Animals & Agriculture Workgroup
Meeting Agenda
December 18, 2012
1:00 p.m. to 3:00 p.m.
H-GAC Conference Room C, Second Floor

Call to Order/Welcome/Introductions

Review Agenda

Discussion

- **Update on I-Plan process**
- **Review Progress** Items identified in the discussion will be included in the annual plan.
    - Implementation Activity 7.1: Promote Increased Participation in Existing Programs for Erosion Control, Nutrient Reduction, and Livestock Management
        - Texas Water Resources Institute's *Lone Star Health Streams Program*: "…the protection of Texas Waterways from bacterial contamination originating from livestock operations and feral hogs…"
        - Ag BMP Effectiveness Table, developed by Texas Water Resources Institute
        - EQIP Funds
            - Distribution of funds by practice
            - Participation in NRCS Local Work Group Meetings, held to gather input for setting priorities for EQIP funding, and priorities identified
        - Inventory of Program Participation: Environmental Working Group Farm Subsidy Database
        - The Conservation Fund: Study of effectiveness of economic incentives to increase participation in voluntary programs
    - Implementation Activity 7.2: Promote the Management of Feral Hog Populations
        - 319 Grant from TSSCB: Texas AgriLife Extension awarded grant for statewide feral hog program
        - Feral Hog Community of Practice: website, publications, webinars
        - Texas Department of Agriculture 'Hog Out Month County Challenge'
        - Pork Choppers: Aerial Wildlife Permits from Texas Parks & Wildlife Department that include a landowner agreement for hogs
- **Identify Priorities**

- What are the priorities towards which we should be focusing our efforts?

- **Determine Recommendations to BIG for Annual Report**
  - The workgroup must make recommendations to the BIG regarding activities related to the work group. Using a sample form conceptually approved by the BIG, meeting participants will consider the following:
    - Status of activities (not started/in progress/complete, ahead/on/behind schedule)
    - Progress
    - Achievements
    - Focus

- **Discuss potential modifications to the I-Plan**
  - What changes, if any, does the work group wish to recommend to the BIG?

Wrap-up

Review tasks

BIG Annual Meeting: May 14, 2012

Adjourn

In compliance with the Americans with Disabilities Act, H-GAC provides for reasonable accommodation for persons attending H-GAC functions.
Requests should be received by H-GAC 24 hours prior to the function.

Animals & Agriculture Workgroup
Meeting Notes
December 7, 2011
1:00 p.m. to 3:00 p.m.
H-GAC Large CE Conference Room

Attendees

Brian Koch (TSSWCB) on phone, Rachel Powers (H-GAC)

Discussion

Brian and Rachel agreed to meet in person at a later date to be determined.

The following describes information that would have been presented.

Overview

The Implementation Plan was still undergoing internal review at TCEQ. TCEQ had not formally requested any changes to the document. Informally, TCEQ requested modification to the inside cover pages, which were made without changes to content.

The annual report will contain information about progress on activities identified in the Implementation Plan. The workgroup will be an important means for collecting information about implementation.

Review Progress

Implementation Activity 7.1: Promote Increased Participation in Existing Programs for Erosion Control, Nutrient Reduction, and Livestock Management

- H-GAC has been gathering baseline data to use for tracking progress on this activity. The data collected this year will used to gauge progress. The plan identifies an interim, measurable milestone as a 5% increase in participation each year. Sources for information include:
    - Inventory of Program Participation: Environmental Working Group Farm Subsidy Database
    - Local and State NRCS offices (for EQIP and other NRCS participation)
    - Local Soil and Water Conservation Boards for WQMP
    - Local Soil and Water Conservation Boards for registered Animal Feeding Operations
- The Conservation Fund is planning a study of the effectiveness of economic incentives to increase participation in voluntary programs. They are hoping to identify a large number of agricultural participants in the H-GAC water-quality planning region. H-GAC is working with the Conservation Fund on this project.

- Both H-GAC and the Bayou Land Conservancy submitted 319 Grant Applications to TSSWCB. Both applications included elements of working with individual landowners to increase participation in existing programs. The H-GAC submittal was not selected for funding.

Implementation Activity 7.2: Promote the Management of Feral Hog Populations

- The interim, measureable milestone is to offer two feral hog management workshops each year for the first five years of implementation. While no workshops have been offered, funding for workshops has been pursued.
- H-GAC and Texas AgriLife Extension Service coordinated on applications to the Texas State Soil and Water Conservation District for 319 Non-Point Source Funds. While funding has not been granted yet, it is possible the grant will allow for one or more workshops in the BIG project area. Dr. Jim Cathey with AgriLife maintains a blog with information and resources relating to feral hogs: http://wild-wonderings.blogspot.com/search/label/Feral%20Hog.
- Texas Department of Agriculture is sponsoring a 'Hog Out Month County Challenge.' In the first year of the program, no counties in the BIG project area participated. In fall 2011, two counties—Fort Bend and Harris—submitted NOIs to participate in 2012. (Three additional counties in the H-GAC area—but outside of the BIG project area--submitted NOIs: Austin, Chambers, and Matagorda.) Actual participation information will be available from grants@texasagriculture.gov. More information is available at http://www.texasagriculture.gov/tabid/76/Article/470/commissioner-staples-announces-second-annual-statewide-hog-out-month-county-cha.aspx.
- In the 2011 Texas Legislative Session, legislation was passed that allows the hunting of feral hogs from helicopters. The "Pork Chopper" rule went into effect Sept 1, 2011. Texas Parks and Wildlife Department issues permits for aerial hunting. These permits are matched to landowner agreements that specify which animals, such as hogs, on the landowner's property may be hunted. As of October 2011, aerial permits in the region are as follows:
    - Brazoria County: 2 permits
    - Fort Bend County: 5 permits
    - Matagorda County: 8 permits
    - Wharton County: 1 permit

