Road Safety Audit:
Hagerman National Fish Hatchery

Prepared by Western Federal Lands Highway Division, FHWA

for

Hagerman National Fish Hatchery, U.S. Fish & Wildlife Service

December 3, 2009

1 Background

1.1 Hagerman National Fish Hatchery

Hagerman National Fish Hatchery (Hatchery) is operated by the U.S. Fish and Wildlife Service (Service). It is located on the north-eastern bank of the Snake River approximately 30 miles northwest of Twin Falls and has been in operation since 1933. In 1984, the Hatchery underwent major remodel and expansion work as part of the Lower Snake River Compensation Plan which was authorized to compensate for fish losses caused by the construction and operation of the four Lower Snake River dams. The Hatchery produces steelhead for release into the Salmon River and rainbow trout for the Dworshak Dam Mitigation Program.

In recent years the Hatchery has observed an increase in traffic associated with the three permitees having access across the Hatchery property. These agencies include public use at the Hagerman Wildlife Management Area, traffic associated with the University of Idaho Hagerman Fish Culture Experiment Station, and operations by the SeaPac of Idaho commercial fish hatchery.

1.2 Other Agencies

1.2.1 Hagerman Wildlife Management Area

The Hatchery property includes part of the Hagerman Wildlife Management Area (WMA), which was created in 1940. The WMA is managed by the Idaho Department of Fish & Game (IDFG), and consists of 880 acres, including 223 acres licensed from the Service. There are several ponds in the WMA that are stocked by IDFG and provide recreational fishing opportunities March through November. The WMA is also a migratory waterfowl rest stop in the winter months. IDFG operates a state-run hatchery located near the National Fish Hatchery, and has an access road approximately 2 miles from the Hatchery gate. There is a cooperative agreement (dated August 14, 1957) between the Service and IDFG regarding the management of Service lands as part of the WMA.

1.2.2 Hagerman Fish Culture Experiment Station

Co-located within the Hatchery grounds is the Hagerman Fish Culture Experiment Station (HFCES). This research facility is owned and operated by the University of Idaho (University). The water rights and diversions for this facility are owned by the Service and administered through the Hatchery. The HFCES was created in the early 1990's when the University of Idaho's Aquaculture Research Institute began conducting fish nutrition and conservation research in a building on the Hatchery. Improvements to the building required University ownership and in the late 1990's a transfer of 4 acres (including buildings) was completed. An MOA was entered into by the Service and University in 1999, shortly after the property transfer. There is also a 2002 Right-of-Way Easement between the Service and the University about rights-of-way and access to the University property.

1.2.3 SeaPac of Idaho

SeaPac of Idaho (SeaPac) is a private commercial fish hatchery that raises trout and tilapia. In 2003 the Service renewed a right-of-way permit for SeaPac to have access to its facility across Service-owned property. The permit also includes provisions for road maintenance and installation of a gate near SeaPac's property.

1.3 Road Safety Audits

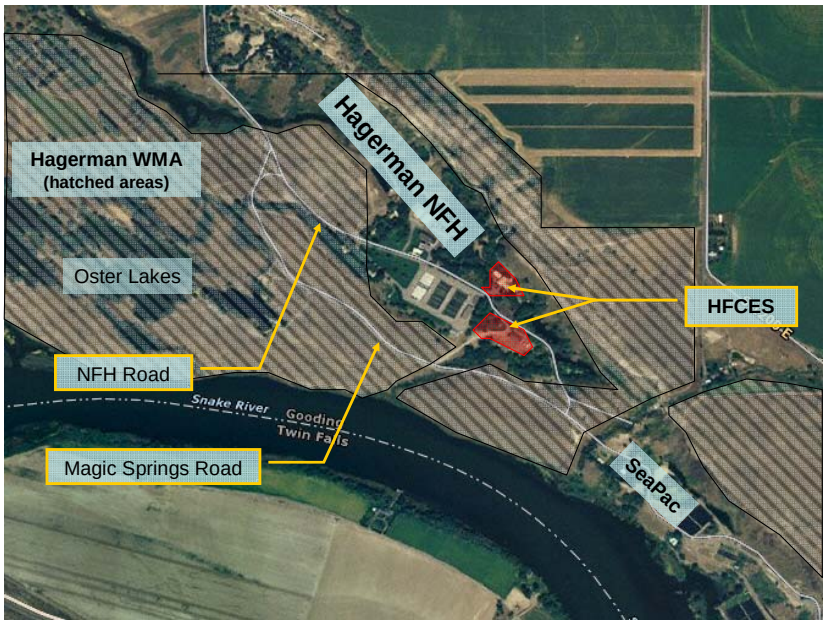
A road safety audit (RSA) is a formal safety performance examination of an existing or future road or intersection by an independent audit team. RSAs help to promote road safety by identifying safety issues at the design and implementation stages, promoting awareness of safe design practices, integrating multimodal safety concerns, and considering human factors in the design.

