H.R. 962

PRESERVE FISHING ON WILD AND SCENIC RIVERS ACT

Action and Implementation Plan for 2018

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Action and Implementation Plan for 2018

Prepared by

Philip Malley (*Manager*), Ella Wynn (*Deputy Manager*), Anne Canavati, Ethan Forauer, Rebecca Hopkins, Diana Lee, Zac Meyer, Johan Møller Nielsen, Amanda Rickert, Alex Rudnicki, and Daniel Wohl

Faculty advisor
Professor Louise Rosen

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Disclaimer

This report is prepared for the fall semester course ENVP U9230 Workshop in Applied Earth Systems Management as part of the MPA in Environmental Science and Policy program by students of the Class of 2018. All information contained in this report is prepared from sources and data believed to be correct and reliable as of December 2017. The views, recommendations, and opinions expressed in this report may not necessarily reflect those of Columbia University or any of its affiliates.

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Mark Sussino

I. Executive Summary

Wild fish populations are under pressure from human activities such as commercial over fishing.[1] To meet the demand for animal protein of a growing global population, the amount of farmed fish on the market has skyrocketed in the past decades and is expected to continue rising.[2] Since 1990, the U.S. aquaculture industry has more than doubled in size from a 600 million dollar industry to one worth 1.4 billion dollars.[3] At this growth rate, aquaculture has the potential to replace wild fish stocks.[4]

The expansion of the aquaculture industry comes with an environmental cost. Aquaculture facilities discharge effluent, which contains high concentrations of nitrates and phosphates from fish food, waste, and chemicals.[5] This has the potential to disrupt natural aquatic environments and bring harmful effects on natural habitats, such as algal blooms.[6] The decomposition of dead algae absorbs the dissolved oxygen in the water, causing hypoxic conditions that kill fish populations.[5]

In the United States, Wild and Scenic Rivers (WSRs) are federally designated for their unique natural and recreational significance. Stretching more than 12,000 miles over 40 states, these rivers have outstandingly remarkable values (ORVs) for fishermen and tourists who enjoy the pristine ecosystems and robust fish populations.[7] Recreational fishing is popular on many WSRs; however, the expanding aquaculture industry perpetuates fears that pollution will undermine the environments preserved by the Wild and Scenic designation. As of now, there are approximately 15 aquaculture facilities located on WSRs, identified in Figure 1-1.

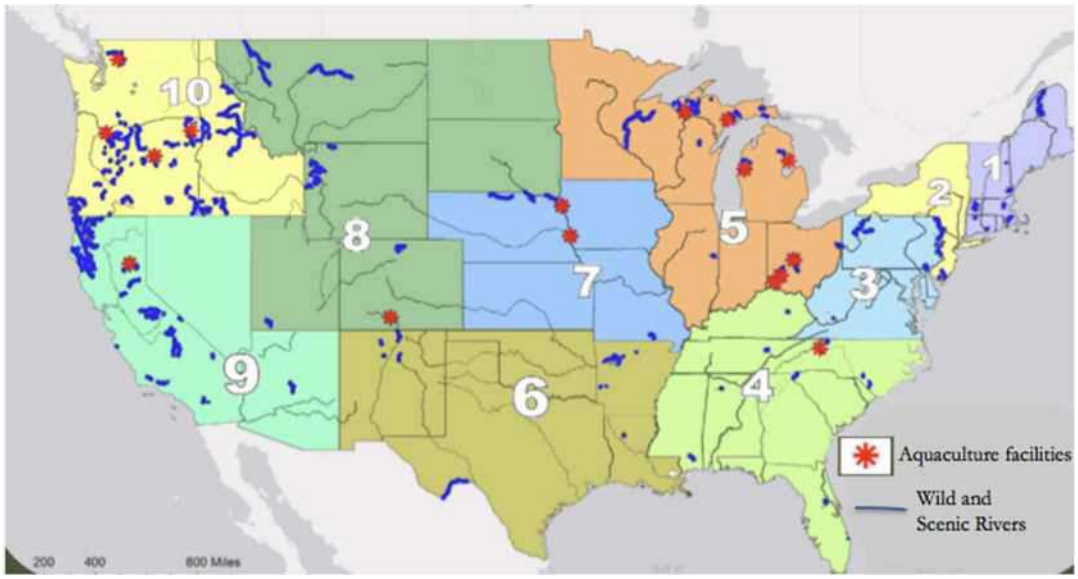


Figure 1-1. United States Wild and Scenic Rivers and Freshwater Aquaculture Farms by state, outlined by numbers representing the EPA administrating regions.

To address the environmental risks from aquaculture to WSRs, Congressman Daniel Kildee (D-MI 5th District) introduced H.R. 962, the Preserve Fishing on Wild and Scenic Rivers Act, in February 2017.[8] The bill proposes strict regulation standards for aquaculture operations by prohibiting any level of pollution on any portion of a WSR.[7]

Below details a comprehensive program for the first 12 months following legislative enactment. This report summarizes the proposed legislation followed by the environmental problems the bill attempts to address. There will be an overview of the pollutants with dedication to nutrient pollution and a case study demonstrating the effects of poor aquaculture maintenance. Research methodology is covered, detailing literature review and interviews with stakeholders, and how it gave rise to different program designs. This is followed by an analysis of the current regulatory structure of Wild and Scenic Rivers and an overview of our proposed program design. Later sections are dedicated to performance management, organizational and staffing plans, and an overview of the budget. Finally, a calendar for the first 12 months of the bill's enactment into law is discussed. Finally, the appendix has been added to acronyms and definitions of terms used throughout this report.

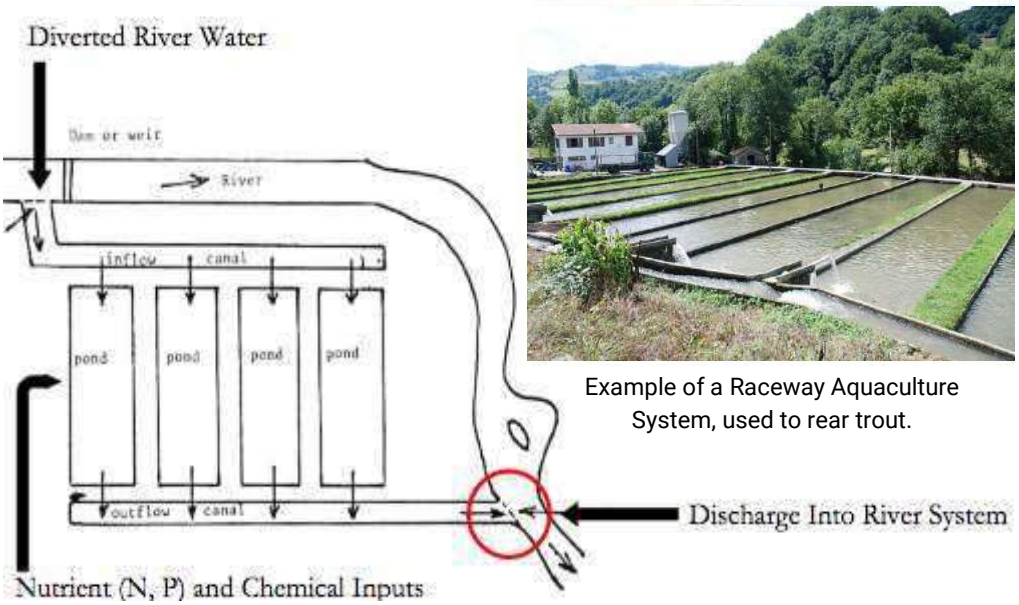
II. Introduction

In 1968 Congress enacted the Wild and Scenic Rivers Act, establishing the national system of Wild and Scenic Rivers (WSRs) to preserve certain rivers with designated Outstandingly Remarkable Values (ORVs) "in free-flowing condition for the enjoyment of present and future generations."[9] ORVs refer to a number of characteristics of a river portion, including the geography and topography of the area, unique ecosystems and native species that inhabit the area, cultural aspects to native tribes, and the remoteness of the location. These WSRs promote local economies by attracting tourists and creating jobs, since the rivers can be used for recreational purposes such as seasonal fly fishing.