Identify Priorities

In the first year, we will focus on identifying baseline conditions against which progress can be measured. As opportunities arise, we will promote increased participation in existing programs and management of feral hogs. In addition, H-GAC will participate in the annual process to identify priorities for EQIP and similar funding programs to provide information about BIG issues.

Potential additions to the annual report and modifications to the I-Plan

If the workgroup decides to recommend changes to the BIG, it will go through the following process:

- First, the workgroup will work together to reach consensus on recommendations.
- The workgroup's recommendations will be presented to the BIG via e-mail for consideration.
- Modifications to the recommendations will be made based on BIG comments.
- At its annual meeting, the BIG will decide whether to incorporate recommendations from the workgroup.

Examples of possible recommendations might include:

- Preservation and/or expansion of the urban tree canopy
- Participation in the US Forest Service Program "Forests to Faucets"
- Development of information for backyard chicken owners
- Activities related to unregulated animal shelters
- Bacteria Source Tracking to determine possible sources of bacteria indicators
- Control/exclusion of bird/bat populations under bridges
- Livestock show education
- Programs at dog parks
- Identify largest Animal Feeding Operations in project area
- Add resources to appendix
    - TPWD wildlife management programs
    - U.S. Forest Service
    - Texas Forest Service
    - Texas Department of State Health Services, which inspects chicken operations
- Update maps to reflect new (and hopefully more accurate) landcover data that will be available in early 2012.

Wrap-up

Rachel will provide notes for the meeting and will meet with Brian Koch.

BIG Annual Meeting: May 22, 2012.

Adjourn

Table B-1. Livestock BMP Fecal Coliform Removal Efficiencies

Management Practice	Effectiveness: Low Rate	Effectiveness: High Rate	Effectiveness: Mid-point
Fencing to Limit Creek Access [1]	30%	94%	62%
Filter Strips [2]	30%	100%	65%
Prescribed Grazing [3]	42%	66%	54%
Stream Crossing [4]	44%	52%	48%
Watering Facility [5]	51%	94%	72.5%

[1] Brenner 1996, Cook 1998, Hagedorn et al. 1999, Line 2002, Line 2003, Lombardo et al. 2000, Meals 2001, Meals 2004

[2] Casteel et al. 2005, Cook 1998, Coyne et al. 1995, Fajardo et al. 2001, Goel et al. 2004, Larsen et al. 1994, Lewis et al. 2010, Mankin & Okoren 2003, Roodsari et al. 2005, Stuntebeck & Bannerman 1998, Sullivan 2007, Tate 2006, Young 1980

[3] Tate et al. 2004, USEPA 2010

[4] Inamdar et al. 2002, Meals 2001

[5] Byers et al. 2005, Hagedorn et al. 1999, Sheffield et al. 1997, Wagner 2011

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lone star healthy streams program

lshs.tamu.edu

One of the primary strategies for reducing bacteria in many Texas water bodies is to assist landowners with implementing best management practices (BMPs) to reduce bacteria runoff. Educational programs are an important part of this strategy.

The Lone Star Healthy Streams (LSHS) Program provides rural landowners with this needed education on reducing the amount of bacteria entering Texas water bodies from livestock operations and feral hogs. Development of this program was initiated in 2007 by the Texas AgriLife Extension Service and Texas Water Resources Institute and has now expanded into a new project, ***Development of a Synergistic, Comprehensive Statewide Lone Star Healthy Streams Program***.

LSHS is incorporating educational materials and results from other programs, such as the *Guide to Good Horsekeeping* developed through the ***Copano Bay Water Quality Education*** project, into a "one-stop" resource for rural landowners on practices for reducing bacteria runoff. With more than 300 water bodies impaired by bacteria, a variety of resources are greatly needed. Resource manuals, presentations and an interactive website for bacteria runoff management for each of the major classes of livestock, as well as feral hogs, are being produced.

The program is providing a coordinated and comprehensive education program designed to increase awareness of the bacteria issues associated with grazing and dairy cattle, poultry, horses and feral hogs; and encourage voluntary implementation of BMPs to reduce bacteria runoff, which will ultimately lead to improved water quality.

