

# United States Forest Service Internship

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**Acknowledgments:**

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I would like to thank Gregory Moon and the rest of the Modoc National Forest staff for giving me this experience. Everyone at the Forest Service went out of their way to make sure myself and the other interns learned as much as we could and got the most out of our summer at the Modoc National Forest.

I would like to give a special thanks to William (Bill) Goodman and Amy Harrison-Smith. Without the help of Bill and Amy, my partner and I would still be trying to fill out the first set of state water board paperwork. Bill and Amy went above and beyond to answer questions and assist us in locating the pertinent information to complete the multitude of wateboard forms we were responsible for.

Finally, I would like to thank the Water Resource Institute (WRI) for selecting me for this program. This internship has been an invaluable experience that will help me in selecting my career as I near the completion of my university education and it has provided me with many of the tools I will need to get there.

**Executive Summary:**

My primary project for the summer was to help the Modoc National Forest maintain compliance with state water board inspections and reporting requirements. This involved site inspections, inspection forms, and water rights reporting. When my primary project was completed, I worked on several other projects such as: the Woleman pebble counts, the archeology field surveys, and I had the great pleasure of assisting with the wild horse project.

**Project Objectives:**

The objective of our project was to get the Modoc National Forest back into compliance with the California Water Board reporting requirements. Due to a shortage of staff, the Modoc National Forest had fallen behind in its reporting to the water board. If the forest was not brought into compliance with the water board's requirements, monetary fines could be imposed and its water rights could be lost, resulting in the inability to divert water. The water board requirements at issue were the inspections of the timber sale sights to ensure that they were not polluting local water ways and the reporting of the water rights and how that water is being used.

**Project Approach:**

In order to bring the forest into compliance, seven timber sale sights needed to be inspected to ensure that they were following the Forestry Service's national best monitoring practices (BMP's). Using maps of the timber sale area, the locations that were most likely to negatively impact water quality were selected for inspection. The GPS mapping application Avenza Maps was used to navigate to the sites and locate the waterbodies and any roads or skid trails that might erode and add sediment to the waterbody. Once located, measurements were taken to ensure roads and timber harvesting activities were outside of the aquatic management zone (AMZ). Once inspections were completed, the BMP forms were submitted to the appropriate water boards. All new timber sales were enrolled in the monitoring program.

In addition to incomplete monitoring of the timber sale sites, water rights reporting was two years out of compliance. In order to bring the forest back into compliance for this requirement, myself and my fellow hydrology intern were required to enter monthly diversion amounts and answer questions about what the water is used for. Each type of diversion has its own reporting requirements. Stock ponds and federal stock ponds both required eight pages of reporting for each claim while appropriative, riparian, and federal riparian claims required nine pages of reporting for each claim. In total there were 782 water rights which were two years out of compliance for a total of 1,564 reports that needed to be entered. One forestry range technician had entered 608 of these reports before we took over. To finish entering the remaining 956 water rights, required a total of sixty-two man-hours between the two of us to. We are proud to report that the Modoc National Forest is back in compliance with these reporting requirements.

One of the other projects we devoted a substantial portion of our time to was the Wolman pebble counts. We were trained to conduct these counts by hydrology technicians from Shasta National Forest who generously visited us at the Modoc National forest to provide this training. These pebble counts are conducted to assess of the average size of the substrate in a stream bed. They are conducted by two persons, one person wading into the stream and randomly selecting a rock from the bottom of the stream, while the other person records the size, this is repeated approximately 100 times depending on the size of the stream. Other stream attributes such as turbidity, conductivity, bank stability, and temperature are also recorded during these surveys. These counts were conducted before and after culvert replacements and road construction to determine whether a road project affected the a nearby stream's morphology.

In between hydrology tasks, we assisted in the heritage department's archeology field surveys. To conduct these surveys myself and fellow interns worked as part of a survey team. Each member of the team is assigned a lane to walk and examine for prehistoric or historic artifacts. Once the initial survey was conducted any areas that contained artifacts were revisited and searched more thourouly. Any artifacts that were found were measured, photographed, and cataloged.

We also had the opportunity to assist the engineering department in doing bridge and water system surveys. During bridge surveys we would take photographs of key points on the bridge, clean the bridge surface, and make notes of any repairs that needed to be made on the bridge. When water system surveys were conducted we would inspect the well head or spring box to ensure that no insects or surface water could enter. Any storage tanks and or valves were inspected for leakes.

Lastly we were able to devote our remaining time to the wild horse program. The Modoc National Forest has a wild hosre management plan that allows for 402 horses, the forsest had more than 4000 horses on its land. With that many horses the carrying capacity of the forest was being pushed to the limit. To prevent suffering of the horses and degradation of the land 1000 horses are gathered each year and adopted out to good homes. To assist this program I helped sort horses that had been adopted and performed improvements on the corrals.

**Project Outcomes:**

Due to our efforts, the Modoc National Forest is now in compliance with the state water board and when the hydrology department is staffed, they will be able to work on maintaining compliance rather than catching up.

**Conclusion:**

Our time here at the Modoc National Forest has helped the forest service maintain compliance with state requirements while it allowed me to gain firsthand experience and insight into the U.S. Forest Service. I continue to believe it would be an honor to assist in the stewardship of our nation's natural resources. After earning my bachelor's degree, I would like to apply to the U.S. Forest Service as a hydrology technician.