



Apple Grove SFH



Ridge SFH



Spring Run SFH



Bowden SFH



Palestine SFH



Edray SFH



Reeds Creek SFH



Petersburg SFH



Tate Lohr SFH

EXPRESSION OF INTEREST



**PROFESSIONAL
ENGINEERING
SERVICES**
for
**WV DNR
Fish Hatchery
Rehabilitation**

DNR213227

JUNE 28, 2012

07/01/13 09:56:23 AM
West Virginia Purchasing Division



June 28, 2013

Department of Administration, Purchasing Division
2019 Washington Street East
P.O. Box 50130
Charleston, WV 23503-0130

RE: WVDNR Fish Hatchery Rehabilitation
DNR213227

SUBJECT: Expression of Interest

Dear Selection Committee:

Recreational fishing is a growing and exciting sport and one that has come to depend on the successful stocking efforts of the West Virginia Department of Natural Resources (WVDNR). To help successfully protect and conserve the State's natural resources, WVDNR has operated fish hatcheries since the early 1930s. Over the years, the WVDNR system has grown to include two warmwater and seven coldwater facilities and those facilities are now in need of various types of repairs, upgrades, and improvements so that the production goals will continue to met.

The HDR project team has a solid understanding of fish hatchery operation and aquaculture bioengineering. We have completed a wide variety of rehabilitation and improvements projects at fish hatcheries across the United States over the last 30 years. We fully understand the specific needs at the hatchery facilities in this project (Apple Grove, Bowden, Palestine, Edray, Petersburg, Reeds Creek, Ridge, Spring Run, and Tate Lohr), having completed the **West Virginia Statewide Fish Hatchery Study** in 2009, as well as the **Palestine Pump and Intake Replacement Design** in 2011, **Assessment of Water Supply at Apple Grove SFH** in 2010, and the **Spring Run State Fish Hatchery Improvements Project Preliminary Engineering Report** in 2005.

The HDR Team benefits WVDNR with our aquaculture and engineering capabilities and experience, specifically:

- We bring to this project hatchery planning and design expertise with specialized civil, structural, environmental, architectural, mechanical, and electrical aquaculture systems experience.
- We bring an established relationship with WVDNR.

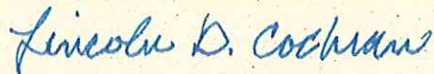
- We bring the experience necessary for successful construction contract administration, permitting, and bidding package preparation in accordance with WVDNR requirements and guidelines.

HDR acknowledges there were no Addenda issued for this Expression of Interest.

With HDR offices in Weirton, WV, as well as our Fisheries Design Center staff, we are well situated to provide a full range of in-house technical expertise to fully meet the challenges and requirements of each of the tasks included in the solicitation. Our team includes Chapman Technical Associates of St. Albans, WV, who will provide surveying as needed. Additional services such as geotechnical will be provided by other local firms.

We look forward to the opportunity of providing our professional services for this important project.

Sincerely,



Lincoln D. Cochran, PE
Vice President
HDR Engineering, Inc.

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HDR Fisheries Design Center fisheries engineers and biologists understand the requirements for facilities with a wide range of missions from sport fish production to protection and/or production of threatened and endangered species.



Founded in 1917, HDR is an architecture, engineering, planning and consulting (A/E/C) firm that helps clients manage complex projects and make sound decisions. We are currently ranked No. 11 among *Engineering News-Record's* Top 500 Design Firms.

As an integrated firm with more than 8,000 employees, HDR provides a total spectrum of services for our clients from more than 185 locations worldwide. Our staff of professionals represents hundreds of disciplines and partner on blended teams nationwide to provide solutions beyond the scope of traditional A/E/C firms. HDR provides solutions that help clients manage complex projects in the following areas:

- Civic
- Natural Resource Management
- Community Planning & Urban Design
- Power & Energy
- Construction Services
- Program Management
- Design-Build
- Project Development
- Economics and Finance
- Science & Technology
- Environmental Security
- Healthcare
- Sustainable Design
- Interior Design
- Transportation
- Management and Planning
- Services
- Water/Wastewater

HDR's operating philosophy is to be an expertise-driven national firm that delivers tailored solutions through a strong local presence. Our ability to draw upon company-wide resources and expertise is a great strength in meeting and exceeding your expectations.

HDR Fisheries Design Center is North America's premiere fisheries design and environmental resource consulting team. The HDR Fisheries Design Center is focused on all aspects of fish culture facilities and aquatic structures, including feasibility and technical studies, planning, design, environmental compliance and permitting, construction observation and operation of fish production facilities.

We are a national leader in providing services based on our understanding of the complex process that merges the biological sciences of fish culture with the technical science of engineering. HDR Fisheries Design Center experience ranges from unique and challenging recovery efforts for threatened and endangered aquatic species to the management of game fish. Throughout our years of experience, our collaborative approach to fisheries projects has ensured the utmost understanding and implementation of agency procedures and guidelines.

We have worked directly with the **West Virginia Department of Natural Resources**. We have also worked side by side with nearly every of the 50 states fisheries agencies, as well as many federal and local agencies, including NOAA Fisheries, US Fish and Wildlife Service, and Bureau of Reclamation. These collaborations have fostered the development of working relationships that continue to grow as time and technology advance.

QUALIFICATIONS AND EXPERIENCE

COMMUNICATION

HDR has a well established relationship with the West Virginia Department of Natural Resources, having completed the **Palestine Pump and Intake Replacement Design** in 2011, **Assessment of Water Supply at Apple Grove SFH** in 2010, the **West Virginia Statewide Fish Hatchery Study** in 2009 and the **Spring Run State Fish Hatchery Improvements Project Preliminary Engineering Report** in 2005. This means there are excellent channels of communication already in place between our key fisheries personnel and WVDNR.

HDR will follow all established WVDNR communication protocols to ensure optimal interaction between the entire design team. The Project Manager will communicate with WVDNR on a bi-weekly basis to discuss the status of each task throughout the entire life of the project. Teleconference and web conference tools will be utilized as a method for enhancing coordination and project continuity. Email communication will be used to improve information exchange. A document tracking major project decisions will be developed and maintained throughout the design and construction phases of the project.

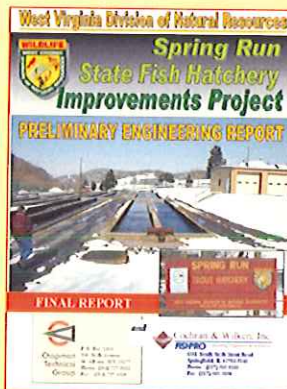
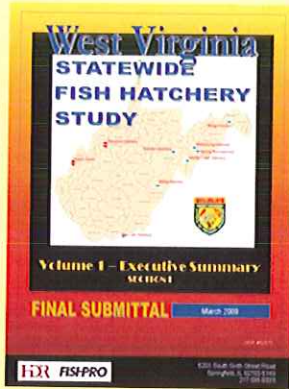
PROJECT BUDGET

HDR offers substantial experience with current fish hatchery construction costing and project scheduling. We have a library of recent costing information for all of the proposed West Virginia Fish Hatchery Rehabilitation improvement elements and have worked with many manufacturers and suppliers of aquaculture and hatchery equipment. Our engineering team knows how to correctly cost and schedule hatchery construction projects, and will bring that demonstrated capability to the West Virginia Fish Hatchery Rehabilitation improvement projects. The following table details four of our recent projects:

Project	Anticipated Completion Date	Actual Completion Date	Estimate	Bid	Low Bid % of Estimate
Wild Rose SFH Phase 1, WI	December 2008	December 2008	\$12,824,665	\$11,608,158	93.98%
Wild Rose SFH Phase 2, WI	December 2009	December 2009	\$20,074,459	\$15,786,439	78.64%
Pfeiffer SFH, KY	July 2013	On schedule July 2013	\$4,429,142	\$3,776,871	85.27%
Reynoldsdale SFH, PA	September 2010	September 2010	\$5,747,275	\$4,430,000	76.95%

Bid but not awarded

▶ Selecting the HDR Team will provide WVDNR with realistic project schedules and appropriate project costing that can only come from the depth of and years of experience in fisheries facilities design and construction.



QUALIFICATIONS AND EXPERIENCE

Examples of facilities and related services provided by HDR include:

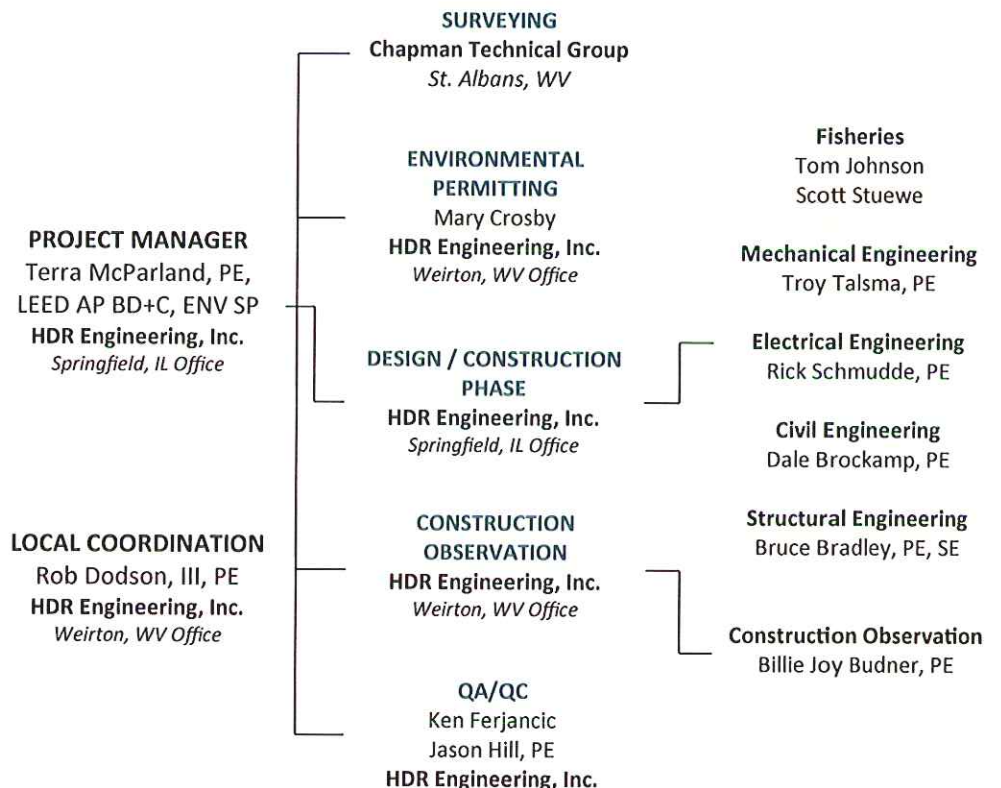
- Aquaculture facilities
- Biosecurity control and water treatment systems
- Captive broodstock facilities
- Effluent assessment, permitting and wastewater treatment systems
- Environmental Assessments (EA)
- Environmental Impact Statements (EIS)
- Hatchery and production systems
- Natural rearing facilities
- Rearing and acclimation ponds
- Recirculation systems
- Site studies, feasibility studies and master plans
- Statewide, basinwide and individual facility studies
- Threatened and endangered species facilities
- Water rights, permitting and budgets

TEAM EXPERIENCE

HDR has focused groups of fisheries disciplines organized into the HDR Fisheries Design Center to better serve the needs of our clients. The Fisheries Design Center provides a centralized and integrated team for fish facilities, and fish passage, barriers and screening design services. The strategic objective of the Fisheries Design Center is to ensure fisheries expertise is utilized as a positive attribute on design projects involving specialized fisheries components. From identifying technical staff resources to providing quality reviews of design features, utilizing the Fisheries Design Center streamlines fisheries deliverables. The development of fisheries specific best management practices are a key feature of the Fisheries Design Center that enables HDR to dedicate the best and the right resources to all fisheries design work.

HDR's experienced Fisheries Design Center staff of fisheries scientists, engineers and architects can provide integrated, single-source, comprehensive services to meet a wide variety of modern facility planning and design challenges. HDR's state-of-the-art fish facility design services integrate the physical, chemical and biological life-support requirements of target aquatic animals with client facility goals, performance expectations and budgets. Facility project design experience includes freshwater and marine fish, crustaceans, amphibians, reptiles and freshwater mussels.

The majority of the proposed team has already visited and worked on the Palestine, Apple Grove, Statewide Study and Spring Run projects. Our Design Team is shown below. Detailed resumes may be found starting on page 17.



QUALIFICATIONS AND EXPERIENCE

PERMITTING

HDR scientists and professionals provide client-focused environmental services aimed at helping you satisfy the full array of environmental regulations while minimizing the impact the compliance process can have on your project. At HDR, we understand the importance of preserving and enhancing environmental quality. We also understand our clients' growth and infrastructure demands. Most importantly, our extensive experience has taught us how to manage a project so that environmental responsibility and sustainable growth can work together for win-win outcomes.