The Wild and Scenic Rivers Act served to safeguard the special characteristics of these rivers while simultaneously recognizing their potential for appropriate use and development. Dams constructed on rivers where segments of it are recognized as wild or scenic must have a policy implemented that protects the free-flowing condition and water quality of the river. It both encouraged river management that crossed political boundaries and promoted public participation in developing river protection goals.[3] "Wild" rivers and "Scenic" rivers are defined as being free of impoundments or any other man-made modifications, and differ only in their accessibility. Scenic rivers can be reached via roads whereas wild rivers are accessible via trails. 12,734 miles of 208 rivers in 40 states and Puerto Rico currently comprise the National Wild and Scenic Rivers System.[9]

While these rivers provide numerous ecosystem services like fly fishing, tourism, and recreational activities like scenic walks, hiking, and swimming to the people nearby,

oftentimes they are used to run a business. According to the National Oceanic and Atmospheric Administration, aquaculture is the rearing and cultivation of aquatic animals and plants for the purpose of consumption or maintaining wild populations.[10] The primary methods to raise fish in aquaculture facilities are earthen ponds, tanks and cages, reticulating systems, and raceway systems.[11] On WSRs, trout are reared using a raceway system, illustrated in Figure 2-1 below. In such a system, river water is diverted to flow through the raceway system, then is discharged at a point downstream. This discharge contains pollutants and contaminants that can disrupt the local ecosystem, causing irreparable harm.



Example of a Raceway Aquaculture System, used to rear trout.

Figure 2-1. A raceway system design for aquaculture facilities.

The purpose of this report is to provide background on H.R. 962 legislation and outline the environmental risks posed by aquaculture facilities to WSRs. Enclosed is a proposed program design for the first year of the bill's implementation upon its passage into law. Methodology describing the process by which we planned this design, including background information is included, along with staffing plans, performance standards, implementation, budget considerations, and a calendar outlining the first 12 months.

III. Legislative Summary

H.R. 962 stems from a local issue. The owner of Harrietta Hills Trout Farm in Harrietta, Michigan, on the Au Sable WSR wanted to double his annual trout production to 200,000 pounds. However, this proposal was met with backlash from the community. The fear was that this expansion would increase the waste byproducts from the trout into the Au Sable, destroy the local ecosystem by killing native fish species in the area, and ruin the

recreational fishing industry downstream of the aquaculture facility. As a result, the congressional representative from the area, Dan Kildee of Michigan's 5th District, proposed H.R. 962, Preserve Fishing on Wild and Scenic Rivers Act. Previous laws like the Clean Water Act, the Safe Drinking Water Act, and the Federal Water Pollution Control Act have limited the pressures of commercial interests from damming to invasive species, building upon the precautionary principle, where the introduction of a new product or process whose effects are disputed or unknown should be avoided.[12,13]

H.R. 962 proposes to prohibit the operation of aquaculture facilities from discharging any pollutants into WSRs.[8] H.R. 962 establishes three key mandates to limit pollution:

1) Aquaculture facilities, excluding government hatcheries, situated on a WSR cannot operate if they release pollutants.
2) A certification process ultimately managed by the Secretary of the Interior must be devised in order to certify mandate number 1.
3) Enforcement will begin three years following enactment.[23]

IV. Environmental Problems

A. Overview of Pollutants

The overarching goal of H.R. 962 is to prevent pollution of WSRs. Pollution can be understood as "the presence of a substance which has harmful effects."[14] A substance introduced to a WSR is not considered a pollutant until it has been shown to be harmful to the ecosystem or humans. This imprecise definition leaves room for interpretation and can present dilemmas. For example, dissolved nutrients are naturally occurring in all aquatic environments, but can have adverse effects on the ecosystem if concentrations are too high for the system to absorb. Using the Au Sable River as a case study, the water quality has normal fluctuations in different nutrient concentrations and levels for dissolved oxygen, nitrates, phosphates, and pH, listed in Table 4-1. This section covers the environmental problems associated with the operation of aquaculture facilities, the transportation of pollutants in the environmental system, and the potential effects of various pollutants on natural ecosystems and human health.

Table 4-1. Au Sable River nutrient concentrations and quality.[15,16]

Water Quality Nutrient/Standard	Concentration
Dissolved Oxygen	9.11 mg/L - 16.9 mg/L
Nitrate	0.4 mg/L - 1.5 mg/L
Phosphate	0.009 mg/L - 0.049 mg/L
pH	7.72 - 9.26

Aquaculture facilities release pollutants that pose risks to native fish populations, their surrounding environment, and to human health. While good management practices have the potential to minimize the use of feed, fertilizers, and chemicals, a way to completely remove pollutants from effluent discharge has not yet been determined.

In the natural environment, rivers are not closed systems and pollutants travel in various ways, not only within the river, but also outside of the system through the water cycle (see Figure 4-1). The tributaries and watersheds of WSRs expand across the continent, making it impossible to demarcate the area affected by the pollutants released by aquaculture. Therefore, pollutants have the potential to degrade groundwater because surface water infiltrates through the soil to the water table. In addition, polluted rivers can damage the lakes or oceans to which they flow.

Pollutants such as excess nutrients, antibiotics, and pesticides that are released from aquaculture facilities exit the water cycle through soil and sediment deposition or by entering the food chain after being consumed or absorbed by plants and animals. As a result, pollution not only poses a potential risk to animals and humans through dermal contact in WSRs, but through ingestion as well. As predatory fish feed on smaller prey, the concentration of chemical contaminants accumulates in the fish's fat tissues. Bioaccumulation occurs when the rate at which the fish ingest these pollutants is faster than the rate their bodies filter it out.[17] With fishermen catching and eating the trout from the river, bioaccumulation poses a severe health risk to the fishermen. This concern is magnified if the people eating the fish have an allergy to the chemicals and/or antibiotics used in aquaculture farming.

Many substances have the potential to be a pollutant, yet not all are equally relevant in the aquaculture sector. The main pollutants that cause environmental problems in the context of freshwater aquaculture are identified in Table 4-2 below and include excess nutrients, antibiotics, pesticides, alteration of water properties, pathogens, and escaped fish.