1.4 Reminder

The RSA Team has conducted this audit to the best of its professional abilities within the time available and by referring to available information. While every attempt has been made to identify significant safety issues, the design team and the project owner are reminded that responsibility for the design, construction, and performance of the project remains with the engineers of record.

1.5 RSA Scope

This in-service RSA of the Hatchery was conducted on Service, University, and WMA properties around the Hatchery. The RSA focuses on general issues associated with road safety to and within the Hatchery and involving or affecting the properties adjacent to the Hatchery.



1.6 RSA Team and Process

The audit team and the project material on which the audit was based are described in Attachment 1.

A site visit was conducted June 29 to July 1, 2009, to gain an understanding of the existing conditions and surroundings, as well as to identify safety concerns. Notes on the site visit are contained in Attachment 2.

2 RSA Findings

Many visitors to the Hatchery are unaware of the other agencies that share the road and/or property. Visitors to the Hatchery can easily follow signs to visitor parking and sites, but visitors going to the other facilities may get confused due to the paved road being the one into the Hatchery, while the more used road going to SeaPac, HFCES, and Oster Lakes (IDFG) is unpaved.

2.1 Roads

2.1.1 National Fish Hatchery Road

The county road (S 1050 E) that leads to the Hatchery is paved, approximately 20 feet wide, and has no pavement markings. The National Fish Hatchery Road splits off the county road about ½ mile northwest of the Hatchery gate. The road then crosses over a narrow bridge and past an intersection with Magic Springs Road before entering the Hatchery complex. Inside the Hatchery gate, the road splits into two narrow paved roadways which lead to staff housing and to the visitor services within the Hatchery.

The road pavement condition seems adequate for the amount of use on the road. The narrow bridge is "structurally adequate and functionally inadequate" and should be replaced with a wider structure in the future, when funding is available. The roads behind the Hatchery gate should be explored for one-way operations (which would ease bus traffic) in the short term, and the one leading to the visitor services should be considered for widening in the long term (for two-way traffic).

2.1.2 Magic Springs Road

Magic Springs Road splits off from the National Fish Hatchery Road between the narrow bridge and the Hatchery gate. Destinations along this road include Oster Lakes (recreational use), the HFCES property, and SeaPac. This gravel road is maintained by SeaPac under the right-of-way permit with the Service. Signing for the public use at Oster Lakes is handled by the IDFG under the cooperative agreement with the Service. There is a narrow box culvert within five-hundred feet of the paved National Fish Hatchery Road which is not marked and not wide enough for two-way traffic. This culvert has been compromised in the past by high water and may not survive a future flood. Traffic at the culvert is affected by the narrow road, the trees obscuring sight distance, and the horizontal and vertical curvature. Replacing the culvert with a wider structure should be explored in the future.