HDR provides expert environmental assistance in the following areas:

- Wetlands and permitting
- Environmental review - NEPA
- Environmental restoration
- Geographic Information Systems (GIS)
- Air quality
- Noise and acoustic services
- Public involvement
- Biological services
- Cultural resources
- Discharge Permitting (NPDES)
- Water appropriations
- Stormwater Permitting
- Construction Phase permitting

HDR initiated communication with permitting agencies as part of the Statewide Study. Specific permitting needs will be developed in the early stages of the design of each task to ensure that adequate review times are allocated in the overall project timeline. The design team will compile required information for submittal to permitting authorities for each required permit or amendment.

It is anticipated that WV/NPDES permit amendments will be required for discharges to West Virginia waters from wastewater treatment operations at Bowden, Edray and Petersburg hatcheries. Water appropriations may need to be modified for the sites requiring water supply changes. Construction permits are also expected and will be prepared for submission.

Objective 1 -A/E SERVICES

HDR offers a complete in-house experienced fisheries design team. Our team is available to begin planning and design services as soon as a notice to proceed is received. Local in-state services are available from our HDR Engineering, Inc., Wierton, WV office and specific fisheries biology / engineering from our HDR Fisheries Design Center in Springfield, IL. HDR has teamed with Chapman Technical Group of St. Albans, WV, to provide surveying services, if required. Additional services as needed, such as geotechnical investigations, will also be provided by local in-state firms.

Offering a blend of planning, science and design capabilities, the depth of our resources goes beyond traditional service lines to provide innovation and versatility. We deliver complex projects on schedule, within budget and without compromising our commitment to quality. HDR offers the specialized services found in boutique firms, backed by the strength of a full-service engineering, design and consulting firm. HDR has more than 8,000 professionals in 185 locations worldwide. The result is the ability to offer a different model and approach with a unique blend of capabilities and tools to meet your most critical needs.

With expertise in a broad range of services, HDR is the firm to turn to for quality project delivery. Our service offerings include fisheries design, fisheries assessment, aquatic ecosystem restoration, and marine science.

Objective 2 - TASKS

HDR proposes to implement a systematic planning and design approach to the tasks in the WVDNR Fish Hatchery Rehabilitation Project. Our design team will work closely with the hatchery managers and key WVDNR staff to insure that practical, functional renovations are designed and constructed per agency requirements within the budget set for this project. HDR will utilize all current codes to ensure compliance for each design and construction project.

We are providing the following itemized project approach, work tasks, and details to outline the design services necessary to complete each of the six tasks listed in Exhibit A of the EOI of the WVDNR Fish Hatchery Rehabilitation Project. Our approach to each of the tasks in this project includes five main phases of work described below:



In addition, HDR is able to offer component testing and system start-up services to ensure that the equipment performs as planned.

Project Initiation Phase (Scope/Review)

During the Project Initiation and Start-up Phase, an on-site meeting and field trip will be undertaken to review of all relevant project information, reports, data, surveys, permit requirements, and project program information with project personnel of WVDNR. During the site meetings and field trip, we would expect to fully review and further define:

- The Scope-of-Work and the requirements for site survey, geotechnical testing, permits and other sampling will be refined and initiated.
- Our Technical Approach including specific project goals, issues, and requirements.
- Identify and prepare a list of all Project Personnel including their identified role in the project review, address, phone number, E-mail address, etc. for distribution to all participants.
- Preliminary list of permits anticipated for construction including local, State, and Federal permits and fees to be paid.
- The Project Schedule including estimated WVDNR review periods, response times and response procedures. The schedule would be discussed as it relates to critical stages for the project including all design phases, bidding, bid award, construction, testing and acceptance. HDR will work with the WVDNR staff in formulating a responsible design and construction schedule.
- The Project Budget would be discussed and all appropriate cost parameters and budget items would be reviewed.
- Provide Monthly Progress Report – work accomplished to date and project issues / resolutions.

Schematic Design Phase

In the Schematic Design Phase, data and information gathered during the Project Initiation Phase will be incorporated into the development of initial scaled schematic drawings for both the hatchery site and the proposed project scope elements. The schematic drawings will have sufficient detail to accurately characterize and illustrate each of the major design elements, materials and systems to be included in the final design. Cost estimates will have sufficient detail to assess the overall project cost against the available project budget. During schematic design WVDNR and/regulatory agency review requirements will be reviewed to insure proper project coordination and permit acquisition by the appropriate parties.

Construction Document Phase

The Final Construction Documents including the complete working drawings, specifications, specification “front end documents” and detailed project cost estimate will be prepared. The Construction Documents will reflect all of the changes, modifications, additions or deletions to the drawings and specifications identified during WVDNR’s review of the Submittals and shall conform to all WVDNR’s requirements. Necessary construction document coordination with environmental and other outside agencies and permits can be completed during this phase, following WV State Construction Office procedures.

Bidding and Assistance Phase

Upon completion of all WVDNR construction document revisions, project specifications and construction plans will be printed and issued in accordance with the WV State Construction Manual. We will issue addenda to the plans / specifications (as necessary) to clarify / correct the project documents.

Construction Services Phase

HDR will coordinate with the WVDNR for project construction phase services. During this coordination, required project procedural paperwork will be reviewed and discussed including the proper lines of communication and coordination, payment review procedures, certification and required forms. Procedures for review and approval of shop drawings, Requests for Information (RFI), Operation & Maintenance (O & M) Manuals will also be discussed relative to the consultant contract terms.

A job schedule shall be prepared by the General Contractor on a monthly basis and reviewed by our firm. Our Project Team can conduct regularly scheduled (number to be determined in negotiation phase) observations of the job site and can prepare observation reports as well as participate in monthly coordination meetings. As part of construction services, HDR will prepare a set of "As-Built" Project Plans utilizing all available field condition records maintained by the general contractor and his sub-contractors, our own field observations and the WVDNR project inspection personnel. Verification of the "As Built" being updated during construction will be undertaken at each progress meeting. HDR has experience in maintaining hatchery facility operation during construction and can address this important requirement.

Project Testing and Completion - We propose to provide an operational system test to insure proper operation and performance. Participation by the General Contractor, all sub-contractors and major equipment suppliers is mandatory. Upon completion of the system test, punch list items will be prepared as well as a summary report presenting the finding of the system test. Extended warranties can be secured on all applicable project elements.

Post Construction Services - Our Project Team can provide the WVDNR with a detailed set of O&M Manuals. Typically, O & M manuals outline "user" operational procedures for each of the hatchery systems and use labeled photographs and colored process diagrams to assist the WVDNR in facility operation. Emergency operation procedures are clearly identified in a step-by-step procedure.

▶ **Selecting the HDR Team will provide WVDNR with an experienced team that knows the WV hatchery system and recognizes the best approach to the repairs / renovations outlined in this solicitation.**

The above outlines our general approach to each of the tasks in this project. Below we briefly discuss a more specific approach to each task based on our understanding of the facilities derived from our completion of the *West Virginia Statewide Fish Hatchery Study* in 2009. Key members of our team selected for this project were instrumental in the completion of the *Study* and are thus intimately aware of the needs at each of the hatcheries included in this solicitation, as well as what it will take to implement the repairs / renovations and the expected costs.

Task 1: Pond Liner Repair or Replacement

Location: Apple Grove State Fish Hatchery, Bowden State Fish Hatchery

Work to be performed: The successful firm will design and oversee implementation of a 5-year program for the repair and/or replacement of pond liners for ponds ranging in size from 0.5-2.0 acres located at the Apple Grove and Bowden State Fish Hatcheries. Currently the problems range from large and small tears to separation of seams and the thinning of the material.

The HDR Team is very familiar with the Apple Grove SFH and Bowden SFH and the condition of the pond liners based upon work completed during the preparation of the *West Virginia Statewide Fish Hatchery Study* in 2009. The team completed field photographic documentation of the 34 ponds at the Apple Grove SFH and 12 ponds at Bowden SFH.

In the last several years HDR hatchery projects have included the development of more than 90 surface acres of aquaculture ponds ranging in size from 1/10-acre up to 4-acre production ponds and multi-acre water storage and treatment ponds. All of the production ponds had harvest kettles, water intake supply and drainage systems. HDR is intimately familiar with the requirements associated with the use of pond liners for fish hatchery/aquaculture applications, including detailed liner assessment studies, design engineering and construction phase services involving pond liners. Hatchery projects with pond liners include:

John D. Parker SFH, TX – 65 acres	North Mississippi SFH – 12 acres
Wild Rose SFH, Wisconsin – 15 acres	Blue Dog Lake SFH, SD – 26 acres
Rathbun SFH, IA – 11 acres	A.E. Wood SFH, TX – 55 acres
Jake Wolf SFH, IL – 10 acres	Lyman SFH, MS – 12 acres

These projects have included specialized design features for hatchery applications including pond underdrains for water control, liner attachments for fish harvest kettles and outlet structures, air venting, pipe boots and substrate preparation for liner installations.

HDR Team experience includes the preparation of detailed liner condition assessment studies that involved detailed field investigations of liner condition and documentation, including repair and replacement recommendations, estimates of probable cost, and liner material recommendations. Examples of hatchery liner assessments with recommendations for repair and/or replacement include:

- Calamus SFH Pond Liner Investigation and Repair/Replacement Project, NE
- Liner Investigation at the Lost Valley Hatchery, MO
- Booker-Fowler Liner Investigation, LA

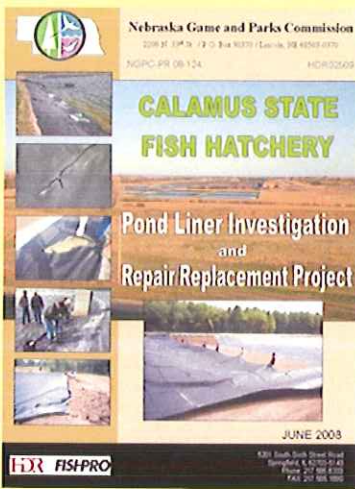
The HDR Team has worked with the Geosynthetic Institute to provide liner evaluation criteria appropriate for fish hatchery liner applications and have developed liner specifications for a variety of materials including High Density Polyethylene (HDPE), Very Low Density Polyethylene (VLDPE), Chlorosulfonated Polyethylene (Hypalon), Reinforced Polyethylene (RPP), and Ethylene Propylene Diene Monomer (EPDM).



Lined Ponds at Apple Grove SFH



Lined Ponds at Bowden SFH





Water is pumped from the Little Kanawha River at Palestine SFH

Task 2: Rehabilitation of the Water Supply System

LOCATION: *Palestine State Fish Hatchery*

WORK TO BE PERFORMED: The successful firm will design and oversee installation a replacement water supply system. Water supply lines will also be evaluated and updated as necessary. Currently water is pumped to the water supply reservoir of this fish hatchery by a single 1,200 gpm pump installed in the 1960's. This pump draws water from the adjacent Little Kanawha River through a gabion rock intake and pumps it to a 3 acre reservoir.

The HDR Team has an excellent understanding of the Palestine SFH water supply system gained from completion of the 2009 *West Virginia Statewide Fish Hatchery Study* and the completion of the *Palestine Pump and Intake Replacement Design* in 2011. This project is pending availability of funding for bidding and start of the construction phase. Additional work to be completed at the Palestine facility includes the evaluation of the hatchery water supply pipelines and water storage reservoir system that are also components of the water supply system.

HDR Team experience includes water supply system evaluations completed for a variety of similar warmwater hatcheries. Examples of investigations followed by improvements where water supply systems were investigated and improvements made to supply and drainage piping, water storage reservoirs and pumping systems include:

Florida Bass Conservation Center, FL
A.E. Wood SFH, TX
Byron SFH, OK

Durant SFH, OK
Watha SFH, NC

These projects included the development of hatchery water supply budgets and establishment of pond water supply and drainage performance criteria appropriate to meet the requirements of each facility.

A similar approach will be used to complete to water supply system assessment and improvements for the Palestine SFH project. This level of experience will insure that the Palestine SFH water supply system improvement needs will be effectively addressed and that a comprehensive, integrated solution will be provided to meet the long term needs. Any new water supply work will be tied into the design work already completed for the pump and intake replacement.

Task 3: Installation of Composite Samplers and Flow Measurement Devices

LOCATION: *Bowden, Edray, Petersburg, Reeds Creek, and Ridge Hatcheries*

WORK TO BE PERFORMED: The successful firm will design and oversee installation of composite wastewater samplers and flow measurement devices at the following hatcheries: Bowden, Edray, Petersburg, Reeds Creek, and Ridge. These devices will assist in complying with National Pollutant Discharge Elimination System (NPDES) permitting requirements.

The HDR Team has working knowledge and understanding of the layout and infrastructure of the Bowden, Edray, Petersburg, Reeds Creek and Ridge Hatcheries gained during the completion of the *West Virginia Statewide Fish Hatchery Study* in



Water flow to be measured at Ridge SFH



Examples of composite sampler and flow measurement equipment

2009. Improvement drawings developed during the study illustrate each facility and the proposed effluent treatment systems and the needed effluent samplers and flow measurement devices that are required to provide NPDES discharge permit compliance. These devices provide the capability to accurately sample hatchery effluents on an automated 24-hour averaging basis which provides an accurate method to measure effluent flow in gallons per minute (GPM) and millions of gallons per day (MGD), parameter concentrations in parts per million (PPM) and mass pounds per month (LBS/MO). Composite samples used for the laboratory analysis of waste parameters measured in the NPDES permit monthly discharge reports (DMR's) are an accurate reflection of the effluent produced in a facility when compared to grab samples.