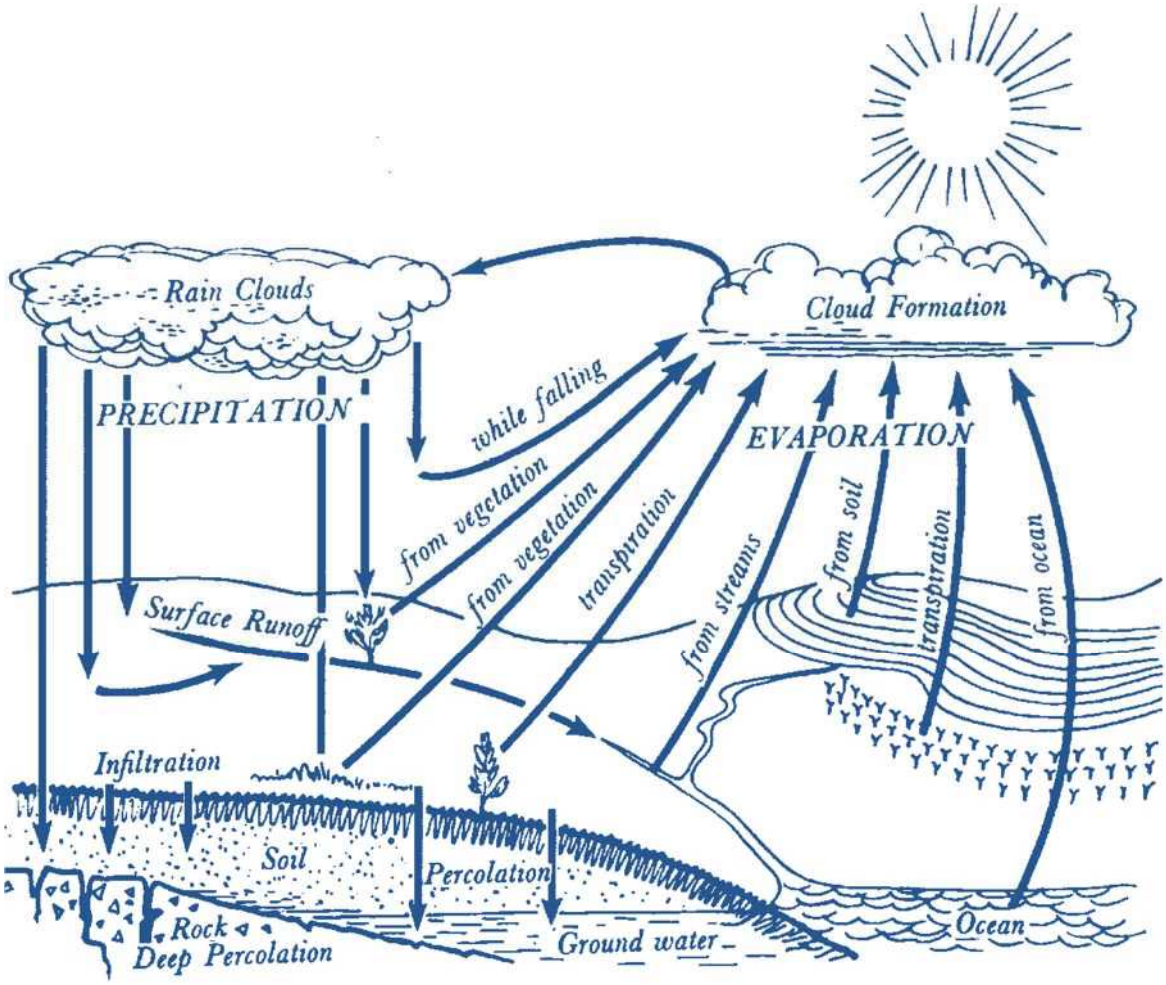


Figure 4-1. The water cycle. Pollutants can travel in various ways not only within the river, but also in and out of the system through the water cycle.

Table 4-2. Pollutants from freshwater aquaculture known to cause environmental harm.

Pollutant	Origin	Effect
Excess nutrients	Uneaten fish food and metabolic wastes	● Elevated levels of nitrogen and phosphorus may cause an increase in phytoplankton growth, resulting in toxic algae blooms and oxygen depletion, causing fish kills.[18,19] ● Water quality recommendations span from 47 ug/L to 76 ug/L for nitrogen and 0.3 mg/L to 2.2 mg/L for phosphorus.[20]
Antibiotics	Antibiotics are used to prevent bacterial infection in farmed fish.	● Antibiotics are non-biodegradable and persistent, remaining in the environment indefinitely, resulting in antibiotic resistant bacteria and pathogens to fish, animals, and humans.[17] ● The concentration of antibiotics bioaccumulate in fish, where their livers cannot filter out the antibiotics faster than the fish ingest them. ● Humans allergic to certain antibiotics are susceptible to illness if they ingest these fish.
Pesticides	Pesticides are used to kill weeds, bacteria, fungi, and to rid waters of competitive fish.	● Pesticides vary in their toxicity to fish and humans. ● Some bioaccumulate in the fat tissues of fish, and certain pesticides are suspected of being linked to the development of cancer in humans.[21,22] ● Glyphosate, an active ingredient in herbicides, is used to control for weeds around raceway systems. ● It is considered unsafe by the EPA at concentrations above 2 mg/L.[23]
Reduction in Dissolved Oxygen	Algal blooms from excess nitrogen and phosphorus, warmer water temperatures	● Algal blooms caused by eutrophication absorb the dissolved oxygen in the water that native fish species need to survive. ● Reduction in dissolved oxygen content leads to hypoxia and fish death. ● A critical level is around 5 mg/L.[28]
Water Temperature	Effluent water is warmer than its surroundings due to the high density of fish in the raceway system	● Increased temperature negatively affects the ability of the water to hold dissolved oxygen. ● Since oxygen is critical to aquatic animals, heated water can be an important pollutant if dissolved oxygen levels drop below around 5.5 mg/L.[24]
pH of water	Changes when new chemicals and are added to a water system	● Upsetting the water balance can disrupt native species, whose bodily functions are regulated to perform at maximum efficiency within a specific pH range.

B. Nutrient Pollution

The most important issue for preserving fishing on WSRs is nutrient pollution. High fish population densities in aquaculture facilities result in the production of excess nutrients, specifically chemical compounds rich in nitrogen and phosphorus . The nutrients of concern are nitrates and phosphates released from uneaten food, feces, and metabolic wastes like urea and ammonia.[25] The transportation and effects of nutrient pollution from aquaculture facilities to the river system is illustrated in Figure 4-2.

Because nitrates and phosphates are often the limiting nutrient in aquatic systems, small changes in concentration can lead to significant effects in aquatic ecosystems. Eutrophication occurs when elevated levels of nitrogen and phosphorus cause a rapid increase in phytoplankton growth, resulting in toxic algae blooms, such as cyanobacteria and brown tides. As the algae in the eutrophicated river die, large amounts of oxygen are needed for bacteria to decompose the dead organic matter, resulting in reduced levels of dissolved oxygen in the river. This problem may arise with nutrient concentrations of only two or three milligrams per liter of water in the river. As dissolved oxygen levels fall below certain thresholds, life cannot be sustained and fish death may occur. For trout, the critical threshold is around five milligrams of dissolved oxygen per liter of water.[25]

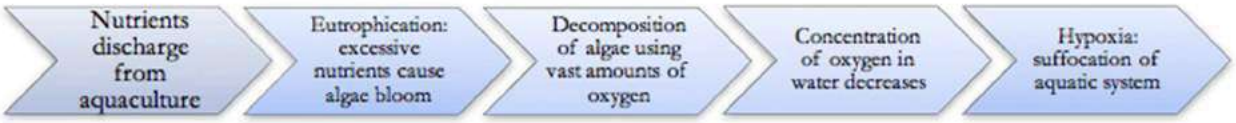


Figure 4-2. The transportation and evolution of nutrient pollution from aquaculture facilities to the local river system.

C. Case Study: Big Spring Creek

Between the 1920s and 1950s, Big Spring Creek in Pennsylvania was a famous brook trout fishing destination. With year round water temperatures ranging from 46°F-51°F, it was one of the most productive wild brook trout rivers in the Eastern half of the United States. Fly fishing enthusiasts would flock to the area from around the world to fish there.

In the mid-1950s, a commercial hatchery opened 0.6 miles from the source of the spring. Within a few years, the trout population downstream was decimated. This facility closed in 1968, but in 1973, the Pennsylvania Fish and Boat Commission built a new fish hatchery directly at the source of Big Spring Creek. Due to negligent practices by the facility, the wild trout population collapsed. The phosphate and nitrate pollution released from the facility caused algal blooms, decreasing the dissolved oxygen levels and making aquatic life uninhabitable. This destroyed the trout population and the subsequent tourism in the area near Big Spring Creek. After years of debate, the Pennsylvania Fish and Boat Commission shut down the hatchery in 2001. Big Spring Creek is slowly regaining its trout population, but it is unknown if this creek will ever fully return to its former state. Big Spring Creek is a prime example of the dangers of aquaculture mismanagement. H.R. 962 aims to prevent these events from occurring in the future.

Hemming, Joe. "A Case Study: Big Spring Creek, PA."[26]

SUMMARY OF THE ENVIRONMENTAL PROBLEMS

- The effect of pollutants released from aquaculture is not necessarily confined to river systems. Chemicals can contaminate groundwater or end up in lakes and oceans, and some compounds bioaccumulate in the tissues of animals and humans.
- Potential pollutants involve excess nutrients, antibiotics, pesticides, alteration of water properties, pathogens, and escaped fish.
- The main environmental concern associated with the rearing of fish on wild and scenic rivers is eutrophication. Caused by excess nutrients from fish feed and waste, eutrophication depletes the water of oxygen with potentially vast ecological consequences.

V. Methodology

A. Initial Research

An initial literature review was conducted to understand how aquaculture facilities are currently regulated on WSRs and to form a pragmatic framework to guide our research. The literature review included both primary sources such as government publications by federal agencies that currently manage WSR, as well as secondary sources such as law reviews and current articles. This framework kept focus within the scope of the mandates set forth by H.R. 962 and was revisited frequently during the research phase to ensure minimal deviation. Required research was divided into sections, such as the history of H.R. 962, the science of the problems and solutions, the stakeholders and socio-economic issues, and the political and legal considerations of implementing H.R. 962. The resulting literature review summarized the existing research as related to the social, economic, political, and managerial factors in the scope of H.R. 962. These collectively informed the program design, providing background on the general policy issue being addressed in order to inform the secondary research task of conducting phone interviews.

