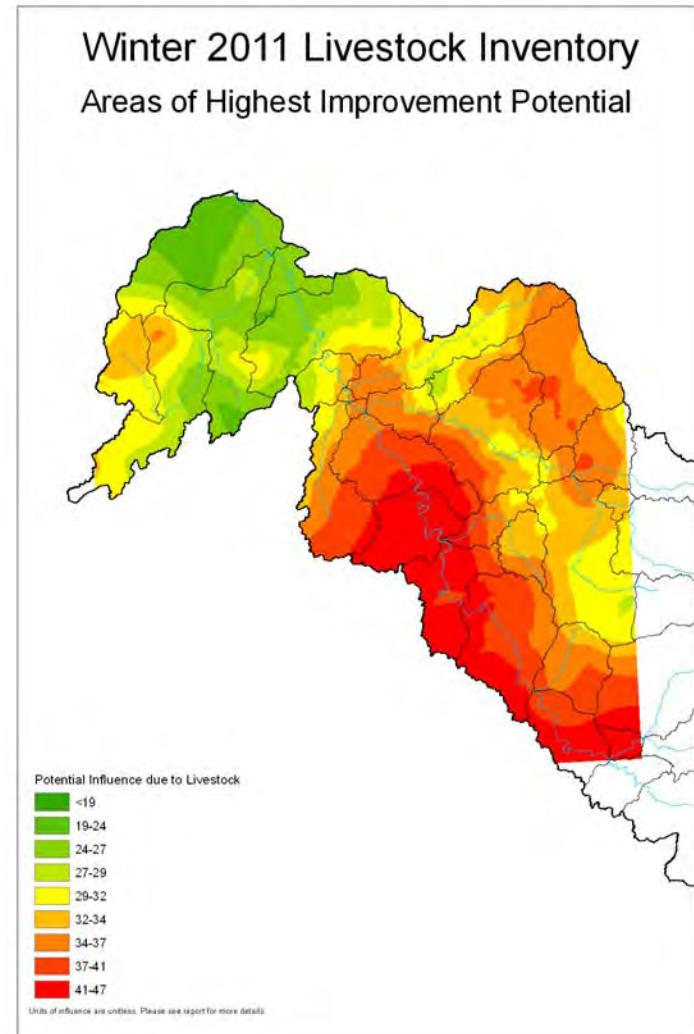
With Fecal Loading Reduction %



- 0 - 25
- 26 - 50
- 51 - 75
- 76 - 100

Inventory Costs

- Driving
 - Approx 3-4 days each (5 employees sal/ben)
 - Approx 1700 mi (\$900)
- Data tabulation/analysis (in progress)
- Map development (in progress)



New Livestock and Land Program

“Step” in new direction

- Livestock Operation Improvement Cost-Share Program
- Workshop Series
- Demonstration Projects and Tours
- Peer to Peer Assistance Program
- Livestock Health & Pasture Management
- Chore Efficiency
- Watershed Stewardship