The HDR Team has worked in the planning, design, construction of many fish hatchery effluent treatment systems including completion of discharge permitting with regulatory agencies, effluent sampling programs and required sampling devices.

Recent fish hatchery projects in Maine, Michigan, Vermont, Virginia and Wisconsin involved extensive NPDES permitting and coordination of permit sampling programs with the regulatory agencies including the installation of automatic composite wastewater samplers and effluent flow measurement devices.

HDR's biologists and engineers have developed computer models to characterize and predict fish metabolic feed generated hatchery by-products in mass and concentration for conventional pollutants. For example, models are used to estimate by-product production of wastes by the fish such as Total Suspended Solids, Biological Oxygen Demand, and nutrient parameters such as forms of nitrogen (total ammonia nitrogen, nitrite and nitrate) and phosphorus (ortho phosphorus and total phosphorus). Model results have been used successfully to negotiate hatchery permits with regulatory agencies.

Experience in West Virginia includes completion of a detailed effluent sampling program and permitting coordination for the Spring Run SFH which subsequently led to the installation of wastewater treatment improvements at the facility. The HDR Team's applied fish hatchery effluent treatment design experience includes rearing unit solids capture systems and transmission piping, and treatment technologies such as microscreens, clarifiers, sludge storage and pumping systems, composite samplers and variety of discharge flow measurement devices. The HDR Team has worked closely with manufacturers such as ISCO and SIGMA in both the hatchery application of portable and permanent composite samplers and integrated effluent flow measurement systems to provide accurate and reliable sampling including time and flow weighed composite sampling to meet discharge permit requirements. If required, HDR's electrical engineers can provide instrumentation, alarm and remote monitoring of composite samplers and flow measurement devices as this type of SCADA interface has been completed in several HDR designed hatchery systems.

HDR's experience in hatchery effluent sampling and treatment will insure that the goals and objectives of the West Virginia hatchery effluent sampling programs, including the selection and installation of composite samplers and flow measurement devices, is fully achieved.

Task 4: Water Supply Rehabilitation

LOCATION: *Edray, Petersburg, Ridge, Spring Run, and Tate Lohr Hatcheries.*

WORK TO BE PERFORMED: includes but is not limited to the design and oversight of repairs, rehabilitation, and /or replacement of spring boxes and water supply lines in each of the listed hatcheries.

The HDR Team understands the goals and requirements of hatchery water supply rehabilitation needs including a detailed understanding of the existing infrastructure of the water supply systems of the Edray, Petersburg, Ridge, Spring Run and Tate Lohr hatcheries gained during completion of the statewide **Virginia Statewide Fish Hatchery Study** in 2009. Drawings developed during the study illustrate the existing water supply systems of each facility and the required improvements to the spring water supply systems including spring water collection galleries, spring water collection boxes, control structures, transmission piping, cleanouts, air releases and aeration / degassing systems. The HDR Team understands the improvements needed to these critical fish life support water supply systems in order to maintain and optimize the collection, transmission and utilization of limited spring water supply volumes.

HDR hydrogeologists have worked with fish hatchery spring water collection systems and have applied experience in the assessment of spring water yield and the development of improvement recommendations to optimize long-term water collection and reliability. The HDR Team has provided spring water supply system improvements for many similar gravity flow and pumped spring water systems and will be able to apply this experience to the planning and design of improvements proposed for the WVDNR hatcheries. Examples of hatchery projects involving spring water systems and improvements to enhance collection, biosecurity, transmission pipes, aeration / degassing systems include:

- | | |
|--------------------------|------------------------|
| Decorah SFH, IA | Nevin SFH, WI |
| Cleghorn Springs SFH, SD | USFWS Leetown NFH, WI |
| Coursey Springs SFH, VA | Iron River NFH, WI |
| Roaring River SFH, MO | Pendills Creek NFH, MI |

The Iron River NFH project involved detailed assessment of spring water systems by HDR hydrogeologists and the development of specific recommendations to improve the yield, reliability and long-term sustainability. The team has worked with a variety of hatchery spring water systems including many with old pipelines constructed of cast iron, transite, wood, and steel piping and are familiar with low head gravity flow hatchery water systems. They are well experienced in providing functional, cost effective improvements to hatchery water supply systems.

Aeration and degassing of water supplies to meet fish health requirements and to maximize the carrying capacity of the water supply with respect to dissolved oxygen is an important aspect of water supply planning and design. HDR's experience in many similar hatchery projects will insure that the proposed improvements to the WV hatchery water supply systems meet these important goals.



Existing spring box at Spring Run SFH



Water supply line at Petersburg SFH



Water supply line at Petersburg SFH

Task 5: Wastewater Treatment Systems

LOCATION: *Bowden, Edray, and Petersburg Hatcheries*

WORK TO BE PERFORMED: The successful firm will design and oversee the installation of hatchery wastewater treatment systems at Bowden, Edray, and Petersburg hatcheries. Currently none of these hatcheries treat the wastewater from fish production activities.

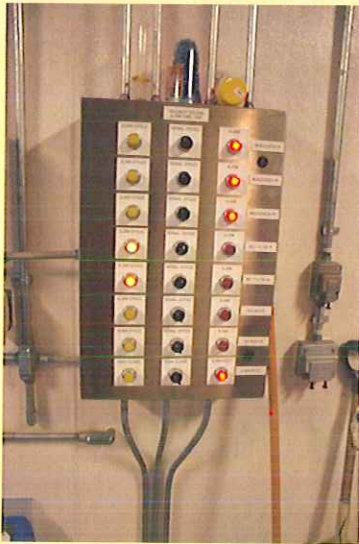
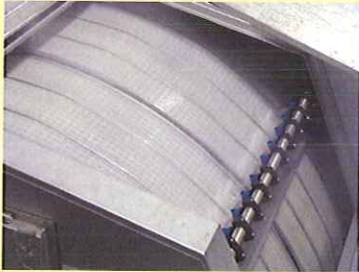
Wastewater treatment systems are needed at the Bowden, Edray and Petersburg hatcheries where there are currently no functional wastewater treatment systems. The HDR Team has a good working understanding of the existing fish rearing units, infrastructure and the layout of these facilities gained during the completion of the *Virginia Statewide Fish Hatchery Study* in 2009.

The HDR Team has worked with the planning, design and construction of many fish hatchery wastewater treatment systems and has provided functional, cost effective design for similar facilities without any type of effluent treatment. Effective hatchery effluent treatment begins with application of best management practices to reduce fecal material and optimize the collection and removal of fish waste from rearing units. Effluent treatment design involves the selection of waste treatment technologies appropriate for fish hatchery effluents which are typically low concentration and high flow systems that have different waste characteristics when compared to typical municipal or industrial effluents. Hatchery effluent treatment needs to be as simple and cost effective as possible to meet discharge permit goals and requirements since the primary purpose of the facility is fish production. Completed projects have provided wastewater systems for hatchery production buildings used for egg incubation and early rearing, circular and raceway production systems, ponds and broodstock holding/ maturation systems.

HDR hatchery effluent treatment experience includes many projects involving the range of relatively simple solids capture and settling systems to high technology, full flow effluent treatment with nutrient removal technologies. Example projects include:

Casco SFH, ME	Wild Rose SFH, WI
Enfield SFH, ME	Jake Wolf SFH, IL
Embden SFH, ME	A.E. Wood SFH, TC
Grand Lake Stream SFH, ME	J.D. Parker SFH, TX
Governor Hill SFH, ME	Coursey Springs SFH, VA
Palermo SFH, ME	Oden SFH, MI
Roxbury SFH, VT	Platte River SFH, MI
Salisbury SFH, VT	Jordon River NFH, MI

In many projects, there was no effluent treatment present and HDR planning and design involved the assessment of appropriate effluent treatment technology to meet requirements and adaptation to the existing infrastructure. Demonstrated experience in the planning, design, construction and permitting of many similar hatchery effluent treatment projects will insure that the goals and objectives of effluent treatment systems proposed for the Bowden, Edray and Petersburg Hatcheries are met with practical solutions for each of these facilities.



Examples of waste treatment system and controls.

Task 6: Bio-filter Repair and Rehabilitation

LOCATION: *Reeds Creek Hatchery*

WORK TO BE PERFORMED: The successful firm will design and oversee the replacement of the 12" gate valves and the valve boxes. While the valves are being replaced, all other system parts will be evaluated and if necessary, reconditioned or replaced.

The HDR Team has as a good understanding of the Reed Creek SFH infrastructure and biofilter including the need to replace the 12-inch diameter gate valves and valve boxes components of the control system of these biofilters. Reeds Creek Hatchery improvements are illustrated in the drawings developed in the 2009 *Virginia Statewide Fish Hatchery Study*. The Reeds Creek SFH biofilter provides important solids capture and ammonia removal by biofiltration using bacterial nitrification for the water recirculation system used at the Reeds Creek SFH. The HDR Team has experience in the assessment of biofilter performance and condition from work on similar biofilters. Biofilter assessments where similar control valves are used as components of the filters have been completed at:

French River Hatchery in Minnesota
Bodine and Mixsawbah SFH Hatcheries in Indiana

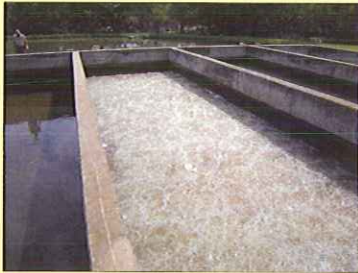
Recommendations for biofilter improvements have included media assessment and replacement, reconditioning and coatings for metal and concrete components, control valves, aeration, and instrumentation and electrical components. HDR has provided planning and design and for biofilters used in the similar hatchery applications at:

Wild Rose SFH, WI
Hackettstown SFH, NJ
Quinebaug Valley SFH, CT
Reynoldsdale SFH, PA

This experience will be useful in the Reeds Creek SFH proposed biofilter improvements. Similar gate valves and valve boxes were recently evaluated and replaced in a project completed at the USFWS Allegheny NFH in PA.

The HDR Team has experience in the selection and replacement of hatchery control valves for a variety of water supply, water treatment and effluent treatment applications. Hatchery process valve applications include gate, plug, butterfly, ball, eccentric and knife and other specialized valves and they have been interfaced to a variety of valve actuators and control boxes. Experience includes selection of proper valve type and performance including requirements such as corrosion proof and non-toxic fish safe valve construction materials. Experience includes the preparation of valve specifications to insure that valves and their controls meet the requirements of the application.

The HDR Team's knowledge of the Reeds Creek SFH, hatchery biofilters and related components will insure that the project goals and objectives are met for this important system that provides processing of culture water reused in the trout rearing program at the facility.



Components of the Reeds Creek Biofiltration & Water Recirculation System



Objective 3 - CONSTRUCTION CONTRACT ADMINISTRATION

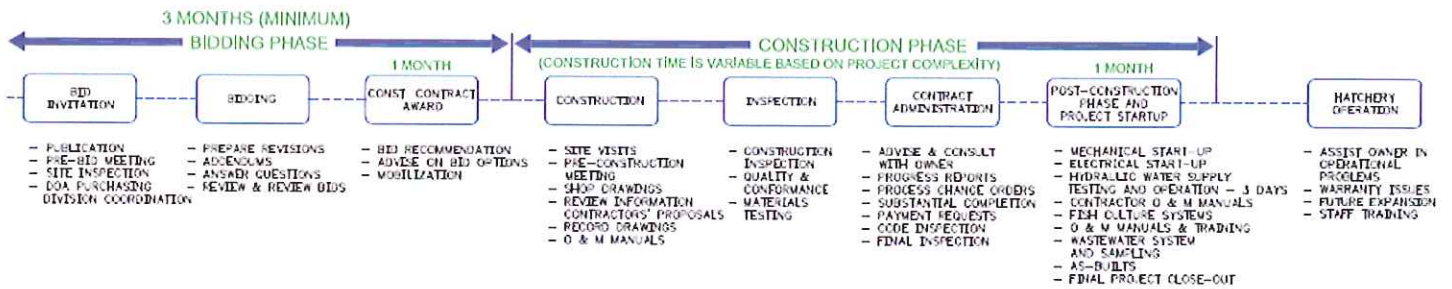
Construction Administration is a key component of any successful project. The best design in the world can fall victim to misinterpretation, misapplication, or be totally ignored if the project design team does not work as a cohesive unit with the owner and the contractors to insure the project is constructed as designed. Fish hatchery projects are unique to almost any general contractor as well as his subcontractors due to the limited number of projects of this type, as well as the many specific requirements not normally required on “similar” projects such as water and wastewater plants or industrial projects. HDR’s team of professionals integrates with the on-site contractors for construction involvement from pre-construction meetings through facility start-up. The presence of our professionals facilitates communication on key construction issues.

