

Executive Summary

Our project goal is to minimize manure runoff in Puget Sound in Washington state by educating hobby farmers about best manure management practices. In order to achieve this, we divided our large goal into smaller objectives. Objective 1 was to research the manure runoff patterns in Washington and Objective 2 was to research the hobby farms in Washington. Objective 3 was to research the current education programs that are available to farmers in Washington. Objective 4 was to implement an educational solution to inform hobby farmers about manure management techniques.

Washington state is the largest producer of shellfish in the United States and the shellfish industry is an integral part of the state's economy and culture (Le, 2011). Unfortunately, the shellfish in Puget Sound have been contaminated by fecal bacteria and 37,000 shellfish beds have been closed due to health hazards (EPA, n.d.). Shellfish feed by filtering the water they are in, and fecal bacteria has been building up in the shellfish, making them unsafe for consumption (EPA, n.d.). The fecal contamination comes from several different starting points, such as large dairy farms, small hobby farms, and pollution from cities (Snyder, 2016). These sources are not unique to Washington and manure runoff is a serious issue nationwide. However, there are higher levels of runoff in Washington due to its climate and geography. Washington receives a large amount of rainfall, which leads to more opportunities for rainwater to wash away manure into one of the many interlocking streams and rivers that lead into Puget Sound. Dairy farms have large numbers of cows that produce enormous amounts of manure. However, the amount of runoff from dairy farms is minimal because of strict government regulations. Similarly, there exists the beginning of many regulations for the urban areas that have also been speculated to contribute to the issue.

Hobby farms are also a source of manure runoff. Hobby farms are small backyard farms where people keep a few animals for themselves, not for profit. These farms are unregulated and largely go unnoticed. We decided to focus on hobby farmers because of the lack of information and attention on them.

The water pollution in Puget Sound has far-reaching effects. The closed shellfish beds affect all of the locals who work in the shellfish industry, but the Lummi Nation is especially impacted. The Lummi Nation is a Native American tribe that relies on shellfish both economically and culturally. Without the shellfish, the Lummi are economically unstable and also are losing their traditions and culture (Le, 2011).



To learn more information about the problem, we looked at journal articles on manure management methods, water quality assessments, and how and why landowners learned about management techniques. We interviewed Larry Stap, a dairy farmer in Washington, and Jean Snyder, who works in the Washington Department of Health Shellfish Program. We also created a decision matrix to decide which solution would be best for Puget Sound.

For our solution, we created an educational pamphlet for organizations, such as 4-H and the Washington Conservation Districts, who will then distribute the pamphlets at county fairs where there will be large gatherings of hobby farmers (See Appendix C for pamphlet). We chose this solution because there will be people of all ages at the fairs and we want to educate multiple generations of people. At the fair, a representative from an organization will be talking to people and creating a direct, personal connection with them, which is an effective way of communicating information. Also, the representatives will be able to initiate conversations with people who aren't motivated enough to learn about manure management (Ryan, 2008). In order to assess our solution, we will also hand out a survey questioning hobby farmers about their current manure management knowledge and practices. In five years, the participants can be contacted again to see if their practices have changed. The Washington Department of Health already carefully measures water quality and the fecal bacteria in shellfish beds, so looking at their maps over a period of time can reveal if there is less bacteria in the water to measure success.