Objectives

- Coordinate the development of the LSHS Program with a livestock industry steering committee, a development committee and AgriLife leadership
- Compile the educational materials developed by ongoing Texas State Soil and Water Conservation Board and AgriLife Extension projects and develop standardized manuals and presentations on bacteria issues and associated BMPs for the major classes of livestock as well as feral hogs
- Make the developed educational materials easily accessible to the public, landowners, county agents, soil and water conservation districts, decision makers and others through the development of an interactive website

texas water resources institute

twri.tamu.edu

Accomplishments

- Developed Lone Star Healthy Streams BMP Manuals for Feral Hogs and Beef Cattle, Dairy, Horse and Poultry Operations
- Developed Lone Star Healthy Streams presentations for Feral Hogs and Beef Cattle and Dairy Operations
- Developed a searchable references database that contains information and links to publications regarding BMPs and bacterial reductions
- Developed an interactive LSHS online course that parallels material contained in the five resource manuals
- Approved for four hours of credit for the Texas Certified Crop Adviser Program
- Developed a certificate of completion for participation in the education program
- Introduced portions of the LSHS Program to various audiences across the state and nation
- Developed Beef Cattle Production presentation with audio commentary by Dr. Larry Redmon

Collaborators

- Texas State Soil and Water Conservation Board
- Texas Water Resources Institute
- Texas AgriLife Extension Service
- Texas AgriLife Research
- Texas Department of Agriculture
- Texas Parks and Wildlife Department
- USDA Natural Resources Conservation Service
- USDA Agricultural Research Service
- Grazing Lands Conservation Initiative
- Texas Farm Bureau
- Texas and Southwestern Cattle Raisers Association
- Independent Cattlemen's Association of Texas
- Texas Cattle Feeders Association
- Texas Pork Producers Association
- Texas Horse
- Texas Poultry Federation
- Texas Association of Dairymen
- Texas Wildlife Association
- Victoria Soil and Water Conservation District (SWCD)
- Hall-Childress SWCD
- Little Wichita SWCD
- Welder Wildlife Foundation
- Private ranchers

Funding Agencies

- Texas State Soil and Water Conservation Board
- U.S. Environmental Protection Agency

Texas Water Resources Institute
make every drop count

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4/2012

AgriLIFE EXTENSION
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SP-412
7/11

REDUCING BACTERIA WITH BEST MANAGEMENT PRACTICES FOR LIVESTOCK

WATERING FACILITY

NRCS CODE 614

Jennifer L. Peterson, Extension Program Specialist, Texas AgriLife Extension Service
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Mark L. McFarland, Professor and State Soil Fertility Specialist, Texas AgriLife Extension Service

Description:
A permanent or portable off-stream water supply, such as a trough or pond system, that provides an adequate amount and quality of drinking water for livestock and/or wildlife and also helps improve animal distribution.

Benefits to Producer:

- Reduces herd health risks associated with livestock standing in muddy areas, such as foot disease and injuries due to unstable footing.
- Provides clean source of water for livestock.
- Decreases herd injuries associated with cattle climbing steep and unstable stream banks.
- Improves water quality by reducing sediment, nutrient, bacterial, organic, and inorganic loading to the stream.
- Reduces stream bank destabilization and associated erosion due to trampling and overgrazing of banks.
- During drought, when surface water sources are dry, an alternative water source provides the water necessary for beef cattle producers to remain in business.

A water tank in a pasture combined with fencing keeps cattle out of critical riparian areas. Photo by Jeff Vanuga, NRCS.

Bacterial Removal Efficiency:

- An off-stream alternative water supply resulted in the following bacterial reductions based on scientific research:
  - *E. coli*: 85%
  - Fecal coliform: 51 to 94%
  - Fecal *streptococci*: 77%

Other Benefits:

- Decreased the amount of direct livestock use of stream for drinking and other activities between 48 and 90%.
- Decreased stream bank erosion by 77%.
- Increased gain in beef cattle of 0.2-0.4 lb/day.
- Improved milk and butterfat production in dairy cattle.
- Increased annual net returns to ranch between $4,500 and $11,000 depending on cattle prices and precipitation levels with use of off-stream salt supplements.
- Increased annual grazing capacity by 85 AUMs.

Cattle watering at an off-stream portable water system. Photo by Chris Coulon, NRCS.

Estimated Installation Costs:

- Watering troughs: $450 to about $7,600 depending on the size and material (plastic, galvanized metal, fiberglass, or concrete).
- Electric water pumps: $1,900 to $4,000 depending on the size.
- Solar water pumps: $5,700 to $12,000 depending on well depth.
- Windmills: $8,200 to $17,800 depending on fan diameter.
- Pond: $2.08/cubic yard to $10.08/cubic yard depending on size.
- Cost information obtained from the Texas NRCS Electronic Field Office Technical Guide for Zone 4; costs may vary for other zones.

Practice Life Span:

- Trough: 15-20 years
- Electric pump: 15 years
- Solar pump: 15 years
- Windmill: 15 years
- Pond: 20 years

Available Cost-Share Programs:

- EQIP (up to 75% cost-share).

For More Information:

- Contact your local County Extension Agent, Soil and Water Conservation District (http://www.tsswcb.state.tx.us/swcds) or the Natural Resources Conservation Service (http://www.usda.nrcs).

