

PRODUCT SPECIFICATION

TITLE	DATE	REV
Product Requirements	24 May 2018	0

Project Fish-Vac Product Requirements

Fish-Vac

Ben McBride, Khari Amos, Cody Gibson, Hasan Alajmi

PRODUCT SPECIFICATION

TITLE	DATE	REV
Product Requirements	24 May 2018	0

Document History

Rev Number	Date	Modified By	Reason
0	25June2020	B. McBride	Initial Release

PRODUCT SPECIFICATION

TITLE	DATE	REV
Product Requirements	24 May 2018	0

Table of Contents

1 OBJECTIVE	4
2 SCOPE	4
3 REFERENCES	4
3.1 CITED DOCUMENTS	4
4 FUNCTIONAL REQUIREMENTS	5
4.1 USER INTERFACE REQUIREMENTS	5
4.2 WHAT IT SHOULD DO	ERROR! BOOKMARK NOT DEFINED.
5 MECHANICAL REQUIREMENTS	5
5.1 STRENGTH REQUIREMENTS.....	5
5.2 VOLUME REQUIREMENTS	5
5.3 APPEARANCE REQUIREMENTS	5
5.4 DURABILITY REQUIREMENTS.....	5
8 ENVIRONMENTAL REQUIREMENTS	5
8.1 TEMPERATURE.....	5
8.2 ENVIRONMENTAL SEALING.....	6
9 REGULATORY REQUIREMENTS	6
9.1 ANIMAL CARE REQUIREMENTS.....	6
10 COST REQUIREMENTS	6
10.1 PROTOTYPE COST	6
11 SCHEDULE REQUIREMENTS	6

PRODUCT SPECIFICATION

TITLE	DATE	REV
Product Requirements	24 May 2018	0

1 Objective

The objective of this document is to outline the requirements for an enhanced fish vaccination system.

2 Scope

The scope of this document is to define the requirements of an apparatus to be prototyped that has the ability to provide a minor puncture (or break) in the integument of rainbow trout so it can be determined if vaccine uptake and protection is enhanced when such a device is incorporated into a mass immersion vaccination.

3 References

3.1 Cited Documents

Dr. Cain's PowerPoint and introduction letter

...

PRODUCT SPECIFICATION

TITLE	DATE	REV
Product Requirements	24 May 2018	0

4 Functional Requirements

4.1 User Interface Requirements

There should be two prototypes made, one small for in lab use, and one large enough for scale testing. Both the small and large prototype must be able to be moved and operated by the average person.

4.2 What should it do

The apparatus should create a puncture or break in the integument (skin) of small (1-5g) salmonids. After the skin is punctured the fish should then be immersed in the vaccine mixed with rearing water. After being immersed in the vaccine for the required amount of time, the fish need to be removed without draining the vaccine.

5 Mechanical Requirements

5.1 Strength Requirements

The design shall be able to withstand years of use, and all consumable parts must be easily changed.

5.2 Volume Requirements

The initial lab testing prototype model should be designed to hold around 1L of fluid, and .240kg of fish. The final prototype should hold around 30 gallons, and 27.4kg of fish.

5.3 Appearance Requirements

The final product shall be polished Stainless Steel.

5.4 Durability Requirements

The system shall be designed to vaccinate thousands of fish without needing scheduled maintenance.

6 Environmental Requirements

6.1 Temperature

The Product is expected to have full operational capabilities in environments with fluid temperatures around 15°C.

PRODUCT SPECIFICATION

TITLE	DATE	REV
Product Requirements	24 May 2018	0

6.2 Environmental Sealing

All components must be sealed in order to operate in both fresh and saltwater environments.

7 Fluid Transfer Requirements

7.1 Drainage Requirements

All fluid holding tanks should be able to be drained into hoses to direct fluid to appropriate location.

7.2 Filling Requirements

All fluid holding tanks should have connection for rearing water filling lines, with visual volume incrementation marks.

8 Regulatory Requirements

8.1 Animal Care Requirements

The components shall comply with the Animal care and use protocol standards.

9 Cost Requirements

9.1 Prototype Cost

Cost to build a testable prototype shall not exceed \$2000.

10 Schedule Requirements

The following are the major Project Milestones:

- Approval of Requirements June 29, 2020
- Project Schedule July 6, 2020
- Portfolio, Wikipage, Logbook July 10, 2020
- Snapshot Day 1 July 13, 2020
- Design Validation Plan July 20, 2020
- Project Value Proposition July 27, 2020
- Concept Design Review July 30, 2020
- Snapshot Day 2 Aug. 6, 2020
- Portfolio, Wikipage, Logbook Aug. 7, 2020
- Engineering Release Review Sept. 27, 2020
- Logbook and portfolio to lead Oct. 10, 2020

PRODUCT SPECIFICATION

TITLE	DATE	REV
Product Requirements	24 May 2018	0

- Snapshot Day 3 Oct. 15, 2020
- Logbook Nov. 14, 2020
- Team Member Citizenship Nov. 22, 2020
- Technical Presentations/Snapshot day 4 Dec. 6, 2020
- Final Deliverables Dec, 13, 2020