B. Interviews

The methodology for this secondary research task was need-based in order to better understand the complexities of existing WSR management programs, specifically in regards to monitoring and enforcing pollution-related statutes. Questions were written and divided based on various elements of the program design, such as budgeting, staffing, and enforcement procedures. Interviews were conducted with personnel at the agencies that currently administer the Wild and Scenic Rivers Act - the US Forest Service (USFS), National Park Service (NPS), Bureau of Land Management (BLM), and the Fish and Wildlife Service (USFWS) These individuals often recommended additional experts who provided further information about WSR governance, interagency collaboration, and how H.R. 962 would look on the ground when implemented.

C. Program Design Considerations

The culmination of the literature review and interviews created three potential program designs of various strengths: lenient, moderate, and strict. Due to the vague language of the bill, program components such as pollution levels and geographical jurisdiction were subject to definition. Through the decision-making process, the determination was made to utilize a moderate interpretation of the language of the bill, which still fulfills the mandates and spirit of the bill. This program will be discussed in depth later in this section.

VI. Current Regulatory Structure

There are four River Administering Agencies (RAA)that manage WSRs, pursuant to the Wild and Scenic Rivers Act of 1968.[27] They are the U.S. Forest Service (USFS), National Park Service (NPS), Bureau of Land Management (BLM), and U.S. Fish and Wildlife Service (USFWS). Each RAA is responsible for the oversight and management of WSRs that flow through the lands they manage. Collectively, these RAAs each have representatives that form the Interagency Wild and Scenic River Coordinating Council, hereinafter the Council. The Council was established in 1992 to coordinate the four RAAs in administration of the Wild and Scenic Rivers Act; the Council is in the ideal position to engage with other federal agencies in administration of H.R 962.[28] The RAAs often defer to either the EPA or state environmental agencies regarding water quality issues. Since WSRs often run through multiple jurisdictions, they can be managed by multiple RAAs.

Aquaculture facilities currently operating on WSRs are permitted under the Clean Water Act, which is administered by the U.S. Environmental Protection Agency (EPA) via a National Pollutant Discharge Elimination System (NPDES) permit.[29] The EPA gives their Clean Water Act regulatory authority to the state water quality authority in 46 states. In the other four states, Indian reservations, and other U.S. territories, the appropriate EPA regional office oversees the Clean Water Act. An individual or business that wishes to discharge pollutants or proposes to discharge pollutants into waters of the United States must apply for an NPDES permit. The individual must apply at least 180 days before the date on which the discharge is to commence or before the expiration date of the existing permit. Each permit expires after five years. To apply for an NPDES permit, the owner must submit a standard form to the EPA.[30] During the process, appropriate pollution discharge levels will be determined. Applicants submit approved EPA or state permit application forms, which require the applicant's name, mailing address, facility contact, facility location, a brief description of the nature of the business, a topographic map showing the location of the existing or proposed intake and discharge structures, water treatment processes, and what effluent data is tested, such as water temperature and pH.[25]

In addition to NPDES permitting, facilities on WSRs undergo a Section 7–Determination. Pursuant to Section 7(a) of the Wild and Scenic Rivers Act of 1968, a project proposal evaluation process must be conducted by the respective RAA. The RAA will review the purpose of and need for the project, the duration of the proposed activities, how the proposed project will affect existing hydrologic or biological process, how it will alter free-flowing condition of the river, and if it is pursuant to the respective river's current management plan, comparing the project analysis to management goals. In order to make the Section 7 Determination, the RAA must explain their rationale and provide an agency signature for the project.[31] RAA's refer to their respective agency's direction for how to conduct a Section 7 Determination. For example, an RAA from BLM will refer to BLM Manual 6400 and an RAA from USFS will refer to Forest Service Manual 2354.

Facilities or projects that undergo a Section 7 Determination include dams, bridges, recreational facilities, and restoration activities. Proposed water resource projects, including aquaculture facilities, on WSRs are evaluated based on evaluative standards set in Section 7 to determine if they would directly have adverse effects on the free-flowing condition, water quality, or ORVs of WSRs, or if they would invade the area or unreasonably diminish the scenic, recreational, or fish and wildlife values of WSRs.[22] Figure 6-1 below shows the current permitting structure for WSRs.

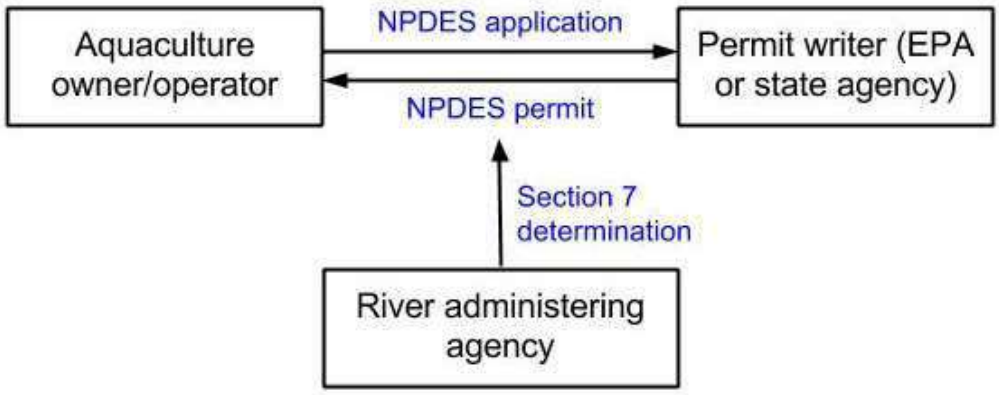


Figure 6-1. The process for an aquaculture facility to obtain an NPDES permit to operate on or near a WSR. NPDES permitting is done by the EPA or state agency, and the local RAA conducts Section 7 Determination.

VII. Program Design

In the following section, a $1,526,241.48 program is proposed that operationalizes the three mandates outlined in the legislative summary and covers the implementation of H.R. 962 for the first twelve months and beyond. This program leverages the existing WSR organizational and management structure in order to streamline program implementation. The main elements of the program design are:

Phase 1: Alignment of Current Organization Structure
Phase 2: Organizing Permitting Process and Baseline Data Collection
Phase 3: Initiate Promulgation

It should be noted that each of the mandates become enforceable three years following the bill's enactment, while program design focuses on first year implementation. Additionally, the bill specifically exempts fish hatcheries operated by federal or state governments.[31]

A. Alignment of the Current Organizational Structure

First, the current organizational structure must be aligned, assuring that all federal agencies (the EPA and four River Administering Agencies) are on the same page for implementation of H.R. 962. Leveraging the existing framework provided by the Council, one new role will be introduced: the Aquaculture Activities Director (AAD). The AAD will serve as the liaison between the Secretary of the Interior and the members of the Council. Furthermore, the AAD will be responsible for working with the heads of each RAA to ensure that their organization understands their obligations under the new legislation. The first task will be an initial meeting between representatives from the Council and EPA Regional Directors.

Next, a white paper document will be created. The AAD, Council, and EPA representatives will outline the implementation of H.R. 962 to ensure that roles and enforcement protocols are aligned across all RAAs and at all governance levels. This white paper will contain guidelines on how to evaluate on the basis of an NPDES environmental assessment, whether a given aquaculture facility will release pollutants into a WSR.

Lastly, upon completion of the white paper, the webinar and training plan phase will begin. Training webinars will teach RAAs about the effects of aquaculture pollution and how to effectively manage incidents of non-compliance. The AAD and EPA representatives will work with the RAAs to develop a comprehensive training plan for stakeholders, consisting mainly of webinars to reduce travel costs.

B. Organizing the Permitting Process and Baseline Data Collection

The main challenge of implementing H.R. 962 is to streamline data collection and overall understanding among the RAAs operating at the local, state, or federal level. The NPDES process already places limits on the amount of nutrients and pollutants that aquaculture facilities can release. The regional EPA office responsible for authoring the permit will work with the local RAA to ensure that the levels written into the permit will not harm WSRs. Because the program grants the Council the right to initiate enforcement action, local RAAs have the power to enforce the effluent limits outlined on an aquaculture facility's NPDES permit through either site visits or observation. This aids to quicker incidence action, as RAAs ultimately know their rivers best.

To collect baseline data information, the onsite representatives of RAAs will install monitoring devices upstream, downstream, and at each aquaculture facility to collect samples throughout 2018. Additionally, during the first year, the regional RAA and EPA representatives will test the samples to obtain baseline information. This step is to ensure that the monitoring devices are accurately collecting data and that they are not being tampered with by aquaculture facility operators. They will also utilize historic data from the EPA.

