1. Introduction:

1.1 Purpose of the system: The CSULB Marine Biology department collects data from several species of marine life that have been tagged. Data will be collected by a receiver located off of Manhattan Beach Pier, which will record the ID # of tags, associated sensor data, date, and time of detection. The receiver in turn will be connected to a computer. The purpose of the system will be to interface with this computer remotely in order to control the receiver and receive data from it.

1.2 Objectives:

1.3.1 Ability to connect remotely to the computer managing the receiver.

1.3.2 Ability to control the receiver remotely through that connection.

1.3.3 Ability to optionally stream real-time data from the receiver.

1.3.4 Sending an email alert when a detection is recorded.

1.3.5 Archive recorded data and recording metadata.

1.3.6 Website with public access with detection records and streaming data.

1.3 Definitions:

1.3.1 “The system” will refer to the software being created by this project, and not the firmware already installed.

1.3.2 Software at the remote site (e.g. Manhattan Beach Pier) will be referred to the “server” or “backend”.

1.3.3 Software running locally by an end-user will be referred to as the “client” or “front-end”

1.3.4 In general, a collection of server and clients will be referred to as the “application network” with each site as “nodes”.

1.3.5 “Phase I” refers generically to the software defined in 1.3.1 through 1.3.5.

1.4 References:

1.4.1 “VR2C wired acoustic receiver”, submitted on 2012-09-17

2. Functional Requirements:

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3. Non-Functional Requirements:

3.1 Usability

3.1.1 The application should minimize network configuration.

3.1.2 Additional receiver nodes with up to N receivers should also require minimal configuration by a remote operator.

3.1.3 The application should allow more than one client to connect.

3.2 Reliability

3.2.1 The system should be available 24 hours a day, 7 days a week.

3.2.1.1 Remote receiver nodes should attempt to detect critical faults and reset without end-user administration.

3.2.2 The system will handle exceptions by notifying the user.

3.3 Safety

3.3.1 There are no known safety requirements.

3.4 Security

3.4.1 Access to the system will be limited to authorized users through the use of configurable access control lists.

3.4.2 Data identified as sensitive will be encrypted when transmitted over open networks (e.g. the internet, the CSULB network, etc.). Note: this requirement does not imply the existence of sensitive data.

3.5 Performance

3.5.1 Commands to receivers and their effects should be sent and received in near-real-time.

3.5.2 Remote servers should enter ready status within N minutes of a cold start.

3.6 Supportability

3.6.1 Sufficient documentation should be provided to the customer to allow for future bug fixes.

3.7 Implementation

3.7.1 TBD

3.8 Interface

3.8.1 The system will interface with the firmware (current at time of implementation) on each receiver.

3.8.2 The system will generate data consistent with existing formats (e.g. CSV).

3.9 Packaging

3.9.1 Server software will be installed on the pier computer.

3.9.1.2 Server software will also be packaged in a manner that facilitates additional installations.

3.10 Statistical Data

3.11 Legal