EQIP Program Houston Resource Team - 2013

The Environmental Quality Incentives Program (EQIP) offers assistance to agricultural producers to implement on-farm conservation practices. The Natural Resources Conservation Service (NRCS) determines eligible producers for the EQIP program and determines eligible land. Eligible producers may apply for assistance on conservation practices that will address the identified resource concern identified by the Local Work Group (LWG).

Summary and Objective:

The Houston Resource Team is comprised of 3 counties; Harris, Montgomery, and Walker Counties. The objectives of the Houston Resource Team Environmental Quality Incentives Program are to promote the use of conservation practices for improving the natural resources throughout counties in the resource team. The major land uses identified by the Local Work Groups in Fiscal Year 2013 are Pastureland, Forestland, Rangeland, Irrigated Cropland, Dryland Cropland and Wildlifeland.

A summary of Local Work Group results has prioritized the following resource concerns for the above listed land uses:

Pastureland – Forage quality and palatability; Inadequate stock water; and Inadequate quantities and quality of feed and forages.

Rangeland/Native Pasture - Forage quality and palatability; Inadequate stock water; and Inadequate quantities and quality of feed and forages.

Irrigated Cropland – Inefficient water use on irrigated land; Soil organic matter depletion; and Plant Productivity, health, and vigor.

Dryland Cropland/Hayland – Plant productivity, health and vigor; Soil organic matter depletion; Sheet and rill erosion.

Wildlife – Inadequate food for fish/wildlife and Inadequate cover/shelter for fish/wildlife, Plant productivity health, and vigor

Forestland – Plant productivity, health, and vigor; Plants not adapted or suited; and Soil organic matter depletion.

County Resource Concerns in Priority Order:

Landuse	Priority 1	Priority 2	Priority 3
Irrigated Cropland	Inefficient water use on irrigated land	Soil organic matter	Plant productivity, health and vigor
Non-Irrigated Cropland	Cropland Plant productivity, health and vigor	Soil organic matter	Sheet and rill erosion

Pasture	Forage quality and palatability	Inadequate stock water	Inadequate quantities and quality of feed and forage
Range	Forage quality and palatability	Inadequate stock water	Inadequate quantities and quality of feed and forage
Wildlife	Inadequate food for fish/wildlife	Inadequate cover/shelter for fish/wildlife	Plant productivity, health and vigor
Forest Land	Plant productivity, health and vigor	Plants not adapted or suited	Soil organic matter depletion

EQIP Program Liberty Resource Team - 2013

The Environmental Quality Incentives Program (EQIP) offers assistance to agricultural producers to implement on-farm conservation practices. The Natural Resources Conservation Service (NRCS) determines eligible producers for the EQIP program and determines eligible land. Eligible producers may apply for assistance on conservation practices that will address the identified resource concern identified by the Local Work Group (LWG).

Summary and Objective:

The Liberty Resource Team is made up of Chambers, Hardin, and Liberty Counties. These counties are located in the Gulf Coast Prairie and Western Gulf Coast Flatwoods major land resource areas. This once thriving farming area has seen a large reduction in crop production over the past several decades. Idle fields are now being brought back into production. This increase of crop production and recent droughts has brought about a need to improve irrigation efficiency. However on non-irrigated cropland the issue of inefficient water use due to slow permeability and nearly level slopes creates low areas of heavy saturation and high areas of dry soils. The northern part of the resource team consists mostly of Forestland. In this area large tracts of commercial timber have been sold off to smaller landowners. Over the last 20 years Chinese Tallow trees have begun to threaten these once pristine forestlands. Harvested tracts face the most severe encroachment of this rapidly invasive species. Pastureland and Rangeland are also threatened by Chinese Tallow increasingly showing the need for progressive management. With the increase of invasive and undesirable vegetation, landowners have recognized the need to address wildlife concerns by improving and providing additional habitat.

The objective of the Liberty Resource Team Environmental Quality Incentives Program is to promote the use of conservation practices for improving the natural resources throughout the counties. The major land uses to be addressed in order of priority identified by the Local Work Groups in 2012 are Irrigated Cropland, Forestland, Cropland, Pastureland, Rangeland, & Wildlife Land.

County Resource Concerns in Priority Order:

Landuse	Priority 1	Priority 2	Priority 3
Irrigated Cropland	Water Quantity	Plant Condition	Soil Quality
Non-Irrigated Cropland	Water Quantity	Plant Condition	Soil Quality
Pasture	Animal Health	Plant Condition	Soil Quality
Range	Plant Condition	Animal Health	Water Quality
Wildlife	Animal Health	Plant Condition	Water Quality
Forest Land	Plant Condition	Animal Health	Soil Erosion

TEXAS A&M AGRILIFE EXTENSION

ESP-420
3/12

Feral Hog Laws and Regulations in Texas

Jared Timmons, James C. Cathey, Nikki Dictson, and Mark McFarland*
Texas AgriLife Extension Service
The Texas A&M University System

Landowners in the Plum Creek Watershed of Hays, Caldwell, and Travis counties are frustrated with the destructive habits of feral hogs. Landowners want to know who owns feral hogs and when that person or agency will get rid of them. In the end, they may be surprised by the answer. No one owns feral hogs – at least not until they are captured or killed by someone on private or public lands.

