Agriculture/Wildlife/Feral Hogs Workgroup Meeting

September 30, 2014
5:30 – 7:30 PM
Bayside Wellness Center

MEETING SUMMARY

Attendees: David Boyd (Houston Sierra Club), Linda Broach (TCEQ), Leroy Ezer, Norma Ezer, Clint Fancher, Guy Jackson, Charles Johnson, Brandt Mannchen (Houston Sierra Club), David Manthei (USDA-NRCS)

Project Team: Ryan Bare, Stephanie Glenn, Brian Koch, Brandie Minchew, Linda Shead

1. Sign-In, Welcome, Introductions, Review Agenda

Linda thanked everyone for attending. She noted the copies of the previous meeting notes and agendas on the tables, and then reviewed the numbers that the stakeholders had developed for the different potential bacteria sources. (See summary table below.)

Cattle, horses, and goats were applied to the grassland/pasture and scrub/shrub landcover in the model, and the densities were developed at the June Ag workgroup meeting. For *cattle*, a density of 1 acre/AU (animal unit) was defined for a small 30-acre area. Density ranges (for *upper* and *lower scenarios*) were developed for the rest of the watershed, and the upper and lower portions of the watershed were marked at the June Ag workgroup meeting, and then further refined at the general meeting. For *horses*, the densities in the Liberty County and Chambers County portions of the watershed were based on Ag statistics, and then applied across the watershed, per the workgroup recommendation. For *goats*, the total number of goats in the Liberty Co. portion was 11 (from Ag statistics), and it was 200 goats in the Chambers Co. portion (from workgroup recommendation).

Deer were applied to the mixed forest/forested wetland landcover, at a density of 1,000 acres per 5.15 deer, from numbers developed by the Texas Parks & Wildlife Department through surveys of the local Resource Management Unit .

Feral hogs in water areas – within 100 meters of a stream and on flooded rice fields – were applied at a high density of 33 ac/hog, since that's where the hogs would spend most of their time. For the rest of the watershed, the density was somewhat less and was applied in two different scenarios for the model: for the *upper scenario*, the density was 50 acres/hog, and for the *lower scenario*, it was 70 acres/hog. These numbers all came from studies of hogs in Texas.

One stakeholder question was whether the CFU loads from cows were all going in the water. Linda reminded everyone that SELECT models the amount of bacteria where it lands, and not what ends up in the stream. The numbers used in the model determine how much bacteria could be landing in different areas of the watershed. The model thus helps identify where potential management measures might be the most effective.

Another question was about grassland/pasture landcover that is not fenced, and thus could not be used by cattle. Because someone had asked about that at the general meeting, stakeholders had been invited to mark the maps, so that those areas were not used for cattle in the model.

Potential Source	Land Cover Where Applied	Location	Density	
Cattle	*Grassland / Pasture and Scrub/Shrub*		*Upper Scenario*	*Lower Scenario*
		30 acres	1 ac / AU	
		Upper Watershed	7 ac / AU	8 ac /AU
		Lower Watershed	12 ac / AU	15 ac / AU
Horses	*Grassland / Pasture and Scrub/Shrub*	*Liberty County*	100 ac / horse	
		Chambers County	125 ac / horse	
Goats	*Grassland / Pasture and Scrub/Shrub*	*Liberty County*	11 goats	
		Chambers County	200 goats	
Deer	*Mixed Forest / Forested Wetland*	*Total watershed*	1,000 ac / 5.15 deer	
Feral Hogs	*Water Areas*	*Streams + 100 m & Flooded Fields*	33 ac / hog	33 ac / hog
	General	*Rest of watershed*	50 / hog	70 ac /hog

2. Updated Watershed Landcover and SELECT Model Results for Potential Bacteria Contributions

Stephanie noted that all of the sources would be presented at this meeting, because the SELECT model works on a comparison basis. She first showed the updated landcover map, which incorporates all the stakeholder-suggested changes after several rounds of input. Also on the map were the outlines of subwatersheds used by the SELECT model, based on drainage areas.