The HDR Team has years of hatchery construction administration experience. While it is true that numerous engineering firms can design and build water and/or wastewater structures, HDR brings that **unique technical understanding of the biological needs** of a fisheries facility into not only the design, but into the construction as well. We know how to construct fisheries facilities that require special items such as pond aeration, water supply and drain systems, and harvest operations. We have the experience of working with contractors to insure that the project is built according to the design specifications and to the state / local code requirements. Working with contractors across the country, we understand and are able to anticipate many of the typical questions that relate to the fisheries-specific items to be constructed. We are experienced with fisheries-related RFIs, shop drawing review, and pay-progress meetings. Our Team is familiar with and will follow all applicable State of West Virginia Department of Administration Construction Services requirements and guidelines. HDR will work with the State of West Virginia project personnel, construction contractors, and hatchery staff to construct, test and operate this project successfully.

The Construction Phase Engineering Services includes construction observation, and reviewing schedules, pay requests and answering general questions. Construction observation may be intermittent (one or two days per month) to full-time depending upon the requirements of the Owner. On larger projects, it is strongly recommended that full-time engineering and inspection personnel be available to observe all construction. These personnel may either be WVDNR employees or representatives of the design engineering firm or a combination of both. For this project, a combination of WVDNR and design consultant provided inspection phase services is suggested. In addition, the design engineer will provide construction observation and management during monthly site meetings. Depending on the level of observation selected by WVDNR, the local Wierton office is available to provide assistance to WVDNR staff to ensure that the project is being constructed in accordance with the construction documents. In addition, HDR will be represented at the monthly meetings by specialists from the Fisheries Design Center.

▶ **Selecting the HDR team will provide WVDNR with construction administration experience that is specific to fish hatcheries, yet local to the project site.**

PROJECT AND GOALS



Objective 4 - BIDDING PACKAGE PREPARATION

HDR has recently prepared a construction level bid package for the Palestine SFH Pump and Intake Replacement Project. The package was prepared by working closely with and using guidelines from the West Virginia Purchasing Division of the Administration Section. HDR proposes to follow these and any new guidelines and work with the Purchasing Division to provide bid packages for the projects outlined in the EOI.

HDR will participate in the pre-bid meeting to provide an overview of the projects to the potential bidders and answer any fisheries and/or engineering questions. Once the bids have been taken, HDR will review the bids to ensure that all project elements were considered in the bid and provide a recommendation of approval of the bids.

Project Manual for the Construction of Pump and Intake Replacement Palestine State Fish Hatchery
 Elizabeth, West Virginia
 March 07, 2011
 Bid Documents

Prepared by
 HDR Engineering
 5201 South Sixth Street Road
 Springfield, Illinois 62703-5143

HDR ONE COMPANY Many Solutions

RIVER INTAKE PUMP STATION PLAN

RIVER INTAKE PUMP STATION SECTION

NON-ROADWAY PIPE TRENCH SECTION

SCHEDULE OF SUBMERSIBLE PUMPS WITH AIR-POWERED MOTORS

CRANE NOT IN CONTACT

SITE PIPING PLAN

TEE WRENCH

PUMP AND INTAKE REPLACEMENT Palestine State Fish Hatchery Elizabeth, West Virginia

SITE PIPING & PUMP PLAN & SCHEDULE

CP-1

Education

Master of Science, Civil Engineering, University of Hawaii, Manoa, 1992

Bachelor of Science, Civil Engineering, University of Michigan Ann Arbor, 1990

Professional Registrations

Professional Engineer, Illinois, No. 062-050924, Expires: 11/30/2013

Also in VT

LEED AP Building Design + Construction, US National Registration, No. 10144047 Issued: 08/30/2011, Expires: 08/30/2013

Envision AP, US National Registration, No Expiration

HDR Tenure

19 Years

Industry Tenure

23 Years

Project Manager**Terra McParland, PE, LEED AP, BD+C, ENV SP**

Ms. McParland's responsibilities include technical design and project management on civil, environmental, lake restoration and fish hatchery projects. Terra is intimately familiar with the WV DNR Hatchery System as she was the project manager and principal writer of the **West Virginia Statewide Fish Hatchery Study** and from which the projects within this solicitation stem. In addition, Terra was the project manager for the **Palestine Pump and Intake Replacement Design** and the **Assessment of Water Supply at Apple Grove SFH**. She was part of the team that completed the **Spring Run State Fish Hatchery Wastewater Treatment System Study**, evaluating current aquaculture wastewater treatment practices and providing solutions to better meet the facility's NPDES permit. Terra's project management responsibilities include the coordination of all preliminary design, final design, bidding, and construction related services. During design, she coordinates a team of engineers and biologists to develop detailed plans and specifications for basic to complex projects involving architectural, structural, mechanical, electrical and civil disciplines. During construction, Terra coordinates all construction administration services such as submittals, requests for information, change orders, pay requests, and construction observation. She also prepares agendas, leads pre-construction and progress meetings, and writes detailed inspection reports and meeting minutes. At the completion of the project, Terra coordinates and verifies all testing requirements, training, record drawings, O & M submittals, and other system-start-up activities. Terra's responsibilities also include field and site investigations, preliminary project analysis and conceptual design, contract and construction administration, subconsultant work coordination, and project follow-up. She has significant civil and environmental engineering experience in many recent projects including effluent treatment systems and NPDES permitting.

Select related experience includes:

A.E. Wood SFH, TX. Design of a wastewater treatment process and plant for fish hatchery wastewater. Included microscreening, sand filters and sludge drying equipment.

Emlden SFH, ME. Assisted with design of aquaculture wastewater treatment system, including a microscreen system, ultraviolet disinfection, retrofit clarifier and sludge storage system.

Wild Rose SFH, Wild Rose, WI. Assistant project manager and aquaculture wastewater treatment designer for the Phase I coldwater side renovation and for the Phase 2 coolwater side renovation. Both sides have been operational and producing at or above capacity ever since.

Castalia SFH, OH. Provided civil / environmental engineering for the wastewater treatment system (microscreens, clarifier, aerated sludge storage) for this complete hatchery renovation.

Platte River SFH, MI. Assisted with design of the aquaculture wastewater treatment system. This wastewater treatment system contains disc microscreens, clarifiers, a sludge storage system, a settling pond, and composite sampling equipment.

Rathbun SFH and Research Facility, IA. Completed wetland and environmental assessment for this new facility that included new membrane lined extensive fish rearing ponds complex.

Jordan River NFH Effluent Treatment, MI. Project manager and civil / environmental engineer for the construction documents and construction phase services for a new effluent treatment system needed to meet new NPDES discharge permit requirements. The new system includes a microscreening system capable of filtering the entire facility overflow (5,400 to 6,400 gpm) and the fish rearing unit cleaning flows of (1,200 to 2,000 gpm). The project includes new drum microscreening building, new electrical and emergency power systems and metering, backwash and sludge storage systems configured to optimize phosphorus capture and retention. The treatment system includes the use of two sludge dewatering belt filters with coagulant chemical feed systems.

Education

Master of Science, Civil Engineering, West Virginia University, 1995

Bachelor of Science, Civil Engineering, West Virginia University, 1992

Professional Registrations

Professional Engineer, West Virginia, United States, Expires: 06/30/2013

Also in NC, PA, and VA

HDR Tenure

19 Years

Industry Tenure

21 Years

Assistant Project Manager and Local Coordination

Robert I. Dodson, III, PE

Mr. Dodson will provide local coordination from the **Weirton, WV**, HDR office where he is the Manager of the Geotechnical Section. His experience includes project management; geotechnical reports; administration, preparation and field surveillance of subsurface exploration programs; coordination of materials testing and evaluation, geotechnical instrumentation and monitoring programs; analysis of subsurface conditions, pavement evaluation and design, and development of foundation recommendations for a wide range of structure types on transportation projects.

Select related experience includes:

City of Weirton Landslide Rehabilitation, WV – Served as the project manager and lead engineer for the repair of four city streets damaged by landslides resulting from Hurricane Ivan in mid-September 2004. Responsible for coordinating obtaining field survey information, test borings and laboratory testing. Evaluated alternate rehabilitation schemes including soldier pile retaining walls, slope regrading, slope buttresses, and MSE walls. Prepared design plans for the construction of cantilevered soldier pile with exposed heights ranging up to 15 feet.

U.S. Army Garrison, HI – Served as the project manager for the pavement management system update of 400 lane miles of roadway, parking areas, and storage areas utilizing the MicroPAVER computer program.

Military Ocean Terminal Sunny Point (MOTSU, NC – Served as the project manager for the implementation of a pavement management system (PMS) for 155 lane miles of roadway, parking lots, and intermodal container storage areas utilizing the MicroPAVER computer program.

Numerous WV Transportation-Related Projects. Project geotechnical engineer.

- Ohio County: Interstate 70 Interchange and Highlands Access Road
Washington Avenue Bridge over I-70
Three Springs Drive Bridge over Washington Avenue Bridge over I-70
- Brooke County: US 22
- Hancock County: Ohio River Bridge at Mountaineer Resort
- Hardy County: Clifford Hollow Bridge (Corridor H)
- Wirt County: Elizabeth Bridge Replacement
- Wood County: West Virginia Route 2 Upgrade, Parkersburg, St. Marys Road
- Brooke County: West Virginia Route 2 Upgrade, Follansbee, Weirton Road

Education

Master of Science, Zoology,
Southern Illinois University, 1972

Bachelor of Arts, Biology, Culver-
Stockton College, 1970

Professional Affiliations

American Fisheries Society National
Section Member:

- Bioengineering
- Computer Users
- Fish Culture
- Fish Health

American Fisheries Society, Illinois

Aquacultural Engineering Society

Association of Conservation
Engineers

World Aquaculture Society

HDR Tenure

29 Years

Industry Tenure

43 Years

Fisheries Biology

Tom Johnson

Mr. Johnson provides biological services planning and design for fish hatchery and related aquaculture projects. Tom understands the needs of the WV DNR Hatchery System as he was the fisheries biologist and main contributing writer of the **West Virginia Statewide Fish Hatchery Study** from which the projects within this solicitation stem. In addition, Tom provided fisheries biology for the **Palestine Pump and Intake Replacement Design** and the **Assessment of Water Supply at Apple Grove SFH**. He was part of the team that completed the **Spring Run State Fish Hatchery Wastewater Treatment System Study**, evaluating current aquaculture wastewater treatment practices and providing solutions to better meet the facility's NPDES permit. During his career, Tom has provided biological expertise for several hundred fisheries projects ranging from small studies to the design and construction of multi-million dollar production facilities. In addition, he has developed in-house computer programs for project bioprogramming including fish production, fish growth, dissolved oxygen management, water supply, aeration/degassing, fish feeding, hatchery system water, and rearing space requirements. He has provided input on numerous hatchery effluent treatment studies and treatment projects. He has also provided biological expertise for numerous natural resource projects.

Select related experience includes:

- A.E. Wood SFH, TX.** Provided fisheries biology for a wastewater treatment process and plant for fish hatchery wastewater. Included microscreening, sand filters and sludge drying equipment.
- Embden SFH, ME.** Provided fisheries biology for the total modernization of this hatchery including a new aquaculture wastewater treatment system that includes a microscreen system, ultraviolet disinfection, retrofit clarifier and sludge storage system.
- Wild Rose SFH, Wild Rose, WI.** Provided fisheries biology for the total modernization of this hatchery that included Aquaculture Wastewater Treatment Design for the Phase I \$12.2 million coldwater side renovation and for the Phase 2 \$16.4 million coolwater side renovation. Both sides have been operational and producing at or above capacity ever since.
- Castalia SFH, OH.** Provided fisheries biology for the wastewater treatment system (microscreens, clarifier, aerated sludge storage) for this complete hatchery renovation.
- Platte River SFH, MI.** Provided biological planning and design services for a new aquaculture wastewater treatment system designed to reduce the solids and associated phosphorus loadings to the Platte River. This wastewater treatment system contains disc microscreens, clarifiers, a sludge storage system, a settling pond, and composite sampling equipment.
- Rathbun SFH and Research Facility, IA.** Provided fisheries biology for this project that included new membrane lined extensive fish rearing ponds complex.
- Jordan River NFH Effluent Treatment, MI.** Provided biological planning and design services for this \$2.1 million new effluent treatment system needed to meet new NPDES discharge permit requirements for the improvements to total suspended solids and total phosphorus capture.
- White Sulphur Springs NFH Freshwater Mussel Refugium, WV.** Provided fisheries biology for the construction of this Refugium, a unique aquatic resource recovery project. HDR Fisheries Design Center had previously completed the Schematic Design Report.
- Calamus SFH Pond Liner Study, NE.** Conducted an evaluation of the existing production pond liners and submitted a report for repair and renovation with estimated costs. An evaluation of various pond liner material documented the advantages and disadvantages of each material.
- Watha SFH, NC.** Provided fisheries biology for the renovation of this hatchery that included a 325 GPM Pump Station, 6,000 LF of drainage piping and 8,000 LF of supply piping across a 60 acre state owned facility. The project included major improvements to the 60 acre pond complex.