During installation, the agency conducting the test will determine the ranges of water quality variables that qualify a river as “healthy,” “unhealthy,” or “in danger.” These ranges will be different for each river in the program, as each river has different biological and chemical equilibria, derived by its local physical and geological environment. Using a hypothetical scenario as an example, a river may have a healthy number of trout between 700 and 1,000 per unit of distance. If the trout population fell between 500-700, the river would be considered “in danger.” If the population were to fall below 500, the river would be considered “unhealthy.” For each WSR, the regional RAA representatives will clearly define the upper and lower bound for pollutants and fish populations by December 2019, the end of the second year of the program. Any and all additional qualitative data should be entered into a database as the baseline values described below:

- Healthy - WSR exhibits no visual abnormalities (such as algal blooms from eutrophication or dead fish from pollutants) and water quality tests indicate no unacceptable pollutant levels; local fish populations are determined to be within normal range when compared to baseline data.
- In danger - WSR exhibits either visual abnormality or water quality test results indicate elevated pollutant levels; fish populations may be found at decreased levels compared to baseline data.
- Unhealthy - WSR exhibits either visual abnormality or water quality test results indicated highly elevated pollutant levels; fish populations observed at decreased levels compared to baseline data.

C. Initiate Promulgation

While it is the responsibility of facility owners to know the law, any comprehensive implementation of a new law will include a promulgation campaign to relevant parties, which in this case are primarily aquaculture facility owners and operators. The external promulgation campaign will include multilingual notices mailed and emailed to aquaculture facilities, onsite postings, and public service announcement in industry publications.

SUMMARY OF THE REGULATORY STRUCTURE AND PROGRAM DESIGN

- Several legislative variables including geographic area and pollution threshold were considered before ultimately deriving a moderate program that aims to protect WSRs, but not make it impossible for aquaculture facilities to operate.

- In addition to aligning the current organization structure, necessary activities during Year One include updating permit restrictions, comprehensive training for all officials involved with WSRs, and developing a river health database and response plan

VIII. Performance Management

A performance management system is a process by which an organization uses thoughtfully determined, quantifiable data to assess the progress of a program and to continuously improve operational activities.[32] The following section presents indicators of success for the program and identifies metrics that will be used to evaluate program outcomes.

A. Performance Management System Overview

To streamline the reporting process, a database will be used to store all water quality data that the regional RAAs and EPA entities collect on WSRs from aquaculture facilities. Qualitative and ongoing quantitative upstream, downstream, and point source data, as well as quality data included in the NPDES permit will be housed in this database. The agency that collects the water quality data will be responsible for immediately updating the database. Training for database usage will be included in the Year One training sessions. The database will be managed by the AAD, who should communicate openly with the relevant RAAs if any data appears to be missing, incorrect, or out of date. If a river is deemed "unhealthy" or "in danger" using the criteria above, the AAD will initiate an investigation of the cause of the problem and work with the appropriate stakeholders to rectify the issue. This will optimize decision-making and communication between stakeholders. Process 8-1 outlines inputs, outputs, and outcomes of this system.

Figure 8-1. Inputs, outputs, and outcomes of the performance management system.

B. Management Innovations for the Future

ADVANCED RIVER QUALITY MONITORING

The monitoring and reporting program must be robust enough to accommodate for updated technology in the future. The monitors that will be installed in Year One require manual laboratory testing following water collection; however, future availability of constant water quality monitoring devices could provide minute-by-minute water quality data without additional manual testing. To update the reporting process along with

technological advancements, a future database could be built on a scalable platform with the capacity to include live-stream water quality data. This continuous data stream could also be displayed visually using GIS.

INCREASED PROMINENCE OF AQUACULTURE

In the event of significant increases in the number of aquaculture facilities over time, the monitoring and reporting process will require additional Full Time Equivalents (FTE). For example, if new facilities on WSRs are added, the AAD could recommend the addition of one new staff member at the RAA level to compensate for the added workload of program administration. The AAD should monitor trends in the aquaculture industry and forecast staff needs accordingly.

C. Feedback Mechanism

The performance measures detailed above will be used to ensure H.R. 962 is implemented as intended. In accordance with the current management of WSRs, non-compliance is often handled at the local level. However, a more general and comprehensive evaluation is useful to guide the implementation across RAAs at the local level as well. Therefore, the AAD will take stock of the national implementation of H.R. 962. By evaluating aggregated data on the number of compliant facilities monthly, the AAD will know whether the bill has been enforced successfully. The AAD will communicate this information with the RAAs. In practice, this definition of success would be that all existing aquaculture facilities achieve compliance by January 1, 2021. In the event that facilities continue to discharge pollutants into WSRs, the Council will coordinate efforts to enhance the training of local river managers and aquaculture operators where pollutant discharge continues.

SUMMARY OF PERFORMANCE MANAGEMENT

- A series of Key Performance Indicators will help inform the Department of the Interior and the Council if the Performance Management System is operating as intended.
- Integrated feedback mechanisms will assist with this effort and help Council understand when the need to innovate and adapt exists.

IX. Organizational/Staffing Plan

The implementation of H.R. 962 cannot be successful without the alignment of the River Administrating Agencies and EPA state and local actors to carry out the three phases of the program design. This section covers the breakdown of the phases and who is responsible for carrying out the tasks necessary for the first year of H.R. 962. Table 9-1 outlines each phase of program design broken down into specific tasks, and names of who is responsible for carrying it out. Figure 9-1 provides a visual of the organizational structure for implementation.

Table 9-1. Breakdown of responsibilities for elements of program design for H.R. 962.

Phase of Program Design	Specific Tasks	Responsible Parties
Phase 1: Alignment of Current Organization Structure	Initiate meeting of Interagency Council and Regional EPA Directors to commence H.R. 962 implementation	Aquaculture Activities Director
	Creation of White Papers	Interagency Council for Wild and Scenic Rivers
	Webinar and Training	Coordinate: External Contractor Attend: River Administrators, EPA NPDES Permit Writers, EPA Water Quality Technicians
Phase 2: Organizing Permitting Process and Baseline Data Collection	Installation of water quality monitoring devices in rivers	EPA Water Quality Technicians
	Testing of water samples	EPA Water Quality Technicians
	Determination of baselines levels of pollutants for healthy, at-risk and unhealthy classifications	EPA NPDES Permit Writers and River Administrators
	Create Database	External Contractor
Phase 3: Initiate Promulgation	Create and distribute notices of H.R. 962	River Administrators