The first two slides showed the results of the total load overall, and what were the main sources of all the inputs, in each subwatershed, according to *upper* and *lower scenarios* in some cases. She explained the color scheme for the subwatersheds, and showed how the numbers were represented on the maps. Looking at the *upper* and *lower scenarios* totals, there was not a lot of difference between the scenarios in terms of subwatersheds with the larger loads, which is also a function of the size of the subwatershed.

<u>Wastewater Treatment Plant</u>

The wastewater treatment plant source is the first of the source maps shown, with one wastewater treatment plant location in the far west subwatershed. Three scenarios were run, decided by that workgroup. The *upper scenario* was based on the highest sampling event thus far. This was a really high rain event, with greater than 24,000 CFU/100 ML, resulting in a much bigger load coming into that wastewater treatment plant. This *upper scenario* resulted in a potential subwatershed maximum load of 1.8 trillion CFU. The *middle scenario* was based on 126 CFU/100 mL, because that is the actual

permitted effluent for the wastewater treatment plant, resulting in a potential subwatershed maximum load of 9.5 billion. The *lower scenario* is based on a geomean of 3.51 CFU/100mL of bacteria observed during dry weather discharges from the plant, resulting in a potential subwatershed maximum load of 270 million CFU. Thus, the plant runs very well without the infiltration from a rain event, resulting in a much lower load, shown in the *middle* and *lower scenarios*.

Septic Systems

On the septic systems, the Septic/Wastewater System Workgroup had previously identified locations and then approximated ages of the septic systems. The age range is broken down into: 0-15 years old, 15-30 years, and 30+ years. The workgroup was able to circle areas and denote the ages of the septic systems in those areas very well.

For the *upper scenario*, a 50% failure rate was assigned for the oldest systems (≥ 31 years), and 40% failure rate for all others. For the *lower scenario*, a failure of 30% was applied to the newer systems (0-15 years old), 40% for the middle age range (16-30 years old), and a 50% failure rate for the oldest group (≥ 31 years old). This was a result of a combination of published numbers and discussion within the workgroup on what was appropriate for this watershed.

So, on the *lower scenario*, the model showed a potential subwatershed maximum load of 4.6 billion CFU in the highest subwatershed. For the *upper scenario*, the model showed a potential subwatershed maximum load of 4.7 billion CFU in the highest subwatershed. This shows that the failure rates did not make much difference between the two scenarios. The locations of the highest loads were also the same.

Cattle

At the work group's last meeting, grassland/pasture and scrub/shrub were identified as the land cover categories where the cattle would be found. Then folks estimated stocking rates for that landcover. The outlines on the map indicate the locations where those stocking rates were applied, based on information from the workgroup and from the general meeting. If there was a range in those numbers – e.g., 7-8 acres per cow or 12-15 acres per cow – the *upper scenario* ran all the high stocking rates and the *lower scenario* ran the low stocking rates. On the *upper scenario*, that calculated to 4,074 cattle in the watershed, which was slightly under the Texas Ag statistics number for the whole watershed. The *upper scenario* had a potential subwatershed maximum of 4.2 trillion CFU/day. The *lower scenario* (this is the lower end of the stocking rates) was 3,494 cattle input in the watershed. The *lower scenario* resulted in a potential subwatershed maximum of 3.7 trillion CFU/day. So 4.2 trillion CFU (*upper scenario*) versus 3.7 trillion CFU (*lower scenario*) as the potential heaviest subwatershed load. For the lightest load subwatershed, the *upper scenario* showed a potential subwatershed maximum load of 21 billion CFU vs. a potential subwatershed maximum load of 17 billion CFU in the *lower scenario*.