Feral hogs originated from domestic sources and were first introduced into the U.S. by early explorers and settlers as a food source. Subsequent escapes from holding pens or intentional releases resulted in a free-ranging population currently estimated to be between 1.9 and 3.4 million in Texas alone.

Feral hogs are not a game or non-game species in Texas. Instead, feral hogs are considered exotic livestock as described in Texas Parks and Wildlife Code Section 1.101(4) and Texas Agriculture Code 161.001(a) [4]. Because of this distinction, they are not owned by anyone until they express control of the animal according to the Texas Agriculture Code Section 161.002.

Here, the codes states, "A person is subject to this chapter as the caretaker of an animal and is presumed to control the animal if the person:(1) is the owner or lessee of the pen, pasture, or other place in which the animal is located and has control of that place; or (2) exercises care or control over the animal. (b) This section does not limit the care and control of an animal to any person."

Agricultural Damage by Hogs

According to the Texas AgriLife Extension Service, feral hogs in Texas cause an estimated $52 million dollars in damage to the agricultural industry annually (Figure 1). This figure does not account for damage in suburban areas or growing concerns over impacts to water quality, as in the Plum Creek Watershed.

Removal

Landowners or their agents are allowed to kill feral hogs on their property without a hunting license if feral hogs are causing damage. However, any landowner that plans to trap or

Figure 1. Damage to pasture from rooting by feral hogs.

*Authors are Extension Assistant; Associate Professor and Extension Wildlife Specialist; Extension Program Specialist; Professor and Extension Soil Fertility Specialist, respectively.

Figure 2. Feral hogs captured in a corral trap.

Figure 3. Feral hog captured in a box trap.

snare hogs should have a valid Texas hunting license, since these activities could affect other wildlife species.

Hunting Requirements

For those who hunt feral hogs for trophy and/or food, a Texas hunting license is required. The Texas Parks and Wildlife Department (TPWD) outlines license requirements and specific legal hunting methods in its annual hunting and fishing regulations publication, the Outdoor Annual. A hunting license permits the use of firearms, snaring and trapping (Figures 2 and 3).

Exotic species, including the feral hog, may be hunted throughout the year. Aerial gunning is allowed with a permit from the TPWD. There is no closed season and no bag limit. It is legal to use suppressors (silencers) on firearms to hunt feral hogs, but an Alcohol Tobacco Firearms Form 4 must be completed to purchase a supressor. Feral hogs may be hunted at night with the use of a spotlight or night vision, but it is a good idea to provide a courtesy call to your local game warden to let them know you will be hunting feral hogs.

Additional Information

To hone your knowledge of feral hogs and methods for their control, several publications were developed by the Texas AgriLife Extension Service and can be downloaded at no charge by going to the Plum Creek Watershed Partnership website at *http://plumcreek.tamu.edu/feralhogs*.

This website also has an on-line tool which allows landowners and the general public to report feral hog sightings and control measures.

Contact Information

For more information contact:
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http://plumcreek.tamu.edu/feralhogs

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Implementation Strategy 7.0:
Animals & Agriculture

#	Activity	Target/ Objective/ Milestone	Status
7.1	Promote Increased Participation in Existing Programs for Erosion Control Nutrient Reduction, and Livestock Management	Each year, 5% increase in participation	Baseline identified; On schedule
7.2	Promote the Management of Feral Hog Populations	Two workshops each year for five years	Not started, On schedule

Work Group Recommendations

Meeting December 18, 2012. XX attendees, including X BIG members and X alternates.

Progress 	Progress has been adequate. Activity has begun and is ongoing for each of the implementation activities.
Achievements 	Baseline data has been collected from NRCS about EQIP funding related to BIG strategies. BIG concerns have been presented at NRCS Local Work Group meetings. TSSWCB has funded Texas AgriLife Extension to provide statewide technical assistance for feral hogs, including priority watersheds in the region.
Focus 	Focus in the coming year will be on encouraging stakeholder involvement in existing programs.
Revisions 	The work group does not recommend changes to the I-Plan.

Implementation Strategy 7.0: Agriculture and Animal Sources

Bacteria loads from agricultural practices and animals are identified in the TMDLs as nonpoint sources of concern. Areas of concern include the potential for bacteria to attach to sediment in runoff, the potential effect that nutrients will have on bacteria growth rates in water bodies, and livestock's direct deposition of fecal waste in waterways. Existing management programs are traditionally voluntary, unless large populations of animals are involved. The expansion of existing programs could help lower bacteria levels in waterways, particularly in subwatersheds where substantial areas of land are devoted to crop, pasture, and range. (See Figure 6.) According to the technical documents for each of the TMDLs, there are no Concentrated Animal Feeding Operations (CAFOs) in the areas covered by this I-Plan. However, livestock populations have been estimated for the area for the Clear Creek and the Lake Houston TMDLs. Cattle and poultry are most abundant livestock in the region. Estimated populations are described in Table 7.