Education

Bachelor of Science, Fishery Sciences, Kansas State University, 1977

Professional Affiliations

American Fisheries Society, Section Member:

- Fish Culture Section
- Fish Management
- Fisheries Administration

Aquacultural Engineering Society

HDR Tenure

6 Years

Industry Tenure

36 Years

Fisheries Biology

Scott Stuewe

Mr. Stuewe is a results-driven professional with 36 years of experience in aquatic management, fisheries, ecosystem restoration, and water quality and supply. He has successfully managed programs encompassing multiple, simultaneously operating projects and has successfully balanced staff and resource requirements. Scott has an excellent relationship with the WV DNR fisheries. Scott contributed to the **West Virginia Statewide Fish Hatchery Study** and fisheries biology for the **Palestine Pump and Intake Replacement Design** and the **Assessment of Water Supply at Apple Grove SFH**. He was part of the team that completed the **Spring Run State Fish Hatchery Wastewater Treatment System Study**, evaluating current aquaculture wastewater treatment practices and providing solutions to better meet the facility's NPDES permit. Prior to joining HDR, Scott oversaw statewide responsibilities and duties of aquatic resources as Chief of Fisheries for the Illinois DNR. In that role, he was responsible for coordinating and managing the Lake Michigan, Rivers, and Inland waters aquatics programs. This included overseeing development and coordination of Division management plans, policy and rule making, and working directly with NGOs, USFWS, and USACE on a variety of environmental projects, inter-jurisdictional species management, and control of aquatic nuisance species.

Select related experience includes:

Wild Rose SFH, WI. Provided fisheries biology for the total modernization of this hatchery that included Aquaculture Wastewater Treatment Design for the Phase I \$12.2 million coldwater side renovation and for the Phase 2 \$16.4 million coolwater side renovation. Both sides have been operational and producing at or above capacity ever since.

Castalia SFH, OH. Provided fisheries biology for the wastewater treatment system (microscreens, clarifier, aerated sludge storage) for this complete hatchery renovation.

White Sulphur Springs NFH Freshwater Mussel Refugium, WV. Provided fisheries biology for the construction of this Refugium, a unique aquatic resource recovery project. HDR Fisheries Design Center had previously completed the Schematic Design Report.

Calamus SFH Pond Liner Study, NE. Conducted an evaluation of the existing production pond liners and submitted a report for repair and renovation with estimated costs. An evaluation of various pond liner material documented the advantages and disadvantages of each material.

Ohio River Bridge Crossing, WV and OH. Delineated wetlands and evaluated vegetative and wildlife communities for the Ohio River Bridge Crossing project for an Environmental Assessment for the OH and WV DOT. Conducted field investigation and authored wetlands delineation report, and several technical memoranda for the EA.

Bodine SFH VHS Treatment, Mishawaka, IN. Development of design and construction documents for installation of UV disinfection equipment for the treatment of effluent water from potentially VHS infected Coho Salmon.

Loup Power District, FERC Relicensing. Responsibilities include: assembly of all available background information regarding hydrology, hydraulics, sediment transport and water quality in the project vicinity; development of monthly and annual flow-duration relationships for the Loup River and Platte River upstream and down stream of the existing project facilities; quantifying the hydraulic effects (stage, velocity, chemical and geomorphic) of daily project hydrocycling operations on the Lower Platte River downstream of Columbus, NE.

Education

Bachelor of Science, Agricultural Engineering (Agricultural Engineering - Soil and Water), University of Illinois Urbana-Champaign, 1988

Associate of Science, Engineering (Pre-engineering), Lincoln Land Community College, 1985

Professional Registrations

Professional Engineer, Illinois, United States, No. 062-049182, Expires: 11/30/2013

HDR Tenure

5 Years

Industry Tenure

27 Years

Civil Engineering

Dale Brockamp, PE

Mr. Brockamp has extensive experience as a civil design engineer for a diverse variety of fisheries projects. As a civil designer, he participates on a team of engineers and architects to develop a list of options for the client which meet or exceed the design criteria. Once the final scope of work has been selected by the client, Dale utilizes his 27 years of experience to prepare clear and concise design plans and to draft thorough and detailed design specifications. In addition to plans and specifications, he prepares detailed and accurate cost estimates and reviews submittals from contractors to verify that the client receives the correct construction materials as specified in the design manual. One of Dale’s areas of expertise is in environmental permitting. Prior to joining HDR, Dale was employed for nearly 10 years by the Illinois Environmental Protection Agency, and has extensive experience in both permit reviews and permit compliance.

Select related experience includes:

Castalia SFH, OH. Provided civil engineering for the wastewater treatment system (microscreens, clarifier, aerated sludge storage) for this complete hatchery renovation.

White Sulphur Springs NFH Freshwater Mussel Refugium, WV. Provided civil engineering for the construction of this Refugium, a unique aquatic resource recovery project. HDR Fisheries Design Center had previously completed the Schematic Design Report.

Coursey Springs Fish Culture Station, VA. Completed rehabilitation of the existing facility that included back-up generator and spring pond cover to control DO and limit suspended solids.

Illinois American Water - East St. Louis & Granite City Facilities, IL. The civil design portion of these projects included demolition and site clearing, erosion and sediment control, facility layout, site utilities, road pavement, and security fencing.

Coopers Farm Sediment Dewatering Facility, IL. Assisted with several permit related issues since the project site was located in an environmentally sensitive area in the western suburbs of Chicago. This project included the construction of a multi-basin sediment containment structure to store hydraulically dredged material from the Fox River System.

Trinski’s Island Restoration, IL. Managed permitting and supported engineering design and construction phase services for the dredging and wetland restoration.

Wonder Lake Restoration, IL. As part of the deep water habitat restoration, Dale provided civil engineering for the 40 acres of dewatering ponds, water control structures, and pipelines through environmentally sensitive areas to move dredge material between the lake and the sediment containment structures.

Pere Marquette State Park, IL. This project included the design of a new sewage treatment system for a popular state park located along the Illinois River near the confluence with the Mississippi River. This project included extensive permitting issues due to threatened and endangered species, the flood-plain encroachment, and wetland mitigation. (Non-HDR experience.)

Beaver Dam State Park, IL. This project involved the design and construction of both a sewage collection and sewage treatment system. The design considerations included minimal disturbance to a popular campground and neighboring residences. (Non-HDR experience.)

Education

Bachelor of Science, Civil Engineering, University of Illinois Urbana-Champaign, 1995

Associate of Science, Lincoln Land Community College

Professional Registrations

Structural Engineer, Illinois, No. 081006102, Expires: 11/30/2014

Professional Engineer - Civil, Illinois, No. 062-054446, Expires: 11/30/2013

Also in VT

HDR Tenure

16 Years

Industry Tenure

18 Years

Structural Engineering

Bruce Bradley, PE, SE

Mr. Bradley's responsibilities include structural design for both building and bridge type structures. He prepares staged construction plans, estimates of probable costs, and project reports, as well as structural engineering planning, design, and construction documents for numerous types of projects including educational facilities, maintenance facilities, and IDOT bridge type projects. He also provides structural engineering for new buildings including manufactured buildings. His experience includes design and plan preparation of buildings and other structures including concrete water holding tanks, circular and rectangular clarifiers, water control and other miscellaneous structures on a variety of building and fish hatchery projects, including new construction and rehabilitations.

Select related experience includes:

Wild Rose SFH, Wild Rose, WI. Provided structural engineering for the Phase I \$12.2 million coldwater side renovation and for the Phase 2 \$16.4 million coolwater side renovation. Both sides have been operational and producing at or above capacity ever since.

Jordan River NFH Effluent Treatment, MI. Provided structural engineering for the construction documents and construction phase services for this \$2.1 million new effluent treatment system need to meet new NPDES discharge permit requirements for the improvements to total suspended solids and total phosphorus capture.

Watha SFH, NC. Provided structural engineering for the renovation of this hatchery that included a 325 GPM Pump Station, 6,000 LF of drainage piping and 8,000 LF of supply piping across a 60 acre state owned facility. The project included major improvements to the 60 acre pond complex.

Mountain Home Air Force Base Effluent Water Lagoon Liner and Dike, ID. Provided structural engineering design services to repair an effluent lagoon liner and dike at the Base's waste water treatment plant. The approximately 19,500 square yards lagoon's membrane liner had deteriorated due to significant benching from wave action in two major areas.

Pfeiffer SFH, KY. Provided structural design for 5 lined rearing ponds.

Bodine SFH VHS Treatment, Mishawaka, IN. Development of design and construction documents for installation of UV disinfection equipment for the treatment of effluent water from potentially VHS infected Coho Salmon.

White Sulphur Springs NFH Freshwater Mussel Refugium, WV. Provided structural engineering for the construction of this Refugium, a unique aquatic resource recovery project. HDR Fisheries Design Center had previously completed the Schematic Design Report.

River Mesocosm and Water Supply System, IL. Provided structural engineering for the design of a continuous water supply that included a new pump installation for this one-of-a-kind national facility will allow scientist to mimic river conditions in their effort to better understand how modifications to the river impact aquatic /riverine species.

Sunshine Coast South Pender Harbor Water Treatment Plant. This project involved the design and construction of a new 5.1 MLD (1.3 MGD) water treatment plant for the approximately 1,000 ERUs of South Pender Harbour.

Education

Bachelor of Science, Mechanical Engineering, South Dakota School of Mines, 1990

Professional Registrations

LEED AP Building Design + Construction, US National Registration Issued: 09/21/2011, Expires: 09/21/2013

Professional Engineer - Mechanical, Illinois, No. 062-064320 Expires: 11/30/2013

Also in ME and WI

HDR Tenure

23 Years

Industry Tenure

23 Years

Mechanical Engineering**Troy Talsma, PE, LEED AP BD+C**

Mr. Talsma was the mechanical engineer and contributing writer of the **West Virginia Statewide Fish Hatchery Study**. In addition, Troy was the lead mechanical engineer for the **Palestine Pump and Intake Replacement Design** and the **Assessment of Water Supply at Apple Grove SFH**. He was part of the team that completed the **Spring Run State Fish Hatchery Wastewater Treatment System Study**, evaluating current aquaculture wastewater treatment practices and providing solutions to better meet the facility's NPDES permit. Troy's expertise includes design of open and closed water supply, reuse and wastewater systems containing pumps, screens, filters and disinfection. He sizes and selects central air handlers, chillers, boilers, blowers, compressors, oxygen generators and fuel storage tanks and provides estimates of operational and construction costs. Troy has planned numerous water, air, oxygen and fuel distribution systems. His design experience includes the selection of pumps for main water supply, wastewater, sludge mixing, domestic water systems, screening systems, and truck fill, as well as detailed pressure filtration, ultraviolet sterilizers, water meters and automatic valves and strainers. Troy has specified many different types of fiberglass aquaculture tanks and fish egg incubation systems. He also has experience with chemical storage; spill containment, alarms, spill removal, personnel safety equipment and special ventilation.

Select related experience includes:

A.E. Wood SFH, TX. Designed the extension and diversion of a 48" diameter combined storm and pond wastewater system. This \$3 million project included a 10 Hp duplex non-clog sewage lift station, traveling bridge gravity sand filter, drum microscreens, automatic sampling equipment, several large flow control structures and gates and a pipe mounted flow meter capable of measuring flow in either a full or partially full pipe.

Platte River SFH, MI. Troy designed pumping systems for reuse water that utilized both rectangular and round pre-cast and cast-in-place sumps for non-clog submersible pumps with variable speed drives and level controls. Designed process drains that tap into an existing 8FT wide by 10 FT tall concrete flume. Large gates, manholes and 42 FT diameter smooth, double-walled polyethylene pipe were specified in project that includes discfilters, numerous water and oxygen meters, a pumped round clarifier, mixed sludge storage tank and two pump stations each with two 30 hp, 6000 gpm variable speed, non-clog submersible pumps.

Rathbun SFH and Research Facility, IA. Mechanical engineer for a 4,600 SF aquaculture research building with 10 one-acre and six 0.1-acre fish rearing ponds including a low-pressure air systems. Effluent is screened, disinfected, lifted with variable speed pumps and filtered, degassed and aerated incorporating Troy's designs.

Watha SFH, NC. Provided mechanical engineering for the renovation of this hatchery with a 60-acre pond complex. The project included a 325 GPM Pump Station, 6,000 LF of drainage piping and 8,000 LF of supply piping across a 60 acre state owned facility.

Pfeiffer SFH, KY. Provided mechanical engineering design for 5 lined rearing ponds.

Andrew Hulsey SFH Renovations, AR. Troy designed a fused polyethylene intake manifold with line-shaft turbine pumps to take water from a lake. Some pumps boosted water through automatic backwashing strainers and on to a network of fish ponds. Other pumps boosted the water through a sand filter and then to a small head tank with variable demand. The latter pumps had continuous level control. All of the pumps had variable speed drives and low water cutoffs.

Blue Dog SFH Pond Aeration, SD. Sized and selected low-pressure blowers and pre-engineered fiberglass buildings. Designed air distribution system for 48 acres of one-acre and two-acre fish rearing ponds.

Education

Bachelor of Science, Electrical Engineering, University of Illinois Urbana-Champaign, 1976

Professional Registrations

Professional Engineer - Electrical, Illinois, 062-038834, Expires: 11/30/2013

Also in AL, AK, AR, CA, CO, CT, FL, ID, MN, NM, OK, SD, TN, VT, WA, and in British Columbia and Manitoba, Canada

HDR Tenure

26 Years

Industry Tenure

39 Years

Electrical Engineering**Rick W. Schmutde, PE**

As lead electrical engineer, Rick has worked extensively with building lighting, emergency lighting, visual alarms, standby power, security systems and energy management for hatchery facilities throughout the United States and Canada. He has extensive experience with all types of electrical power system upgrades and replacement, building and task lighting, and communication (phone, computer, other) systems. His projects include designing power centers, switchgear, electrical distribution systems, monitoring, motor controls and emergency generators. He has also completed many electrical surveys for which he accurately located all major electrical distribution components including transformers, switchgears, power pedestals, electrical vaults and manholes, primary and secondary power lines, etc.