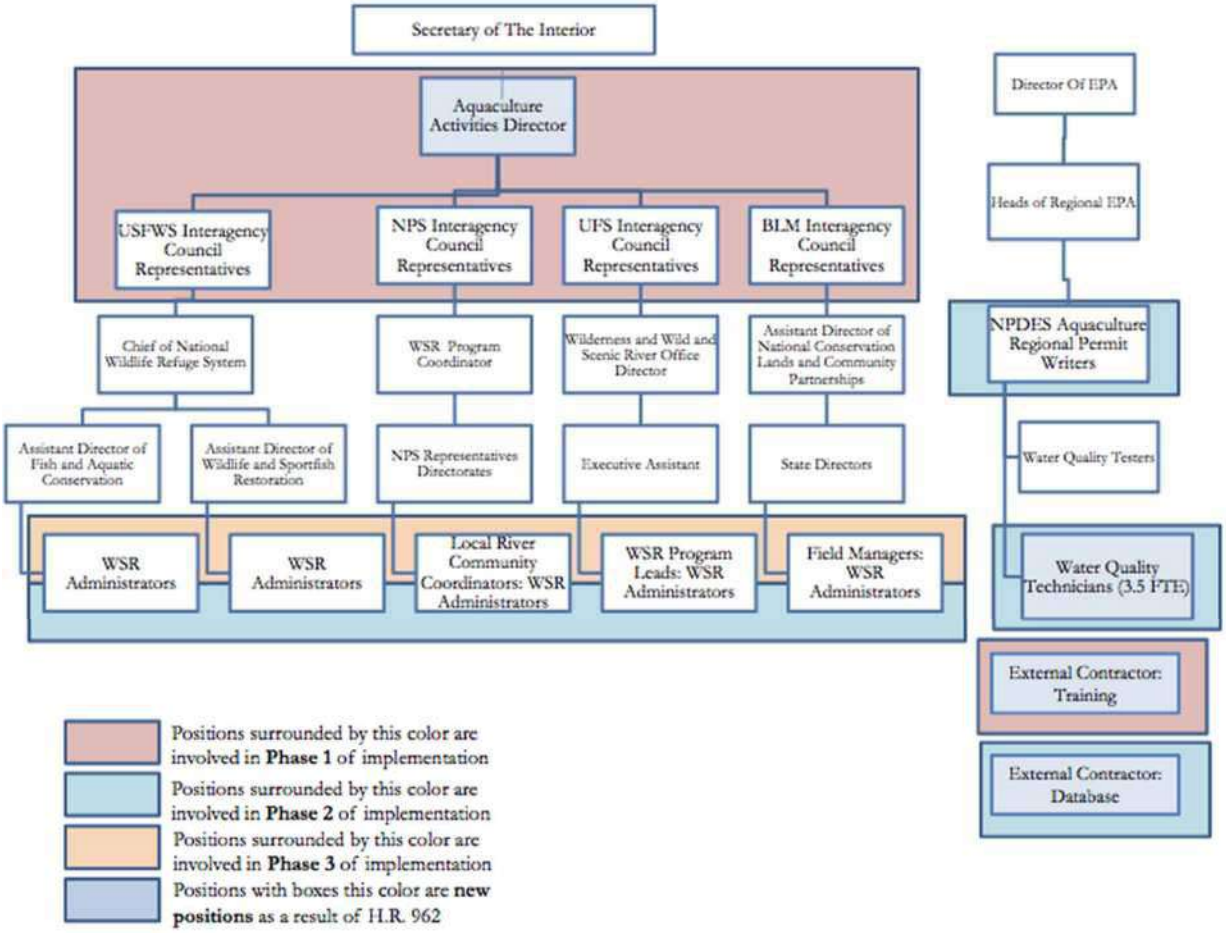


Figure 9-1. Organizational chart of the administrative bodies in H.R. 962, highlighting key areas of alignment as well as where proposed positions fall under current organizational structure.

A. Responsible Parties

Interagency Council for Wild and Scenic Rivers

The Council consists of 12 representatives from Bureau of Land Management, National Parks Service, Fish and Wildlife Service and United States Forest Service. Each representative works directly with WSR management in their position. The council members are responsible for proliferating information throughout their respective agencies, and do so through established chains of command, allowing for a more uniform management of WSR in the face of four extremely different organizational structures. The program design for H.R. 962 has capitalized on the Council for implementation of H.R. 962, specifically in creation of the white paper that outline how implementation will be carried out by each agency.

River Administrators

The River Administrators hold various titles within the RAA in which they are employed, but they serve as the primary administering agent of the Wild and Scenic Rivers Act on a specific river. In the first year of H.R. 962, these positions are responsible for attending the trainings on H.R. 962 enforcement, coordinating with the NPDES permit writers and Water Quality Technicians to collect water quality baseline data and establish baseline levels for each river, as well as initiating promulgation for their respective WSRs.

Aquaculture Activities Director (AAD) (General Schedule Grade 13 (GS-13)/ FTE:1)

The AAD will be seated at the head of the Council under the National Park Service, reporting directly to Secretary of the Interior. The AAD is responsible for overseeing the legislation's implementation during the first year and beyond. The responsibilities of the AAD include budget management, overseeing streamlining, guidance over best management practices, monitoring and evaluation of program success. The AAD will be in charge of arranging the initial meeting of H.R. 962 implementation and responsible for assisting in creation of the white paper.

EPA

EPA regional directors are responsible for being available to provide technical advice to the Interagency Council when they are creating the white paper for H.R. 962 implementation. NPDES permit writers are responsible for attending trainings on H.R. 962 enforcement and then for working with River Administrators to determine baseline levels of pollutants for each river.

Water Quality Technicians – (General Schedule Grade 5 (GS-5)/ FTE:3.5)

Under the EPA, 3.5 FTE will be added as part of a field team that will monitor each existing aquaculture facility on WSRs. The collected information will be used to create the updated permit restrictions. These positions are temporary and are only needed for the first year of the program. These positions will establish baseline levels for water quality at each WSR with an already existing aquaculture facility. There are already staff engaged in water

quality testing at local, state and federal levels, therefore, it is essential to add additional staff to ensure comprehensive data capture. These positions will report to their EPA superiors.

B. Contracting of External Agencies

DATABASE

A key factor for success in monitoring and evaluation of the program is data availability as the result of collection in response to real time monitoring. This can only be achieved with a comprehensive database accessible to the RAAs and EPA. Because of the technical nature of this endeavor, this task will be contracted to a software and data management company that will work closely with the Council to create a system that works for all of the River Administrators and EPA Water Quality Technicians in the first year.

TRAINING

A third party will be contracted to develop and implement the essential training for RAAs with coordination from the Council in the form of webinars that will be available on DOI Learn, which is the Department of the Interior's online training platform. The primary River Administrator for each river, their direct supervisors, and members of the EPA who are responsible for NPDES permitting and water quality testing will be required to participate in the webinar trainings.

SUMMARY OF THE ORGANIZATIONAL/STAFFING PLAN

- 4.5 FTEs will be required in the first year of the implementation of H.R. 962.
- The AAD is responsible for monitoring the implementation of H.R. 962 and reporting to the Secretary of the Interior on the overall success of the program. In addition, on-the-ground and laboratory staff will be added to the EPA to establish baseline water quality data for all Wild and Scenic Rivers.
- Contractors will be hired to complete the training of RAA primary contacts and EPA NPDES permit writers, as well as to build the water quality database.

X. Budget

To put this bill in action, funding must be secured. H.R. 962 is not an appropriations bill, therefore, it must receive funds directly from the EPA and River Administering Agencies. The money provided by the Department of the Interior and will be split up amongst the following sub agencies: the BLM, USFWS, and NPS and USFS. The total budget for H.R. 962 is $1,526,241.48.

The budgeting process starts in January 2018 by engaging the Secretary of the Interior. The aforementioned agencies will be convened to sign a Memorandum of Understanding stating they will contribute funds in the next fiscal year's budget to effectively management of the WSRs in their jurisdiction. This is standard with other interagency collaborations.[33] This document is not legally binding, but it establishes an acknowledgement of a commitment to protect WSRs. Each agency will then determine their portion of the budget to be administered and will be subject to review, approval, and inclusion in the 2019 fiscal year budget. After determining budgets, each agency will write a mandatory budget justification to include their budget proposal. This budget is then proposed to Congress and passed with the items needed to administer H.R. 962, starting October 1, 2018.

A. Scope

The DOI portion includes executive oversight of the Council. In future years, a portion of the budget will be held in provision in the DOI's Office of the Solicitor to prepare for costs of future lawsuits due to the enforcement of H.R. 962. This is not a cost associated with the first 12 months.

For agencies in the Council, the overall budget will be divided based on the number of WSR each RAA manages. Most of the costs are derived from travel, research, and collaboration that requires the full involvement of all the Council members.

In addition, staff at every level must be trained on their new positions and requirements. This will require seminars and online training sessions so everyone understands the goal of H.R. 962 and how it is supposed to be implemented, as discussed in the above sections.

Finally, the EPA portion includes the monitoring program for existing aquaculture facilities on WSRs. The monitoring program ensures that future NPDES permits are more accurate regarding impacts of aquaculture on these protected rivers. This will expedite the permitting process, saving the EPA costs in the long term and be more consistent in its application of the NPDES permits. Measured pollutants will consist of dissolved oxygen, nitrogen compounds, and others associated with local ecosystem health. New equipment must be purchased to account for the changes.

Overall, the percentage breakdowns of the total budget are as follows: creating the white paper (6.5%), training and staff (28.8%), and monitoring the rivers (64.7%).

B. White Paper Budget Breakdown by RAA

Each RAA is responsible for helping to draft the white paper. The heads of each department (GS-13) will contribute 0.25 FTE of their work schedule in its creation, with the RAA ultimately responsible for its finalization. A breakdown of the white paper budget is located below in Table 10-1.

Table 10-1. White paper budget for H.R.962.

