

**NAU CENE 476**

**Fall 2017**

**Scope/Schedule for San Simon Basin Dam Evaluation**

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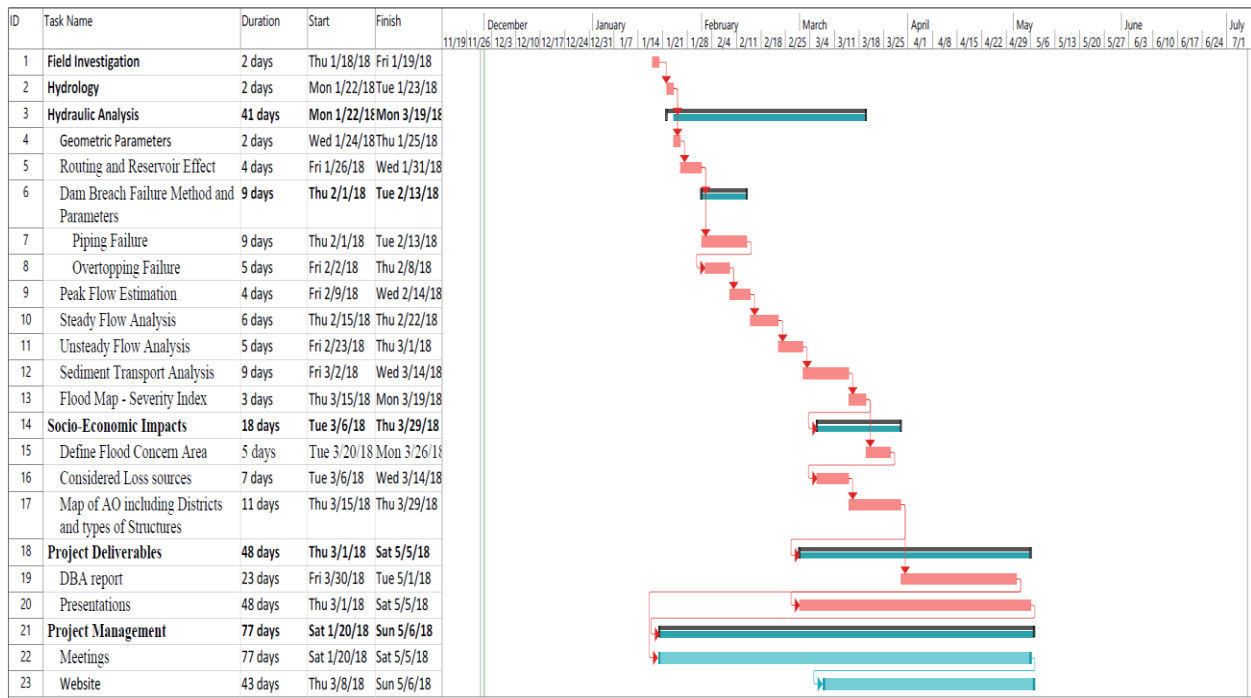
Figure 2: Work Breakdown Structure

### Abbreviations

- HEC-RAS - Hydrologic Engineering Center's River Analysis System
- BLM - The Bureau of Land Management
- NAU - Northern Arizona University
- DBA- Dam Breach Analysis

### 3.0 Project Schedule

The San Simon DBA project began in the Fall 2017 semester and will continue into the end of the school year in the Spring of 2018. The overall schedule has been divided into four portions in order to ensure the engineering team stays on the project's critical path as well as to give short term deliverables for the team. The four sections of the project are divided into data collection, the HEC-RAS model, an economic analysis, and the final compilation. The projects critical path will follow the same breakdown starting with data collection which will be used for the HEC-RAS model. The HEC-RAS model as well as additional data will be used for the economic analysis portion and the results from all 4 sections will be compiled for the final deliverable in the Spring of 2018.



Figures 1: Gantt Chart

### 3.1 Data Collection

The first major task for the San Simon engineering team is to compile all of the necessary data in order to complete the analytical tasks. The first section of the project is completely dedicated to gathering all of the information needed and has been estimated to take 90 days, or from August 31st to late November. During this time the rainfall data, channel hydraulic data, channel assumptions, topographic data, and local flood prone areas for the basin must be collected and organized.

### **3.1.1 Project Synopsis**

After the initial meeting with BLM, the engineering team began to break down the problem at hand and the local area involved in the project. This portion of data collection consisted of gathering basic project information such as the main scope of work to be completed by the engineering team, the stakeholders involved, and all other introductory necessities. This portion of the data collection task took 60 days to gather.

### **3.1.2 Hydrology Data**

Local topographic areas as well as target basins are to be used along with local hydrologic data to approximate an average rainfall during a 100-year peak storm event. This rainfall approximation will be assessed by looking at the infiltration and runoff coefficients for the local area, and assuming a very large runoff. This portion of the data collection task will take 15 days to complete and double check to ensure accurate results.

### **3.1.3 Hydraulic Data**

The last data collection task for the engineering team will be the research real channel properties as well as come up with necessary analysis assumptions. These assumptions will need to be back checked by all stakeholders and engineers involved in the outcome of this project. These assumptions as well as real channel measurements will be used in further model steps in order to create a detailed model of the single dam structure being analyzed. This section of the data collection task will take 15 days to complete and ensure all results and assumptions are checked.

## **3.2 HEC-RAS Model**

The second major task for the engineering team will be to compile all of the necessary channel data into a model representation of the basin and dam. The team will then need to run multiple simulations in order to determine the outcome of the DBA with multiple possibilities. This task has been estimated to take 105 days, or from early December to Mid March to model and complete all necessary simulations.

## **3.3 Economic Analysis**

An economic analysis for the surrounding flood prone area is the next step for the engineering team. Data from the first portion of the project will be needed to determine affected flood areas as well as an estimated cost for different portions of land. However,

additional research will likely need to be performed during this step of the project in order to determine a proper cost of damage if a catastrophic flooding event were to occur. This portion of the project has been estimated to take 30 days, or from mid March to mid April to complete and ensure an accurate economic model.

### **3.4 Final Submittal**

The final portion of the project for the engineering team will be to compile all of the gathered data into a final submission document, an informational website, and a professional presentation. The final submission document is an ongoing process throughout the entire project life and will be complete along with a website containing all of the same information on the project. The professional presentation will be performed on midterm of Spring 2018 in front of professional engineers as well as engineering professors. The final portion of the project has been estimated to take 21 days, and will be worked on sporadically from now until final submission.