Select related experience includes:

A.E. Wood SFH, TX. Provided electrical engineering for a wastewater treatment process and plant for fish hatchery wastewater. Included microscreening, sand filters and sludge drying equipment.

Emden SFH, ME. Provided electrical engineering for the total modernization of this hatchery including a new aquaculture wastewater treatment system that includes a microscreen system, ultraviolet disinfection, retrofit clarifier and sludge storage system.

Wild Rose SFH, Wild Rose, WI. Provided electrical engineering for the total modernization of this hatchery that included Aquaculture Wastewater Treatment Design for the Phase 1 \$12.2 million coldwater side renovation and for the Phase 2 \$16.4 million coolwater side renovation. Both sides have been operational and producing at or above capacity ever since.

Platte River SFH, MI. Provided electrical engineering and design services for a new aquaculture wastewater treatment system designed to reduce the solids and associated phosphorus loadings to the Platte River. This wastewater treatment system contains disc microscreens, clarifiers, a sludge storage system, a settling pond, and composite sampling equipment.

Rathbun SFH and Research Facility, IA. Rick provided electrical engineering for the individual water reuse water sumps and water reuse treatment components, high intensity ultraviolet disinfection, and 10 one-acre and six 0.1-acre fish rearing ponds including a low-pressure air systems.

Jordan River NFH Effluent Treatment, MI. Provided electrical engineering planning and design services for this \$2.1 million new effluent treatment system needed to meet new NPDES discharge permit requirements for the improvements to total suspended solids and total phosphorus capture.

Albuquerque Biological Park Wetland and Tingley Pond Restoration Project, NM. Lead electrical engineer providing preliminary and final design, construction documents for the restoration plan. The water supply comes from two upgraded groundwater wells located in the bosque, to supply a maximum amount of 400 gpm. Aeration and recirculation systems were included to maintain levels of dissolved oxygen. The ponds are lined to prevent pond water from seeping into the Riverside Drain.

White Sulphur Springs NFH Freshwater Mussel Refugium, WV. Provided electrical engineering for the construction of this Refugium, a unique aquatic resource recovery project. HDR Fisheries Design Center had previously completed the Schematic Design Report.

Coursey Springs Fish Culture Station, VA. The electrical design features a PLC based process control and alarm system. Process monitoring by the system was achieved through the use of discrete and analog signals from magnetic and ultrasonic water flow meters, continuous water level sensors, float switches, thermal sensors, dissolved oxygen analyzers, and discrete contacts located on the process equipment.

Watha SFH, NC. Provided electrical engineering for the renovation of this hatchery that included a 325 GPM Pump Station, 6,000 LF of drainage piping and 8,000 LF of supply piping across a 60 acre state owned facility. The project included major improvements to the 60 acre pond complex.

Education

Master of Science, Civil Engineering, University of Pittsburgh, 2008 Summa cum Laude

Bachelor of Science/Bachelor of Art, Chemistry, La Roche College, 2005 Summa cum Laude

HDR Tenure

1 Year

Industry Tenure

7 Years

Environmental / Permitting

Mary Crosby, EI

Ms. Crosby specializes in water and wastewater engineering, air pollution compliance and permitting, erosion and sedimentation control permitting associated with oil and gas operations, storm water management control design, and environmental permitting in the northeastern region. She has strong public speaking experience from working as an educator at the collegiate level. She also has experience with quantitative chemical analysis and instrumentation and water sampling. Ms. Crosby has experience with AutoCAD, HEC-RAS, USACE DREDGE Model, HY-8, and Hydroflow computer programs.

Select related experience includes:

Antero Resources Corporation, Environmental and Engineering Permitting, Various Counties, WV - Wetland and environmental field studies; federal, state and local permitting associated with natural gas gathering; erosion and sedimentation control design; and post construction storm water management.

Hydro Green Energy, LLC., Braddock Lock and Dam #2, Monongahela River, PA. – Water quality study to determine the feasibility and environmental soundness of the construction of microturbines on the Monongahela River; field work associated with the Hydrolab deployment, data collection and data accuracy.

Non-HDR Project Experience:

Open-end contract for Equitrans and Equitable Transmission Company of Pennsylvania permitting and engineering projects. Provided Erosion and Sedimentation (E&S) Control Plans and storm water management plans for:

- | | |
|------------------------------------------------------------|----------------------------------------------|
| NIJU-S016B Pipeline, Greene County | H-153 Pipeline Replacement, Allegheny County |
| NIJU-S015B Pipeline, Greene County | NIJU-S012 Pipeline, Greene County |
| NIJU-S013 Pipeline, Greene County | NIJU-D03 (H-160) Pipeline, Greene County |
| Low Pressure East and West Pipeline Upgrade, Greene County | H-103 Pipeline, Greene County |
| F-117 Pipeline Project, Greene County | Tioga (TD-1) Pipeline, Tioga County |
| Phillips Well Line Project, Greene County | NIJU-S021 Pipeline, Greene County |
| G-145 Pipeline Replacement, Allegheny County | Hunters Storage Cave Pipeline, Greene County |
| | Callisto Compressor Station, Greene County |

Open-end contract for Laurel Mountain Midstream, Inc. (LLM) / Williams - Midstream of Pennsylvania permitting and engineering projects. Provided Erosion and Sedimentation (E&S) Control Plans and storm water management plans for:

- | | |
|---------------------------------------------|----------------------------------------|
| Shamrock Compressor Station, Fayette County | North Pipeline, Fayette County |
| Skovran Pipeline, Fayette County | West Dogbone Pipeline, Fayette County |
| Fairbanks Pipeline, Fayette County | Line 23 to 32 Pipeline, Fayette County |

Provided Erosion and Sedimentation (E&S) Control Plans and storm water management plans for:

- Appachian Gathering System, Pennsylvania and West Virginia (M3/Momentum)
- Gallagher Pipeline in Kentucky and Indiana (Duke Energy)
- Line N and Buffalo Compressor Station in Pennsylvania (National Fuel)
- Litke Suction Line in Pennsylvania (EXCO)
- Line 1278 in Pennsylvania (Columbia Gas)
- Line 1528 in Pennsylvania (Columbia Gas)
- Route 15 Pipeline Replacement in New York (Dominion Transmission)
- JP-139 Pipeline Replacement in Pennsylvania (Dominion Transmission)
- Greene Gathering Pipeline in Pennsylvania (Chesapeake)
- Snowshoe Pipeline in Pennsylvania (Superior)
- Black Moshannon Pipeline in Pennsylvania (Superior)
- Karthus Pipeline in Pennsylvania (Superior)
- Brookfield Pipeline in Pennsylvania (Superior)
- AES Wilson Creek Wind Turbine Project in Pennsylvania (AES Corporation)
- Southern Maryland Reliability Project in Maryland (SMECO-Southern Maryland Electric Company)

Education

Certificate, Senior Engineer Tech-Transport, Fairmont State College, 2008

Bachelor of Science, Civil Engineering, University of Pittsburgh, 2002

Professional Registrations

Professional Engineer - Civil, West Virginia, Expires: 06/30/2013

Also in PA

Level IV Transportation Engineering Technician - Senior (TET-SC), West Virginia, Expires: 06/30/2013

Compaction Inspector, West Virginia, Expires: 12/31/2015

Reinforced Concrete Special Inspector, West Virginia, Expires: 12/31/2015

Aggregate Sampling Inspector, West Virginia, Expires: 12/31/2015

HDR Tenure

11 Years

Industry Tenure

11 Years

Construction Services

Billie Joy Budner, PE

Ms. Budner has served as a construction inspector on various construction projects throughout West Virginia. Her experience includes asphalt and concrete pavement, signing/pavement markings/signalization, drainage, earthwork, structures, sanitary sewer placement and other miscellaneous items. In design, she worked on permitting, temporary traffic control plans, traffic studies, sign renovation, signal renovation, planning, drainage design and hydraulic analysis and right of way plans. Billie currently holds the role of Client Manager for North Fayette Township, PA, where she oversees all design and construction in the Township.

Select related experience includes:

Corridor D, US 50 Projects for West Virginia Division of Highways, Parkersburg, WV – Consultant inspector for District 3 on two projects, which involve grading, pipe placement, drainage, paving, lighting, signing, MSE walls and four bridges. She has been involved with the earthwork, drainage, erosion and sediment control, Superpave HMA placement, sign erection, pavement markings, re-steel and Class K Concrete placement for bridge deck and other miscellaneous items. She has calculated quantities and prepared estimates for payment to the contractor.

Three Springs Drive Bridge Renovation for West Virginia Division of Highways, Weirton, WV – Provided construction inspection services for a new bridge across US Rt. 22. Project included expanding an existing 2 lane bridge to a new 5 lane span with ramp widening and upgraded intersections. This project also included asphalt and concrete pavement, lighting and signal, erosion and sediment control, guardrail, Class H concrete for bridge deck, pipe placement, drainage and re-steel. Also calculated quantities for pay items.

WV Rt 2 Wellsburg Slide, Wellsburg, WV – Construction inspector, acted as sole inspector for moving over 50,000 CY of material to waste area. Project items also included seeding and mulching, asphalt pavement, drainage and placing rock borrow into new dumped rock gutter. Calculated all quantities and prepared change orders and estimates to contractor.

Pennsylvania Avenue 02 Construction Inspection for West Virginia Division of Highways, Weirton, WV – Provided construction inspection services for the upgrades to existing roadway on Pennsylvania Avenue. The project included new sidewalks, curb and gutter, drainage systems, and pavement.

North Star Sanitary Sewer, North Fayette Township, PA – Construction Inspector, field representative for North Fayette Township during the installation of sanitary sewer system through North Fayette Township. She coordinated between property owners and contractor to place each wye connection as necessary. She also observed all traffic detours, utility re-connections, trench backfill compaction tests and pipe pressure tests.

North Fayette Township, PA - Client Manager, overseeing multiple construction activities throughout the township including storm and sanitary pipe placements, manholes, drainage systems, pavement rehab and placement, grading, and other miscellaneous items. Also oversees design reviews for proposed land development projects, grading permits, traffic studies, and manages a team involved in helping North Fayette Township meet the wet weather needs of ALCOSAN.

Education

Bachelor of Science, Fisheries (Fisheries Biology), University of Washington, 1971

Professional Affiliations

American Fisheries Society,
 Aquacultural Engineering Society (AES)
 Desert Fishes Council (DES),
 Society for Conservation Biology
 World Aquaculture Society

HDR Tenure

35 Years

Industry Tenure

42 Years

Education

Bachelor of Science, Civil Engineering (Civil/Structural Engineering), Washington State University at Pullman, 1997

Associate of Arts, General Studies, Lower Columbia College, 1992

Professional Registrations

Professional Engineer, Washington, No. 38335, Expires: 07/25/2014

Also in AK, ID, NV, NM, OR and UT, and in British Columbia, Canada

HDR Tenure

9 Years

Industry Tenure

16 Years

Quality Control

Ken Ferjancic, Fisheries Biologist

Mr. Ferjancic has spent over 40 years in the planning, design and operations of fish culture facilities and fisheries enhancement programs. He has guided projects requiring the siting, biological design, design development, operation and management of fish related facilities. These facilities cover a wide spectrum of uses, including spawning stations, incubation, early fry rearing, fingerling through yearling rearing, and broodstock rearing/holding as well as the associated support activities such as marking/tagging, fish health, genetics, bio-security, water quality treatment, effluent treatment, food production and administrative spaces.

As the Senior Fishery Biologist responsible for innovative design, Ken has performed biological design criteria on 56 facility designs reflecting evolving technologies and regional issues. As a precursor to design, his bio-programming analysis has included production requirements balanced with the characteristics of the quality and amount of the water supply. Available space, effluent treatment requirements, planting size, quality of fish and timing of release are incorporated into these analyses. He has facilitated the design development process for multiple clients on a given project while managing a team of engineers consisting of the civil, mechanical, structural, and electrical disciplines. These projects typically also involve architects, geotechnical and survey investigations

Quality Control

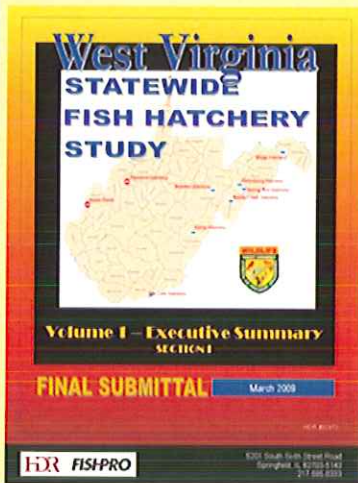
Jason Hill, PE

Mr. Hill has 16 years of experience in civil, structural, and fisheries engineering, project management, and construction management. Project sizes range from small feasibility studies to \$35M hatchery designs, with engineering budgets of up to \$1.6M. Jason has been a key member of design teams for hatchery, trapping, screening, barrier facilities, trap and haul facilities, fish passage systems, stream, pond and wetland restoration projects representing every phase of design including site selection and feasibility analysis, conceptual design, final design and construction assistance. He has served as Project Manager and /or Project Engineer for fisheries projects across the western US, as well as projects in Canada, and Alaska. Jason has managed fisheries projects where multi-disciplinary teams were assembled to achieve the goals at hand. The teams typically include civil, structural, mechanical and electrical engineering disciplines, biologists, and permitting experts. He has participated in and directed technical work groups that bring numerous stakeholders together to move a project through to completion in a collaborative approach.