Table 7: Estimated Livestock Populations

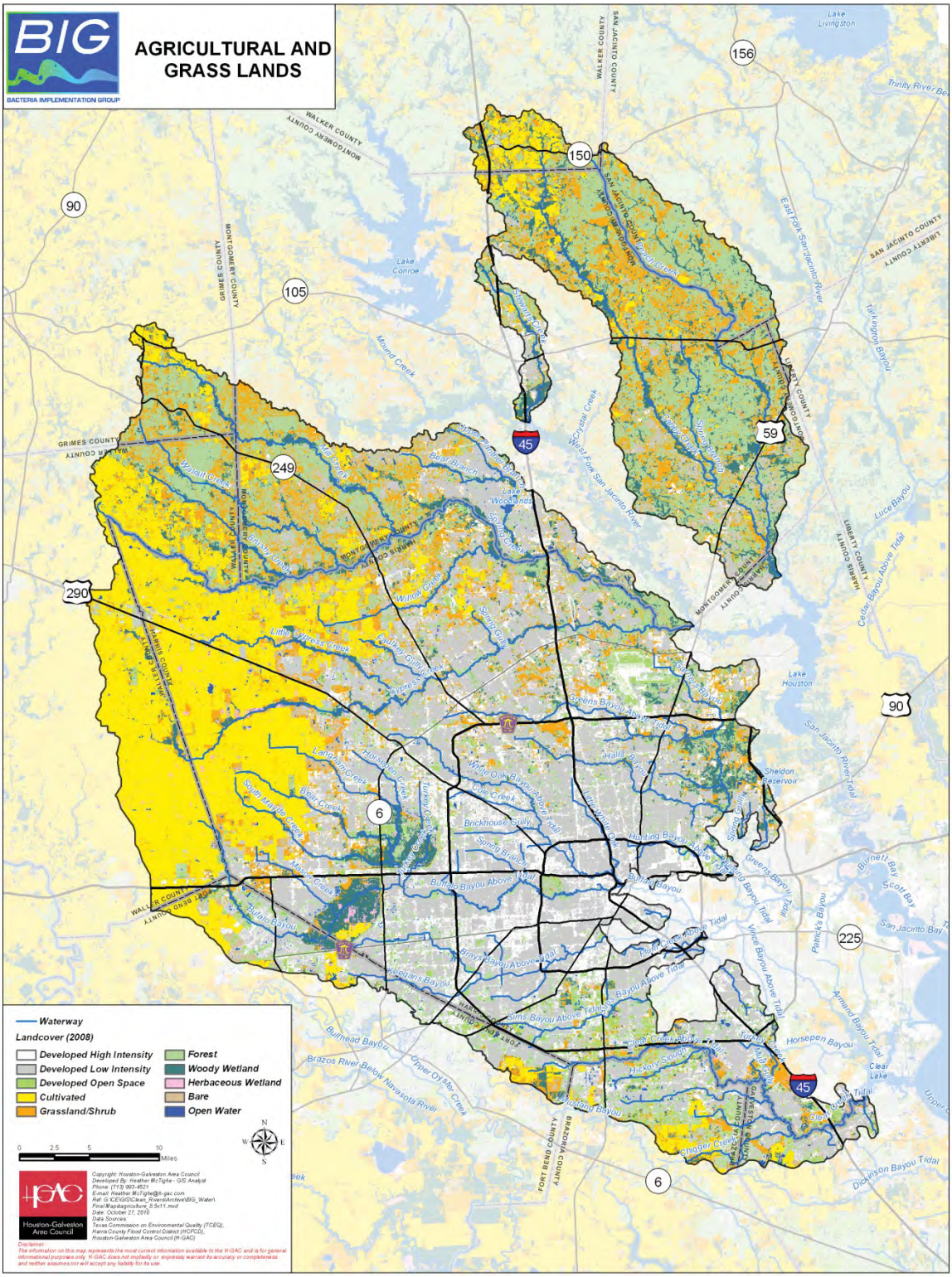
TMDL	Cattle	Poultry
Clear Creek[93]	2,696	2,093
Lake Houston[94]	52,510	50,293

Other animals of concern throughout the region include horses, swine, sheep, and goats, with their densities varying by watershed. For example, horse populations are prevalent in the Cypress Creek and Spring Creek watersheds.

[93] (University of Houston & Parsons 2009b)

[94] (James Miertschin & Associates, Inc. 2009)

Figure 6: Map of Agricultural and Grass Lands



A prominent concern raised by stakeholders pertains to feral hogs. In addition to being a nuisance to landowners because of their rooting and wallowing and occasional predation of small livestock, feral hogs discharge large amounts of bacteria and nutrients into the environment through fecal waste. No precise estimate of the number of feral hogs is available for the BIG project area, yet anecdotal evidence suggest a large hog population in the region. Hogs are known to reproduce quickly, have no natural predators, and spend the majority of their time either in or around water.[95] Hogs are likely a significant source of bacteria for some of the impaired waterways encompassed by this I-Plan.