Oster Lakes

Access and parking for fishing at Oster Lakes consists of designated areas near the narrow culvert crossing and a more developed location about a ¼ mile down Magic Springs Road. There are also user-defined access points and parking along the road. The current access near the culvert has limited sight distance due to the trees and grade difference. Closing this access and developing the user-defined road farther from the trees should be explored. The other user-defined accesses just east of the culvert crossing should be discouraged or developed. The signed Oster Lakes access (skewed and extra

leg) may need a reconfigured intersection and improved signing to encourage that site for primary use.

University of Idaho HFCES

Access to the HFCES is just beyond the Oster Lakes site. There are no destination signs for this facility past the Hatchery/Magic Springs intersection, which may make it difficult for visitors and delivery drivers to find the site since the HFCES access road is located about a half-mile from the intersection. With the majority of traffic on Magic Springs Road past the Oster Lakes recreational area due to staff, students, and deliveries to the HFCES facilities, a berm made by turning vehicles is beginning to be built up at the HFCES access road. This berm could be an operational problem for traffic traveling past the HFCES approach in the future. Grading and regular maintenance is recommended to improve safety and operations of the roadway.

2.1.3 Road System

Consistency enhances road safety by allowing drivers to anticipate conditions ahead based on the conditions they have already encountered. Planning for future road improvements is encouraged, whether it is resurfacing the paved road, improving the gravel road, or widening the water crossings. Conducting a traffic study that analyzes the traffic flow patterns into and within the study area would help to determine what improvements could be made to enhance visitor experience. Any administrative maintenance agreements that are part of the documents mentioned in Section 1.2 should be updated to avoid overlaps and to clarify roles and responsibilities of the Service and the permitees (University, IDFG, and SeaPac).

2.2 Signs

While there are some warning and guide signs to help drivers make decisions, the RSA team found room for improvement in the location or message of some signs. The narrow bridge on the main road north of the intersection with Magic Springs is adequately signed, though the tree at the southwest corner of the bridge will need trimming to avoid blocking the sign. The guide sign at the Hatchery/Magic Springs intersection has directions for both the Hatchery and the HFCES, but could benefit from an improved message and have better placement by moving the sign before the intersection. Other signs for the Oster Lakes parking areas and for HFCES should also be incorporated into the overall signing plan in the future. Finally, traffic speed in the area is a concern and a speed study should be conducted to help determine the posting of proper speed limits.

Example of Direction Sign at Intersection with Magic Springs Road

2.3 Property Administration

There are documents that include stipulations for road maintenance, rights-of-way, and access between the agencies in the vicinity of the Hatchery. The language in these documents may need updating due to changes in uses and/or activities in the study area. Case in point, an overall agreement with how to manage and maintain the unpaved Magic Springs Road should be considered, rather than having individual agreements between different groupings of entities that use that road. Ongoing cooperation between the Hatchery and the other agencies can improve road and visitor safety and experiences through consistent management of the roads in the area.

3 Conclusion

Three main safety issues have been identified in this in-service road safety audit: road improvements, signing improvements, and administration improvements. A long-term road management approach, as well as interim suggestions for improvements, have been identified and are described in this report (Attachment 2). Many of the road improvements are long-term actions needing detailed planning and design. A traffic study was recommended to help identify and document traffic patterns, speeds, and usage. This will also help in determining messages and locations for signs. Partnering and mediation between the agencies located in and around the Hatchery property is encouraged to foster good working relationships and help update any documents between the agencies. The Service/Hatchery, University, IDFG, and SeaPac are invited to consider the suggested changes. To complete the audit process, these entities can prepare a consolidated written response to the issues and options outlined in this report.