Client:
West Virginia Department of
Natural Resources

Contact:
Mr. Bret Preston
(304) 558-2771

Completed: 2009



West Virginia Statewide Fish Hatchery Study Statewide, WV

The purpose of the study was to develop a planning document that would provide support and guidance to WVDNR in defining the current condition of the infrastructure of the existing fish hatchery system. In addition, the facilities were evaluated in terms of production expansion potential to increase trout production from 750,000 pounds to 1,000,000 pounds. The audience for this report included WVDNR administration, legislative representatives and staff, and the general public. The Study consisted of a comprehensive review and analysis of the existing infrastructure and identified major problems at the nine WVDNR fish hatcheries: seven (7) coldwater fish hatcheries and two (2) warmwater fish hatcheries. Historically, the WVDNR coldwater program has produced and stocked four species of trout including brown, brook, golden rainbow and rainbow trout. The goal of the WVDNR is to stock as many catchable sized trout that their facilities can rear, except for a small program with Trout Unlimited and other conservation groups that provides advanced fingerlings for stocking.

The areas of critical review included: water source(s), water distribution, water treatment systems, buildings, fish rearing units, effluent management, supplemental oxygenation of water supplies, pond aeration, general hatchery operations, and selected improvements and expansion potential. The fish production program was evaluated utilizing historical and current production numbers and projected future requirements. Potential solutions and possible options to the hatchery infrastructure problems and deficiencies were provided. Construction cost estimates and projected time frame requirements for implementation were included. The project scope, as specified in the contract, focused on items within each of the following broad tasks:

- Field Work
- Production & Operation Analysis
- Infrastructure Analysis
- Infrastructure Improvements
- Report Assembly

Assessment of Water Supply at Apple Grove SFH Apple Grove, WV

The Apple Grove State Fish Hatchery is located adjacent to the Ohio River and approximately one mile north of the town of Apple Grove, WV. The hatchery ponds are filled with groundwater pumped from five water supply wells, and the yield of the wells had reportedly decreased since installation. There was also a history of pumping sand and the well screens becoming fouled. The sand pumping was the most critical issue, and it had been shown to ruin new pumping equipment in less than one year. At the time of the study, only one well was in operating condition and could not supply the water needed to fill the ponds in the spring. WVDNR asked HDR to investigate the problem with sand pumping and suggest possible solutions. The Report addressed the short-term need to supply water to fill the ponds in the Spring of 2010 and provided options and recommendations for the long-term viability of the wells.

Client:
West Virginia Department of
Natural Resources

Contact:
Mr. Bret Preston
(304) 558-2771

Completed: 2010

Client:
West Virginia Department of
Natural Resources

Contact:
Mr. Bret Preston
(304) 558-2771

Completed: 2011

Palentine SFH Pump and Intake Replacement Design Elizabeth, WV

HDR provided design engineering services to generate a set of biddable construction plans and specifications to replace the pump, provide a new wet well, replace the electrical power, replace the intake screen, and replace the intake pipe. A 95% submittal was included to obtain review comments from WVDNR Engineering and Fisheries staff.

Several options were available for either rehabilitation or replacement of the existing pump system. After discussing some of the viable options with WVDNR, replacement was selected which meant the pump could most reliably and efficiently be replaced with a similar line shaft turbine system or a submersible sump pump system. HDR suggested a new wet well and new electrical service also be installed.

The project replaced the existing pump in a new wet well with a new 1,200-gpm pump (60 hp). This included a precast manhole, piping to connect to the intake line, access hatch, and electrical replacement. The existing pump could be rehabilitated in the future and used if redundancy is required for emergency situations. Instrumentation, controls, and automation could be added in the future.

When selecting the replacement intake system, data was obtained about the existing river hydraulics and other site specific information (such as icing conditions, types of debris in the river, etc.). A new river intake screen was then selected using the site specific information and data from a site survey. The site survey was needed to obtain bank and river elevations, and cross sections. Other easier to maintain intake options were also available but were generally more expensive. The proposed intake pump was tied to this new intake system.

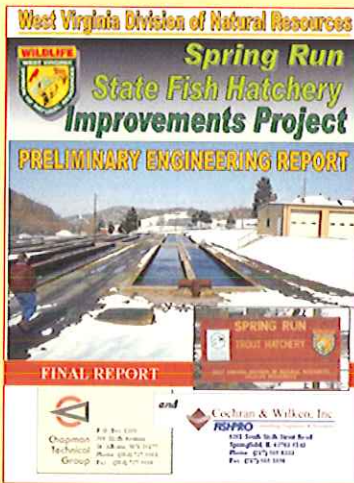


Spring Run SFH Improvements Project Preliminary Engineering Report Petersburg, WV

Client:
West Virginia Department of
Natural Resources

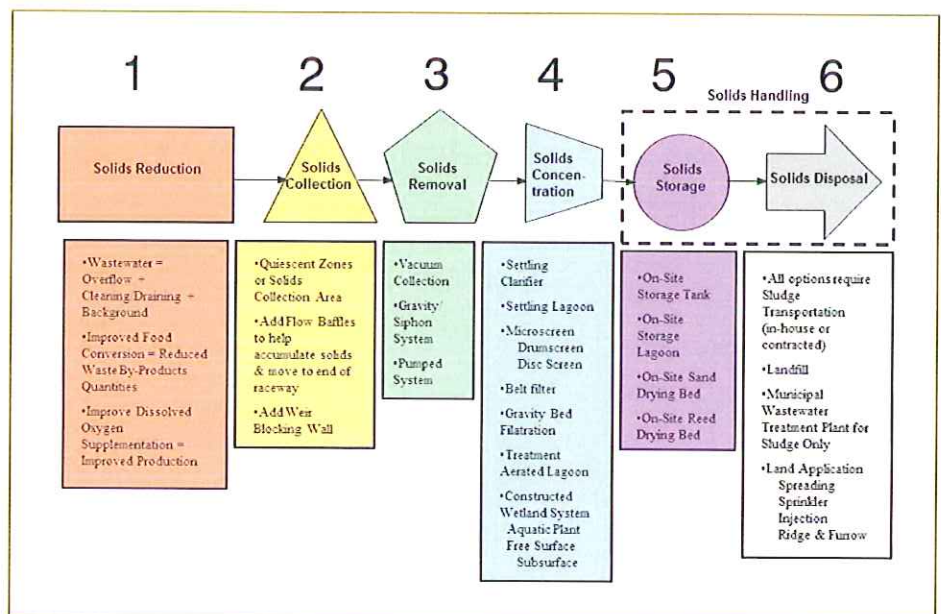
Contact:
Mr. Bret Preston
(304) 558-2771

Completed: 2005



The Spring Run SFH Preliminary Engineering Report (PER) consists of a brief review and analysis of the existing facility and presented a series of conceptual improvements to ensure that existing and future NPDES permit requirements could be met. This project master plan outlined the first steps necessary to modernize the facility's effluent treatment. This report provided the basis to evaluate the options and costs associated with the proposed wastewater treatment improvements. The areas of critical review included: water source(s), water distribution, supplemental oxygenation of water supplies, water treatment systems, buildings, fish rearing units, effluent management, general facility infrastructure and visitor facilities. Emphasis was placed on evaluating the current rearing unit complex cleaning patterns and current effluent water quality analysis. Potential solutions and possible options to the hatchery wastewater treatment system were provided. Construction cost estimates and projected time frame requirements for implementation were also included.

The Hatchery had exceeded the levels of total suspended solids (TSS) and biochemical oxygen demand (BOD5) of 60 mg/l required under the WVDEP NPDES discharge permit during weekly cleaning events. This Study provided an analysis of existing rearing unit cleaning practices, effluent characterization during cleaning and non-cleaning events, and a series of potential effluent treatment options to meet discharge permit requirements. The report included a series of to-scale AutoCAD conceptual level engineering drawings illustrating the existing facility and potential improvements targeted toward enhanced effluent treatment and rearing unit cleaning improvements.



Client:
Maine Department of Inland
Fisheries & Wildlife

Contact:
Mr. Todd Langevin
(207) 287-5261

Completed: 2006

Fish Species: Brown Trout, Brook
Trout, and Atlantic salmon

Embden State Fish Hatchery Somerset County, Maine

HDR completed the conceptual layout, bioprogramming and design for the Embden SFH renovation, managing the project from design to bidding through construction observation. The project included the renovation of the lake intake structures and pipelines located at two different depths within the water supply lake. The two lines allow for the blending of water temperatures which matches growth requirements of the species propagated at this station. Influent lake water is U.V. sterilized using new immersion type UV equipment to reduce the spread of infectious disease to the coldwater fish being reared at the facility. In addition to sterilization, the design incorporated dissolved oxygen management technology using liquid oxygen supply to maximize the carrying capacity. This is the first of five lake-based water supply state fish hatcheries to be renovated using single-pass circular tank technology with full effluent microscreening and enhanced effluent treatment.



Castalia State Fish Hatchery Castalia, Ohio

HDR provided completed the conceptual layout, bioprogramming and design for the Castalia SFH renovation, managing the project from design to bidding through construction. The project included a new pumping system to transfer water from the on-site spring to the existing hatchery building, the new hatchery building, and the existing concrete raceways. In addition, the project includes new underground electrical service throughout the site. The Hatchery Building includes biosecure egg propagation, vertical flow egg incubation system, 28 indoor raceways with start trough inserts, and a refrigerated feed room. The water supply is a 5,000 gpm VFO-controlled pumped spring water supply with modern aeration/degassing system. The hatchery building water is recovered for reuse in the concrete raceways. New biosecure raceway enclosures were provided. The renovated facility produces steelhead and rainbow trout.



Client:
Ohio Department of Natural
Resources

Contact:
Mr. David Kirschner
(614) 265-7080

Completed: 2012

Fish Species: Steelhead and
Rainbow Trout

Client:
USFWS Service

Contact:
Mr. Craig Swedenborg, Project
Engineer
(612) 713-5265

Completed: 2010

Fish Species: Lake Trout

Jordan River National Fish Hatchery Elmira, Michigan

HDR completed a Phase I Site Inspection and Schematic Design Report for improvements to the Effluent Treatment System at Jordan River National Fish Hatchery, one of several hatcheries providing the production of lake trout as a component of the Great Lakes Native Lake Trout Rehabilitation Program.

The existing hatchery effluent treatment system consisted of two linear concrete clarifies that were being used to capture and settle cleaning effluent from raceway and hatchery building fish rearing units. The facility's new NPDES discharge permit required improvements to total suspended solids and total phosphorus capture.

"...I'd rate them topnotch. This project that I did was almost picture perfect as far as their involvement in it. It was very smooth. So, for this project, they've been absolutely great to work with."

*– Craig Swedenborg
USFWS Project Engineer*

HDR was then contracted to provide construction documents and construction phase services for a new effluent treatment system. The new system includes a microscreening system capable of filtering the entire facility overflow (5,400 to 6,400 gpm) and the fish rearing unit cleaning flows of (1,200 to 2,000 gpm). The project included a new drum microscreening building, new electrical and emergency power systems and metering, backwash and sludge storage systems configured to optimize phosphorus capture and retention. The treatment system includes the use of two sludge dewatering belt filters with coagulant chemical feed systems. The use of belt filters provides zero overflow discharge from the sludge storage tank to maximize phosphorus capture.



Client:
Michigan Department of Natural Resources

Contact:
Mr. Gary Whelan
(517) 373-6948

Completed: 2004

Fish Species:
Coho and Chinook Salmon

Platte River State Fish Hatchery Platte River, Michigan

In 1987 the Platte Lake Improvement Association filed suit against the Michigan Department of Natural Resources over the operation of the Platte River hatchery. Platte River Hatchery discharges its production water to Platte River which flows about 11 miles downstream to Platte Lake. In spite of studies conducted in the Platte River watershed that indicated the hatchery is contributing less than 5% of the total watershed's phosphorus budget, the court required the MI DNR to continually reduce the amount of phosphorus discharge. In order to comply with court rulings and reduce the pounds of phosphorous discharged annually, the Platte River Hatchery was renovated with a state-of-the-art solids capture system designed to reduce the solids and associated phosphorus loadings to the Platte River. The project involved demolition of existing infrastructure, design and construction a new infrastructure and the use of cutting edge design and technology that captures solids on a continuous basis from newly designed raceways using microscreening.