	White Paper		
NPS	AAD (GS-13)	1 FTE	$92,663.00
	Labor on White Paper (GS-13)	0.25 FTE	$23,165.75
	Airfare, Travel, Lodging		$5,000.00
FWS	Labor on White Paper (GS-13)	0.25 FTE	$23,165.75
	Airfare, Travel, Lodging		$4,100.00
BLM	Labor on White Paper (GS-13)	0.25 FTE	$23,165.75
	Airfare, Travel, Lodging		$4,100.00
USFS	Labor on White Paper (GS-13)	0.25 FTE	$23,165.75
	Airfare, Travel, Lodging		$5,000.00
		Total	**$203,526.00**

C. Webinar Training

Once the white paper has been created, an online training platform will be created to train all new employees on how to enforce the new legislation. This will be performed by the BLM and consists of creation of the internet training platform, contracting costs to produce the content on the website, and the creation of the river database system. A breakdown of its budget can be seen in Table 10-2.

Table 10-2. Webinar creation and training budget breakdown.

	Training	
BLM	Internal Training Web Platform – e-learning module	$100,000.00
	Contractor costs to produce content for platform	$50,000.00
	Contractor costs to develop database	$750,000.00
	Total	**$900,000.00**

D. River Monitoring Collection and Testing

The EPA is responsible for collecting water samples from WSRs and testing them in their laboratories. Funding will only be required for Regions 4, 5, 7, 8, 9, and 10 due to the location

of aquaculture facilities on WSRs. Budgeting has been accounted for employees and contractors, travel funds, and laboratory equipment and materials. A breakdown is shown in Table 10-3.

Table 10-3. EPA river monitoring and collecting budget.

	River Monitoring Collection and Testing		
EPA	Regions 4 and 5	Employees and Contractors	143,589.25
		Airfare, Travel, Lodging	20,880.00
		Laboratory Equipment and Materials	46,888.49
	Regions 7, 8, 9, 10	Employees and Contractors	143,589.25
		Airfare, Travel, Lodging	20,880.00
		Laboratory Equipment and Materials	46,888.49
		Total	**422,715.48**

SUMMARY OF THE BUDGET

- The budget for the first 12 months concentrates on setting up the program for success.
- Budget costs stem from the creation of new positions, the purchase of monitoring equipment, and staff trainings.
- Some of these costs, such as new monitoring and lab equipment, will not need to be purchased in future years outside of eventual replacement parts.
- Other purchases will be necessary in the future, such as potential legal fees, but are not necessary for the first year of the bills enrollment.
- A budget breakdown of the tasks for H.R. 962 can be seen in the Appendix Figure A-1.

XI. Calendar

A comprehensive first year calendar for H.R. 962 was designed based on the program design, organizational and staffing plan, and budget. The master calendar is provided as a Gantt chart in the appendix of this paper (Figure A-2). The calendar delineates the main tasks and subtasks involved in carrying out the program and highlights the critical path upon which implementation of H.R. 962 depends. It identifies the agencies involved with each task and how much time will be required to complete each task. If a task on the critical path becomes delayed, the entire program will be delayed. To avoid this, days were integrated into the schedule, which can act as a buffer in case of unexpected delays.

The critical path of the first year of implementation is divided into six phases:

1) Memorandum of Understanding to budget Year One
2) White Paper creation and distribution
3) Training RAAs of new responsibilities
4) Monitoring WSR that have aquaculture facilities on them by the EPA
5) Database creation to store water quality data
6) Budget Year Two before the start of the next fiscal year.

During Year One, the agencies will write a white paper to establish the program design. This white paper will be informed heavily by the task force research that was performed in Year Zero. The authorship of the white paper will mainly be completed by members of the Council with some input from the EPA. After the white paper is written, there will be a phase of promulgation in which a notice of the white paper will be released on www.rivers.gov, in aquaculture trade publications, and circulated to all aquaculture facilities affected by this bill. During Year One RAAs will be trained via webinar for their new responsibilities regarding H.R. 962 implementation. Year One will also consist of heavy monitoring and testing of WSRs that have aquaculture facilities on them. The results of these tests will be used to establish a baseline level of pollutants and other physical and chemical characteristics. There will be three phases of river monitoring performed by the EPA. After testing is complete, the EPA Water Quality Technicians will input water quality data into the database, so all agencies involved in the implementation of H.R. 962 can easily access water quality data. The first tasks of Year One are outlines in figure 11-1. A more detailed Gantt chart is located in the appendix under Figure A-2.

Year Two of the program will focus on communicating with aquaculture facilities currently operating on WSRs in order to inform them of the new regulations and requirements of H.R. 962. Year Three will focus on creating a Penalty Program Design for facilities not complying with H.R. 962.

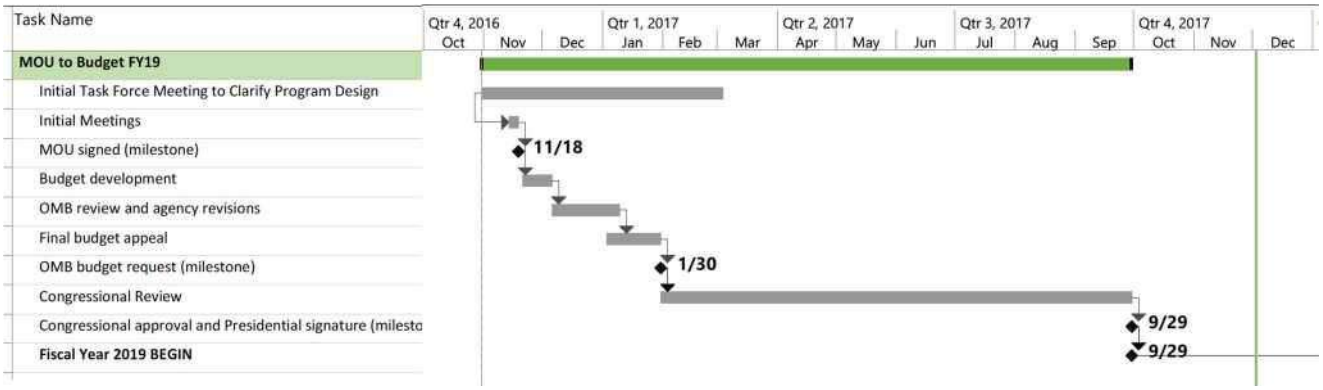


Figure 11-1. Calendar outlining the initial tasks of Phase 1 of the program, beginning with an initial meeting to commence H.R. 962 implementation and tasks to budget Year One.

XII. Conclusion

H.R. 962: Preserve Fishing on Wild and Scenic Rivers Act, was introduced in order to address the issue of pollution from aquaculture facilities on WSRs. Prior to H.R. 962, the four RAAs had no regulatory authority in the event of point source water pollution on a WSR. H.R. 962 grants the Secretary of the Interior regulatory and enforcement capabilities in the event of pollution of a WSR by an aquaculture facility, which he or she can then grant to local RAAs.

H.R. 962 changes the current aquaculture permitting process and practice on WSRs by setting a stricter pollution threshold. Local monitoring within the first year will lay the foundation for an ongoing performance management system and to ensure consistent and accurate baseline measurements. In additional to strengthening existing WSR procedures and management structures, the program for H.R. 962 designates a new AAD who will serve as the manager for this program and be tasked with regularly monitoring the programs new database, data collection, monitoring, and reporting process.

H.R. 962 and its implementation program described in this report aim to preserve the pristine natural ecosystems and ORVs of WSRs by preventing pollution from aquaculture facilities. Aquaculture facilities operating on WSRs will be certified by the Secretary of the Interior and overseen by the AAD and RAAs. This will maintain native wild fish populations, allowing recreational fishing to prosper while also meeting an increasing demand for fish from a growing population.