Horses

The numbers used for horses came from the Census of Agriculture for the two counties. Putting them together, the total input was 294 horses. The horses were distributed among grassland/pasture and scrub/shrub, equally. The basic differences in the subwatersheds are the differences in acreages of that particular land cover. The potential maximum was 9.6 billion CFU/day for the heaviest load subwatershed, and the potential load was 87 million CFU/day for the lightest load subwatershed. Only one scenario was run, because the workgroup had suggested just the one number for horses.

Goats

Goats also had just one scenario and the number of goats had been estimated by the workgroup as 200 for Chambers County, and a number of 11 was developed for Liberty County based on Ag statistics. The goats were then applied equally to the scrub/shrub and grassland/pasture landcover. The potential maximum was 31 billion CFU/day for the heaviest load subwatershed, and the potential load was 280 million CFU/day for the lightest subwatershed. The higher and lower subwatersheds were the same locations as the horse, because of the same land use.

Feral Hogs

As noted before, the riparian buffer zones can be seen (on the feral hog slides). All the waterways have a "buffer" zone around them. Also, the cultivated/rice crop areas can be seen. Those are the places that folks said feral hogs would be found most. Although feral hog information is hard to find, both scenarios use the highest acre/hog number that is published – 33.8 acres per hog, in studies by TAMU and the Texas Water Resources Institute – for the places where feral hogs are more likely to be found. The *upper scenario* uses 50.4 acres per hog in the rest of the watershed, and the *lower scenario* uses 70 acres per hog in the rest of the watershed. The bacteria load difference between the *upper/lower scenarios* for the highest sub-watershed is not that great (potential subwatershed maximum of 1.1 trillion CFU vs. 1.0 trillion CFU). The subwatersheds with the lowest potential load show more difference between the *upper/lower scenarios*: potential subwatershed maximum of 30 billion CFU vs. 22 billion CFU.

Deer

Deer are surveyed by TPWD in what they call a resource management unit. So, using the numbers for the resource management unit for this area, the number of deer that would be found in the watershed was calculated and then applied equally to the mixed forested and forested wetland landcover categories. Although the area with the highest mixed forest/forested wetlands has the highest bacteria contribution from deer, the total numbers are comparatively small – a potential subwatershed maximum of 1.9 billion CFU for the highest subwatershed and a potential subwatershed maximum of 3.3 million CFU for the lowest subwatershed.

Totals

The next slide showed a table of the total sums of the potential daily bacteria – that is, per day, what you are getting from each source over the entire watershed. The largest contributors are cattle, feral hogs, and the *upper scenario* for the wastewater treatment plant. The total *upper scenario* for these model runs was a potential maximum of 39 trillion CFU/day, and the total *lower scenario* was a potential maximum of 33 trillion CFU/day.

3. Discussion

So, with these model results, the project team asked whether the numbers made sense to the workgroup, or if there were concerns. And again, noted the reminder that, for feral hogs and deer and cattle and such, the model shows what is potentially falling on the ground, but doesn't say what is going into the stream. However, more of the feral hog waste could end up in the stream, since in or near streams is where the hogs spend more of their time, to cool off. The group was comfortable with the results that were presented.

A question was asked about whether the "hotspots" were the same for cattle and for people. One of the subwatersheds has relatively high numbers for both septic, cattle, horse, and feral hogs.

4. Consideration of Comparisons with Others Potential Sources & Relationship of Results to Potential BMPs

Linda showed the list of potential management strategies that the workgroup had previously identified for bacteria. These measures will be re-visited once the sampling numbers are known and can be compared to what and where the biggest source issues might be.

In response to a question about the frequency of the water samples that are collected and the relationship to precipitation, Stephanie noted that there are "routine" sampling events that are scheduled currently approximately twice per month, and then there are "targeted" sampling events that occur only during precipitation. This way samples reflect both rainy and dry conditions in the watershed and what might be changing during these conditions.

5. Wrap-Up and Next Steps

The next step will be to present the preliminary water quality sampling results at the next general meeting, on October 21. After that, there will be workgroup meetings to consider those results and what potential management measures to recommend where. Linda thanked everyone for attending, and the meeting adjourned.