Client:
Iowa Department of Natural Resources

Contact:
Mr. Andy Moore
(641) 647-2406

Completed: 1998

Fish Species: Catfish and Walleye

Rathbun State Fish Hatchery Rathbun, Iowa

HDR completed a Schematic Design Report and Construction Documents defining the requirements and estimated costs for development of a fish culture research facility and new membrane lined extensive fish rearing ponds at the existing hatchery facility. The three-phase project included the construction of 10 one-acre and six 0.1-acre fish rearing ponds that are earthen levee ponds complete with synthetic membrane liner, Kansas harvest kettles, and concrete outlet structures. Low pressure air and electrical power were included in the pond design. The reuse water pump station treats water supply to the pond complex and raceways to allow operation of the complex with a limited volume of reservoir / lake water. A 3,600 gpm reuse water pump station building was also constructed and includes a rotary drum screen, high intensity ultraviolet disinfection, and two variable speed pumps along with power, process, monitoring, instrumentation and alarm systems.



Client:
Wisconsin Department of Natural Resources

Contact:
Mr. Al Kaas
(608) 267-7865

Completed: 2011

Fish Species: Chinook Salmon, Brown Trout, Northern Pike, Muskellunge, Walleye, Suckers, and Lake Sturgeon

Wild Rose State Fish Hatchery Wild Rose, Wisconsin

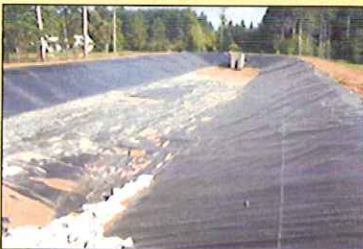
HDR was retained in 2002 to develop a major renovation and compliance study for the Wild Rose Fish Hatchery, the largest of 18 facilities operated by the Wisconsin Department of Natural Resources. This study, "Fish Propagation Water Supply Compliance and Renovation Study," completed in January 2003, led to funding for expansion and renovation of the fish hatchery in three phases. A major constraint associated with this project was the requirement to keep the existing hatchery operational while under construction.

Phase 1 - Total Modernization and Renovation of the Coldwater Facility (west side) included new covered intensive rearing systems. The project includes a 14,000 SF hatchery building, four 5,000 SF covered raceway buildings, an 8,000 SF broodstock building, modern effluent treatment system, and a visitor center. The visitor center includes both new and historic fish culture displays and the historic preservation of original CCC-era raceways, stone entrance and several wooden buildings.

Phase 2 - Total Modernization and Expansion of the Coolwater / Warmwater Production Facility (east side) included a 14 modern lined production pond complex, effluent treatment system and a 30,000 SF intensive recirculation (RAS-based) indoor rearing building.


Items included in both phases include but are not limited to:

- Fish rearing and egg preparation facilities
- Bio-security areas associated with egg disinfection / egg preparation and facility effluents
- Significant water treatment and distribution systems that allow for maximum reuse of water and best management practices for treatment of facility effluents
- Water control structures for production ponds and numerous other ponds.
- Both water storage and detention ponds
- Water monitoring through all phases of project from intake water supplies to discharge water supplies – modern PLC-based instrumentation and alarm systems
- LHO's and dissolved oxygen management systems
- Microscreens and UV systems for effluent treatment and reuse of water.
- Energy and Resource Conservation



The facility also uses state-of-the-art fish hatchery effluent treatment technology and a modern fiber optic based programmable logic controller (PLC) instrumentation and alarm system that enables operators to maintain constant observation 24 hours a day. The collected solid waste material is removed from the system and is available for land application returning much needed nutrients to nearby land. These innovations dramatically decrease the water consumption, energy use and ultimately reduce the operational footprint required to operate the Wild Rose SFH complex.

Select Fisheries Experience

Year Completed		State	Surface Water Intakes	Groundwater Systems	Pumping Facilities	Transmission & Piping Systems	Water Supply Treatment	Wastewater Treatment	Coldwater Species	Warmwater/Coolwater	Multi-Species	Production Ponds	Civil/Hydraulic Design	Structural Design	Mechanical Design	Electrical Design	Statewide Hatchery Evaluation	Engineering & Planning Study	Schematic Design	Design Development	Construction Documents	Construction Administration	Start-Up & Owner Training
current	USFWS - Greers Ferry NFH Water Supply Improvement Project (F12PD02060)	Arkansas					•		•				•	•	•	•		•	•	•	•		
current	USFWS - Norfolk Raceway Drain Line	Arkansas					•		•				•	•	•	•		•	•	•	•		
current	CANADA Manitoba - Keeyask Conawapa Generating Station Fish Hatchery Design	Canada	•	•	•	•	•	•		•			•	•	•	•		•					
current	MN DNR - French River Cold Water Hatchery Rehabilitation Analysis	Minnesota	•	•	•	•	•	•		•			•	•	•	•		•					
current	NCWRC - Armstrong SFH Renovation	N Carolina			•	•	•	•	•				•	•	•	•				•	•		
current	VT FWD Roxbury Fish Culture Station Reconstruction and Improvements	Vermont	•	•	•	•	•	•		•			•	•	•	•		•	•	•	•	•	•
current	VT FWD Salisbury Fish Culture Station Modernization Feasibility Study	Vermont		•	•	•	•	•	•		•		•	•	•	•		•	•	•	•	•	•
2013	USFWS - Pencil Creek NFH Influent Treatment Bldg	Michigan	•					•		•			•	•	•	•		•					
2013	East Texas State Fish Hatchery	Texas	•		•	•	•	•		•		•	•	•	•	•		•		•	•	•	•
2012	USFWS - Alchesay NFH Sand Removal System	Arizona					•			•			•	•	•	•		•					
2012	Maine Hatchery Bond Bill	Maine	•			•	•	•		•			•	•	•	•		•					
2012	Lincoln University Development of a New Aquaculture Facility	Missouri	•	•					•	•			•	•	•	•		•					•
2011	Palestine SFH Pump and Intake Replacement Design	W. Virginia	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
2011	Auburn University Aquatic Research Center	Alabama	•				•	•		•			•	•	•	•		•					
2011	Marine Science Magnet High School of SE Connecticut	Connecticut				•	•	•		•			•	•	•	•		•					
2011	Stock Enhancement Research Facility	Florida	•	•	•	•	•	•		•		•	•	•	•	•		•					
2011	USFWS - Green Lake NFH UV System	Maine	•			•	•	•	•				•	•	•	•		•					•
2011	Ipswich Clam Wet Storage Preliminary Work	Massachusetts								•			•	•	•	•		•					
2011	MT Zebrafish Replacement Laboratory	Massachusetts								•			•	•	•	•		•					
2011	USFWS - Pencil Creek NFH Master Plan	Michigan	•	•	•	•	•	•	•	•			•	•	•	•		•					
2011	Castalia SFH	Ohio	•		•	•	•	•	•				•	•	•	•		•		•	•		•
2011	Kincaid SFH	Ohio			•					•	•		•	•	•	•		•					
2011	London SFH	Ohio			•					•	•		•	•	•	•		•					
2011	Reynoldsdale SFH design, rehabilitation and construct fish-rearing facilities and related infrastructure	Pennsylvania	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
2011	WI DNR Statewide Study	Wisconsin	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
2011	Wild Rose State Fish Hatchery Improvements - Phase II	Wisconsin	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
2011	USFWS - Dexter NFH Analysis & Design	New Mexico					•			•			•	•	•	•		•					
2010	Claude Petet Marioulture Center	Alabama								•			•	•	•	•		•					
2010	USFWS - Greer's Ferry NFH Aeration System Replacement	Arkansas					•			•			•	•	•	•		•					
2010	Assessment of Water Supply at Apple Grove SFH	W. Virginia	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
2010	DFO Quinsam River Fish Hatchery Improvements	Canada	•	•	•	•	•	•	•	•			•	•	•	•		•					
2010	FBCC Phase 4	Florida					•			•			•	•	•	•		•					
2010	Southern Illinois University-Carbondale Biosecurity Modeling	Illinois								•			•	•	•	•		•					
2010	KDFWR Kentucky State Fish Hatchery Studies	Kentucky	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•					
2010	USFWS - Jordan Effluent Treatment	Michigan						•	•				•	•	•	•		•					
2010	USFWS - Pencil Creek NFH Early Rearing Building	Michigan					•	•	•	•			•	•	•	•		•					•
2010	USFWS - Pencil Creek NFH Traveling Screen	Michigan	•	•	•	•	•	•	•	•			•	•	•	•		•					
2010	USFWS - Nashua NFH Generator Replacement	N Hampshire											•	•	•	•		•					
2010	USFWS - Spiny Water Flea Water Treatment Study, Lake Sacandaga & Lake Champlain	New York					•			•			•	•	•	•		•					
2010	Byron SFH Pond and Water Supply Improvements	Oklahoma			•	•				•	•		•	•	•	•		•					
2010	Coursey Springs FCS Renovation	Virginia	•	•	•		•	•	•	•			•	•	•	•		•					
2010	USFWS - Genoa NFH Isolation Effluent Treatment	Wisconsin		•	•	•		•	•				•	•	•	•		•					
2010	USFWS - Iron River NFH	Michigan					•	•	•	•			•	•	•	•		•					
2009	AK DFG William Jack Hernandez Sport Fish Hatchery QC	Alaska	•	•	•	•	•	•	•	•			•	•	•	•		•					•
2009	Anchorage Sport Fish Hatchery	Alaska											•	•	•	•		•					
2009	Bodine & East Fork SFH VHS Study & Preliminary Design	Indiana	•				•	•	•				•	•	•	•		•					
2009	USFWS - Green Lakes NFH chiller replacement	Maine								•			•	•	•	•		•					
2009	USFWS - North Attleboro NFH #5 Field Review	Massachusetts											•	•	•	•		•					
2009	IPN Disease Issues - Conelquod	New York	•				•						•	•	•	•		•					

CERTIFICATION AND SIGNATURE PAGE

By signing below, I certify that I have reviewed this Solicitation in its entirety; understand the requirements, terms and conditions, and other information contained herein; that I am submitting this bid or proposal for review and consideration; that I am authorized by the bidder to execute this bid or any documents related thereto on bidder's behalf; that I am authorized to bind the bidder in a contractual relationship; and that to the best of my knowledge, the bidder has properly registered with any State agency that may require registration.

HDR Engineering, Inc.

(Company)

Lincoln D. Cochran

(Authorized Signature)

Lincoln D. Cochran, PE, Vice President

(Representative Name, Title)

(217)585-8300

(Phone Number)

(217)585-1890

(Fax Number)

June 28, 2013

(Date)

RFQ No. DNR213227

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

MANDATE: Under W.Va Code §5A-3-10a, no contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and: (1) the debt owed is an amount greater than one thousand dollars in the aggregate; or (2) the debtor is in employer default.

EXCEPTION: The prohibition listed above does not apply where a vendor has contested any tax administered pursuant to chapter eleven of the W. Va Code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

DEFINITIONS:

"Debt" means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

"Employer default" means having an outstanding balance or liability to the old fund or to the uninsured employers' fund or being in policy default, as defined in W. Va. Code § 23-2c-2, failure to maintain mandatory workers' compensation coverage, or failure to fully meet its obligations as a workers' compensation self-insured employer. An employer is not in employer default if it has entered into a repayment agreement with the Insurance Commissioner and remains in compliance with the obligations under the repayment agreement.

"Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceeds five percent of the total contract amount.

AFFIRMATION: By signing this form, the vendor's authorized signer affirms and acknowledges under penalty of law for false swearing (W. Va. Code §61-5-3) that neither vendor nor any related party owe a debt as defined above and that neither vendor nor any related party are in employer default as defined above, unless the debt or employer default is permitted under the exception above.

WITNESS THE FOLLOWING SIGNATURE:

Vendor Name: HDR Engineering, Inc.

Authorized Signature: Lincoln P. Cochran

State of Illinois

County of Sangamon, to-wit:

Taken, subscribed, and sworn to before me this 28 day of June, 20 13

My Commission expires: April 12, 20 16

AFFIX SEAL HERE

NOTARY PUBLIC

Jennifer Williams

Purchasing Affidavit (Revised 07/01/2012)



ADDENDUM ACKNOWLEDGMENT FORM
SOLICITATION NO.: DNR213227 |

Instructions: Please acknowledge receipt of all addenda issued with this solicitation by completing this addendum acknowledgment form. Check the box next to each addendum received and sign below. Failure to acknowledge addenda may result in bid disqualification.

Acknowledgment: I hereby acknowledge receipt of the following addenda and have made the necessary revisions to my proposal, plans and/or specification, etc.

Addendum Numbers Received:

(Check the box next to each addendum received)

- | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> Addendum No.1
<input type="checkbox"/> Addendum No. 2
<input type="checkbox"/> Addendum No. 3
<input type="checkbox"/> Addendum No.4
<input type="checkbox"/> Addendum No.5 | <input type="checkbox"/> Addendum No.6
<input type="checkbox"/> Addendum No. 7
<input type="checkbox"/> Addendum No.8
<input type="checkbox"/> Addendum No. 9
<input type="checkbox"/> Addendum No. 10 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

I understand that failure to confirm the receipt of addenda may be cause for rejection of this bid. I further understand that any verbal representation made or assumed to be made during any oral discussion held between Vendor's representatives and any state personnel is not binding. Only the information issued in writing and added to the specifications by an official addendum is binding.

HDR Engineering, Inc.
Company

Lincoln D. Cochran
Authorized Signature

June 28, 2013
Date

NOTE: This addendum acknowledgement should be submitted with the bid to expedite document processing.