The four governmental agencies in the following list will be responsible for implementing management measures aimed at reducing nonpoint source loadings from agricultural operations. Their duties and activities related to this I-Plan are described in greater detail in Appendix H.

- **Texas State Soil and Water Conservation Board (TSSWCB**) – The TSSWCB is the lead agency in Texas responsible for planning, implementing, and managing programs and practices for preventing and abating agricultural and silvicultural (forestry) nonpoint source pollution.[96]
- **Natural Resources Conservation Service (NRCS)** – The NRCS provides conservation planning and technical assistance to landowners, groups, and units of government to develop and implement conservation plans that protect, conserve, and enhance their natural resources.
- **Soil and Water Conservation Districts (SWCDs)** – Through decades-old agreements, SWCDs offer agricultural landowners and operators technical assistance through partnerships with the NRCS and the TSSWCB.
- **Texas AgriLife Extension Service** – AgriLife Extension, an agency of the Texas A&M University System, provides quality, relevant outreach and continuing education programs and services to Texans.

Additional agencies may be able to facilitate voluntary actions pertaining to wildlife and property management activities. Agencies include Texas Parks and Wildlife Department, the U.S. Fish and Wildlife Service, wildlife management associations and co-ops, and other entities.[97]

Implementation Activity 7.1: Promote Increased Participation in Existing Programs for Erosion Control, Nutrient Reduction, and Livestock Management

A variety of programs provide farmers and ranchers with the technical and financial assistance necessary to combine agricultural production with environmental control actions. These actions may address

[95] (Taylor n.d.)

[96] See Tex. Agric. Code § 201.026

[97] The Private Landowner Network maintains a comprehensive list of resources available to private landowners at http://www.privatelandownernetwork.org/grantprograms/.

water quality, reduction of soil erosion and sedimentation, livestock waste management, and other issues that are likely to reduce bacteria in regional waterways.

Funding mechanisms identified by stakeholders include:

- Environmental Quality Incentives Program (EQIP), administered by the NRCS;
- Water Quality Management Plan Program (WQMP), a part of the Texas Non-Point Source Management Program administered by the TSSWCB through the SWCDs;
- Conservation Innovation Grants, administered by the NRCS;
- Conservation Security Program (CSP), administered by the NRCS;
- Farm and Ranch Lands Protection Program, administered by the NRCS;
- Grassland Reserve Program, administered by the NRCS;
- Wetlands Reserve Program, administered by the NRCS; and
- Wildlife Habitat Incentives Program, administered by the NRCS.

The funding mechanisms in the preceding list should not be considered an exhaustive list. Additional programs may be added as this I-Plan is updated.

These voluntary programs provide technical and financial assistance. Program participation levels should be increased by increasing familiarity with the program through marketing. Primary methods for disseminating information and increasing participation include:

- Texas AgriLife Extension Service agents' contact with the public;
- Public outreach from local SWCDs;
- Information distribution through local 4-H clubs, rodeos, the Texas Farm Bureau, the Texas and Southwestern Cattle Raisers Association, the Independent Cattleman's Association of Texas, Future Farmers of America, and at Agricultural Field Days; and
- Word of mouth.

Implementation of erosion control, nutrient reduction, and livestock management programs likely will not result in immediate cost savings to the landowner. However, implementation does have other benefits that should be promoted, including increased plant health, increased infiltration, reduced erosion, and increased filtration and trapping of nutrients. Additionally, participation should help landowners avoid violating water quality regulations and the associated fines. If a participating landowner violates water quality regulations while following an approved plan, the regulating agency may give the landowner an opportunity to implement BMPs to come into compliance. Also, when new mandatory implementation practices come into effect, participating landowners are often not forced to update their operations, as they are already in compliance with water quality regulations. Success stories should be highlighted.

The Montgomery County and Harris County SWCDs have informational materials for small landowners regarding environmental best practices for agriculture. These could be updated and made available to landowners in all watersheds. Providing landowners with clear and practical information may increase the likelihood of them implementing agricultural management measures, whether independently or through an existing program.

Targeted program promotion will increase through word-of-mouth campaigns and Extension Agent involvement. Additional promotion methods include emails; notices in newsletters and local newspapers; participation in local festivals, rodeos, and fairs; and development of school programs. Promotion efforts will be conducted by TSSWCB, local SWCDs, NRCS, AgriLife Extension, H-GAC, and other agencies as appropriate with a goal of increasing participation in the programs each year. The BIG will provide this I-Plan to the implementing agencies along with a formal request for their assistance in encouraging program participation in accordance with this Implementation Activity.

Implementation Activity 7.2: Promote the Management of Feral Hog Populations

With continuous effort, feral hogs can be managed. The Texas Wildlife Damage Management Service, a division of the Texas AgriLife Extension Service, is a valuable resource for training, technical assistance, and direct control in wildlife damage management including feral hog populations.[98] Control methods include snaring, live trapping, shooting, hunting with dogs, aerial hunting, exclusion, and habitat management.[99]

The BIG region will take advantage of the services provided by the Texas Wildlife Damage Management Service by arranging two feral hog management workshops for landowners, local governments, and other interested individuals annually for five years. H-GAC will request that workshops be held in strategic locations throughout the BIG region. Workshops will be heavily promoted in the Extension Service newsletter, local newspapers, and radio stations. Management activities, as described, can also be implemented by local governments as appropriate. If interest in workshops remains strong after five years, H-GAC will continue to arrange workshops throughout the area covered by this I-Plan.