Attachment 1

Road Safety Audit Team and Materials

Location Hagerman National Fish Hatchery (Hagerman, ID)

Audit Team
Tori Brinkly, PE, Highway Safety Engineer, Western Federal Lands, FHWA
Matt Joerin, Project Manager, Western Federal Lands, FHWA
Lance Johnson, Safety Engineer, Idaho Division, FHWA
Bruce Drewes, Manager, Idaho Technology Transfer Center

Project Owners
Hagerman National Fish Hatchery
Hagerman Fish Culture Experimentation Station, Aquaculture Research Institute, University of Idaho
IdaSea, SeaPac of Idaho
Idaho Department of Fish & Game

Hagerman NFH	http://www.fws.gov/hagerman/
Hagerman WMA	http://fishandgame.idaho.gov/cms/wildlife/wma/hag/
HFCES	http://www.webs.uidaho.edu/aquaculture/hagerman_facilities.htm
SeaPac	http://seapacofidaho.com/

Review Date June 29 - July 1, 2009

Audit Stage In-service

Start-Up Meeting June 29, 2009, 1:00 pm

Attended By
Hagerman National Fish Hatchery
Hagerman Fish Culture Experimentation Station, University of Idaho
IdaSea, SeaPac of Idaho
Idaho Department of Fish & Game
US Fish & Wildlife Service, Region 1

Documents Available for the Audit:

- MOUs and MOAs of the agreements between the different agencies, including:
  - Cooperative Agreement, Service & State, 1957
  - MOA, Service & University, 1999
  - Right-of-Way Easement, Service & University, 2002
  - Right-of-Way Permit, Service & SeaPac, 2003
- Map of the area with ownership boundaries marked
- Aerial photos of the area

Attachment 2

Notes of Site Visit &
Draft Observations and Suggestions

Road Safety Audit (RSA) at Hagerman National Fish Hatchery, Idaho
June 29-July 1, 2009
From one lane bridge on National Fish Hatchery Road through NFH and on Magic Springs Road from NFH Rd, past HFCES access and to SeaPac.

Reason: increased traffic use in the area and FWS efforts for long range transportation planning, determined a need to conduct an RSA which will lead to efforts to complete a Traffic Management Plan for the Hagerman NFH area.

Approaching NFH:

1. Hatchery Road Bridge is well-defined by object markers. One-lane bridge with paved surface. SHORT TERM: Maintain. LONG TERM: replace/widen as necessary in the future.
2. One Lane Bridge sign present, but too low and does not meet minimum retroreflectivity criteria. SHORT TERM: Evaluate current signing and develop sign management plan for the facilities (Hatchery, Oster Lakes, HFCES) to address sign location, size, message. (sign plan for whole area)
3. Tree by southwest corner of bridge will eventually obscure object marker. SHORT TERM: Trim back vegetation as needed to maintain sight distance.
4. Approach speeds are of concern due to narrow, curvy road. SHORT TERM: Recommend conducting speed study to determine appropriate speed and sign accordingly. (Reference Idaho Code; study whole area.)

NFH & Magic Springs Y Intersection:

1. Signs: Too much information. Oster Lakes sign is routed wood and very small. HFCES sign too low. Hatchery & HFCES signs in odd location per the Manual on Uniform Traffic Control Devices (MUTCD). SHORT TERM: Recommend having sign after bridge and before Magic Springs Rd providing directions to Hatchery, HFCES, & Oster Lakes. Recommend moving existing Hatchery sign towards NFH gate. Evaluate need for street name signs on Yield sign.
2. Alignment & Extra Roads: Skewed alignment and vegetation limit sight distance from Magic Springs Road. LONG TERM: User defined roads need to be developed or discouraged. Intersection

should be evaluated for realignment and could possibly use one of the pioneered roads for new Magic Springs Rd approach.

Hatchery Access:

1. 12-16 feet wide, paved; gated. SHORT TERM: Short signs just beyond gate need to be at proper height and placed where not obscured by vegetation. Some signs on wrong side of road. Install object markers or other delineation on gate. Sign management plan for sign in Hatchery (speeds, warnings, etc.).
2. Narrow (single-lane, 12-ft) roads split from main entrance road to go to residents on right and visitor center on left. LONG TERM: Consider widening access to visitor center to help more positively direct the public.
3. Traffic access and circulation may be confusing. SHORT TERM: Recommend better signing for visitor parking. Recommend a plan for dealing with bus visits that could include one-way circulation for the busses and safer location for off-loading students.
4. Pedestrian access within Hatchery could be improved through developing a pedestrian plan for safe pathways and sites to see.
5. Ecology blocks are being used as road barriers between trees and raceways to prevent through traffic. They are also present along south side by the Hatchery's two RV pads and at end of residential access. SHORT TERM: As part of signing plan, incorporate object markers (end of road) for placement on/at blocks.