XIII. Glossary of Terms

A. *Acronyms*

AAD = Aquaculture Activities Director
BLM = Bureau of Land Management
DOI = U.S. Department of the Interior
EPA = U.S. Environmental Protection Agency
FTE = Full Time Equivalents
H.R. 962 = House Resolution 962: Preserve Fishing on Wild and Scenic Rivers Act
NPS = National Park Service
ORV = Outstandingly Remarkable Values
RAA = River Administering Agency
USDA = U.S. Department of Agriculture
USFS = U.S. Forest Service
USFWS = U.S. Fish and Wildlife Service
WSR = Wild and Scenic River

B. *Definitions*

1. Outstandingly Remarkable Values are those values that are river-related, owe their existence or location to the river, and are rare, unique, or exemplary in character: Scenery, Recreation, Geology, Fish, Wildlife, Prehistory, History, Cultural. River segments with "scenic" or "recreational" classifications do not necessarily have identified ORVs of scenery or recreation. River classifications and identification of ORVs are usually determined by a federal agency through a pre-designation study. The classification of each segment is often included in the amendatory act with a detailed description of the ORVs developed in each individual Wild and Scenic River's Comprehensive River Management Plan, prepared by its river-administering agency.[34]
2. An aquaculture facility is a facility used to breed fish and/or raise fish through natural processes in a controlled environment. This does not include a Federally or State operated fish hatchery.
3. A pollutant is defined by Section 502(6) of 33 U.S.C 1362(6) as "...dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water…"
4. A river is defined by Section 16(a) of 16 U.S.C. 1286(a) as a "...flowing body of water or estuary or a section, portion, or tributary thereof, including rivers, streams, creeks, runs, kills, rills, and small lakes."
5. Wild and Scenic Rivers are defined by 16 U.S.C. 1271, the Wild and Scenic Rivers Act of 1968. WSRA requires designated rivers be classified as wild, scenic or

recreational, depending on the level of development and access present along the river at the time of designation:

a. Wild River Areas—Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. Wild river segments are the most natural appearing and the least accessible. Little or no developments, such as roads or campgrounds, are present.
b. Scenic River Areas—Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads. Scenic river segments have shorelines that are largely undeveloped with few access points. River-related scenery is considered views of the river and its immediate environs and/or scenes from the river of distant landscapes where the river factors into the foreground view.
c. Recreational River Areas—Those rivers or sections of rivers readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion.[31]

XIV. Appendix

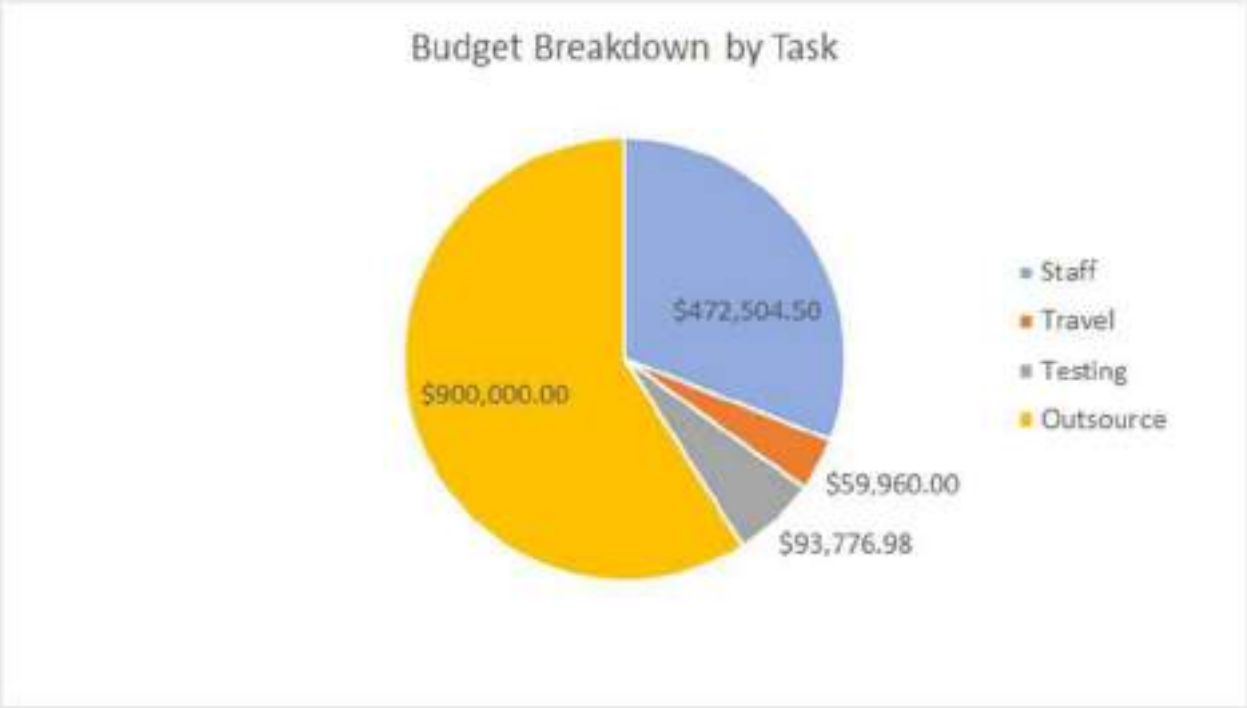


Figure A-1. A breakdown of the overall budget by task.

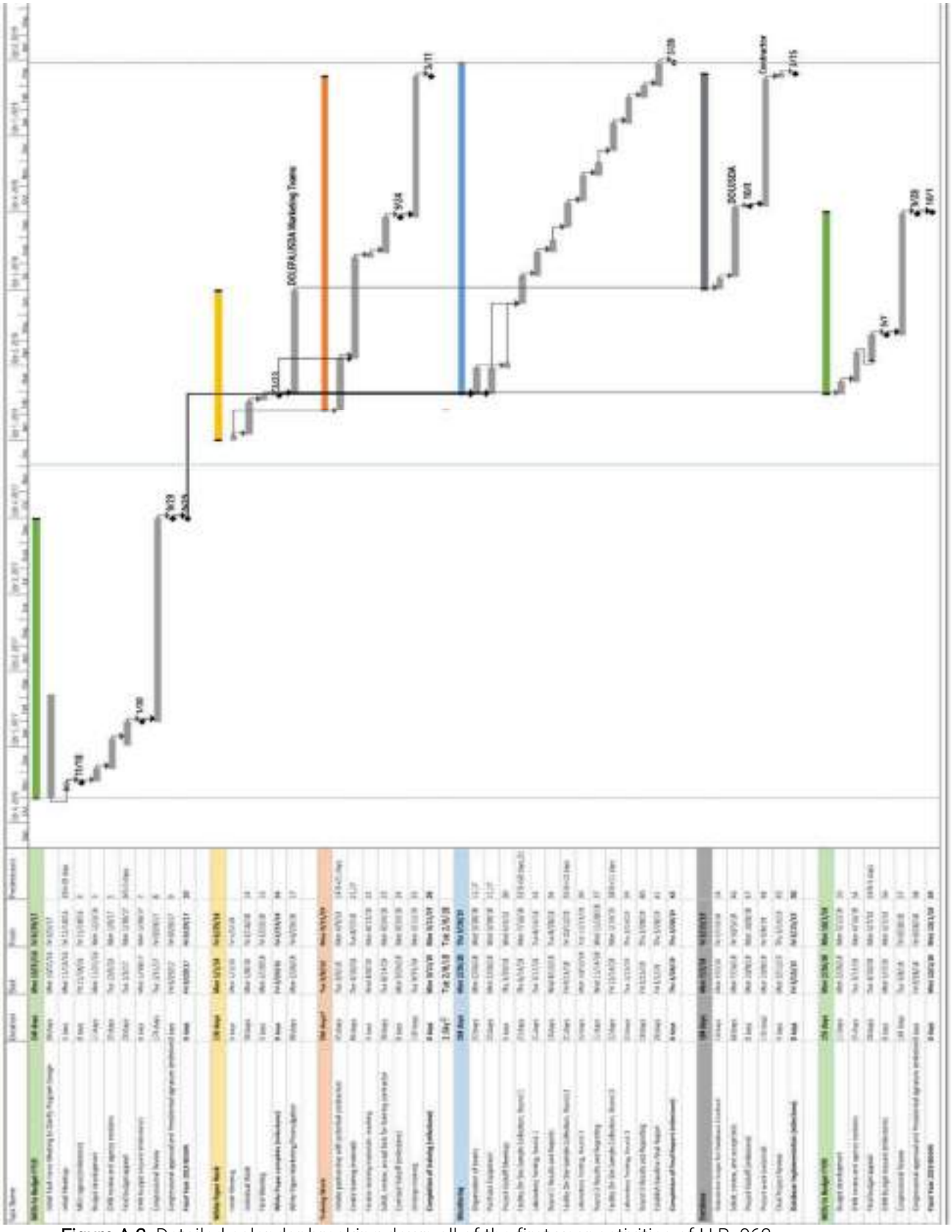


Figure A-2. Detailed calendar breaking down all of the first-year activities of H.R. 962

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