[98] (Coping with Feral Hogs 2010)

[99] (Muir and McEwen 2007)

Load Implementation Plan for Knox Creek and Pawpaw Creek,[150] indicates bacteria and sediment removal rates of up to 85 percent for erosion and sediment controls. If the rules, guidelines, and best management practices for our region are implemented, best professional judgment suggests that bacteria loads from construction sites will be substantially reduced.

Implementation Strategy 6.0: Illicit Discharges and Dumping (IS6)

5 percent reduction in loading from illicit discharges and dumping each year

The estimated load reduction from the three main activities within IS6 is 5 percent. Best professional judgment suggests that a slight to moderate decrease in loading may be accomplished.

Implementation Strategy 7.0: Agriculture and Animals (IS7)

10 percent reduction in loading from agriculture and animals each year

The estimated load reduction from the two main activities within IS7 is ten percent each year. Studies of animal-population-based estimates show up to a 65 percent reduction in loading per population addressed[151] This, combined with the assumption that a limited number of populations will be addressed each year, suggests only mild load reductions as a result of these activities.

Implementation Strategy 8.0: Residential (IS8)

2 percent reduction of load from residential sources each year

The estimated load reduction from the main activity within IS8 is 2 percent each year. Studies of public health campaigns suggest that advertising and marketing has a limited influence on behavior modification, although sustained efforts over multiple years can lead to improved results.[152] Best professional judgment suggests a slight decrease in loading may be accomplished.

[150] (Map Tech, Inc. and New River-Highlands RC & D 2008)

[151] (Wagner, et al. 2008)

[152] (Abroms and Maibach 2008)

Table 27: Implementation Strategy 7.0: Agriculture and Animal

(a) Causes/ Sources	(b) Implementation Activities and Targeted Critical Areas	(c) Estimated Potential Load Reduction	(d) Technical and Financial Assistance Needed for Each Activity	(e) Education Component for Each Activity	(f) Schedule of Implementation for Each Activity	(g) Interim, Measureable Milestones for Each Activity	(h) Indicators to Measure Progress	(i) Monitoring Component	(j) Responsible Entity
Nonpoint sources from croplands and rangelands	Promote increased participation in existing erosion control, nutrient reduction, and livestock management programs (IA 7.1).	It can be expected that a 65% reduction in bacteria loading can be achieved for each cattle population addressed. In conjunction with IA 7.2, a 10% reduction in bacteria loading from agriculture and animal sources is expected over 25 years.	Technical- assistance will be provided to farmers and ranchers by the Texas State Soil and Water Conservation Board, local Soil and Water Conservation Districts, Texas AgriLife Extension Service, the United States Department of Agriculture's Natural Resources Conservation Service, etc. Financial- The costs depend on the goals for the property, the size of the management area, the existing condition of the property, and the plan that is collaboratively developed with the various resource agencies. The state's cost-share limit for Water Quality Management Plans is $15,000.	Information will be disseminated via word of mouth from participants; Texas AgriLife Extension Service agents' contact with the public; public outreach from local Soil and Water Conservation Districts; and through 4-H clubs, rodeos, agricultural field days, the Texas Farm Bureau, the Texas and Southwestern Cattle Raisers Association, and the Independent Cattleman's Association of Texas.	Implementation of this activity will begin immediately and will continue for the entire implementation process.	5% increase in participation each year.	The number of new or expanded plans or projects	H-GAC will collect reports from agencies such as TSSWCB, local SWCDs, NRCS, and AgriLife Extension.	Farmers and Ranchers: upgrade/develop plans and projects BIG: provide the I-Plan to the implementing agencies along with a formal request for their assistance in encouraging program participation TSSWCB, local SWCDs, NRCS, and AgriLife Extension: work with landowners and provide information and technical assistance H-GAC: collect and share information on the progress made each year
Bacteria deposited in the watersheds by feral hogs	Promote the reduction of feral hog populations (IA 7.2).	In conjunction with IA 7.1, a 10% reduction in bacteria loading from agriculture and animal sources is expected over 25 years.	Technical- existing resources such as feral hog management trainings offered by the Texas Wildlife Damage Management Service and others. Financial- grant funding and existing program funding	Trainings will be offered to large landowners, land managers, local governments, and other interested parties on feral hog management and reduction methods.	Two feral hog management workshops will be offered each year for the first five years of implementation with the potential to continue offering the trainings.	Two workshops each year for five years	The number of trainings offered each year The number of attendees	H-GAC will collect information from agencies regarding the number of trainings held and the total number of attendees at each.	TWDMS: conduct feral hog management training H-GAC: request workshops and collect and share information on the progress made each year