Magic Springs Road (MSR)

1. Magic Springs Bridge is narrow, one-lane bridge (box culvert) with gravel surface. Lacks object markers and has sustained damage from high flow. Steel plates were used to retain road. Vegetation has been cleared to improve sight distance, but appears to need regular attention. SHORT TERM: Recommend object markers be installed at bridge and add sign for One Lane Bridge. LONG TERM: Future could include replacing with larger, longer structure.
2. See Oster Lakes for observations & recommendations.
3. See HFCES for observations & recommendations.

Oster Lakes Access

1. First access (lakes 3-5) off MSR has two driveways, first is pioneered (user defined) and second is just before the box culvert near trees. Sight distance is good for site approach but not for those traveling NW on MSR. LONG TERM: Explore developing user defined driveway as main road and close off second driveway, but maintain area next to trees as turn-around and parking areas.
2. Next access is user defined and rough road. Not well used so hidden in roadside vegetation. LONG TERM: Recommend closing off and rehabilitating area.
3. Third access is most developed and a single-lane gravel road. There is parking, a restroom, and accessible fishing pier present. Sign is non-MUTCD. Skewed intersection not good for traffic turning SE toward HFCES & SeaPac. User defined roads exists that could be developed as needed. Sight distance for turning on to MSR could be better. LONG TERM: Widen the access road into Oster Lakes to improve the safety of the intersection and travel on the roadway over the hill. This would also allow for the closing of the user defined roadway.
4. No signing at first and second access roads, but third access has non-MUTCD sign. SHORT TERM: Develop signing plan for Oster Lakes, including signing for accessible parking and fishing.

University/HFCES Access

1. No signing for their access off MSR. Gate present with 13-14 foot wide gravel road (16-ft clearance at gate). SHORT TERM: Install HFCES Lab directional sign before approach. Look into need for address sign on gate (for emergency response and visitor identification).
2. Access road into HFCES property is narrow (14-16'), but traffic volume is low. Hairpin curve at dorms and fish lab could be difficult to maneuver in large/long vehicle. Guy wire at utility poles could be snagged by tall and/or off-center vehicles. Hydrant present in grass just off inside of curve. SHORT TERM: Coordinate with Hatchery for any oversize/long load deliveries to HFCES. LONG TERM: Widening access road should be considered if traffic volume at HFCES increases in future. Evaluate whether utility poles could be consolidated and guy wire moved (or removed). If utility poles cannot be adjusted, consider flagging guy wire. Hydrant could be moved to provide more turning radius on inside of curve.
3. HFCES property signing is lacking. SHORT TERM: Recommend signing Fish Lab building and direction to main HFCES office. (HFCES specific sign plan)

SeaPac

1. Maintains MSR from intersection with NFH Road to SeaPac gate. Road seems adequate for current traffic use and volume (approx 18 ft wide).
2. Concerned with trespassers. SHORT TERM: Recommend signing for Dead End or Private Road just beyond HFCES access, including a No Turnaround sign. Minor grading for turnaround space may be necessary here or closer to SeaPac gate.

Administrative

1. The Hatchery's Traffic Management Plan should include input from the other agencies/permittees (HFCES, SeaPac, IDFG) in the area.
2. Consider meeting on regular basis to discuss access issues, upcoming events, etc. that could affect visitation to all properties (Hatchery, HFCES, SeaPac, IDFG).
3. NFH & HFCES should develop a request process for access through the Hatchery if there are large vehicles or deliveries coming to the HFCES Lab or if access via Magic Springs Road is not available.
4. If HFCES continues growing and/or has concerns about condition of Magic Springs Road, they should coordinate with SeaPac about improving road surface (dust abatement, grading, etc.)