**Pine River Pond Watershed Plan.**

Student’s Name:

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Course Name: Course Code:

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Date:

**2.1 Watershed Characteristics**

The Pine River Pond watershed area is situated in Wakefield, Carrol County in eastern New Hampshire, and it covers approximately 3,367 hectares. Subsequently, inclusive in the watershed area is a Lake area that covers an averagely of 230 hectares, and it constitutes 6.394% of the open water in the watershed region. Additionally, close examination of the area reveals that the surroundings have 10% of the land being occupied by water bodies; the surrounding environs of the Pine River Pond watershed area covered by forest, accounting for approximately 71% of the region. Moreover, this results in 19% of the land without forest coverings, and of that remaining percentage, 13% accounts for land that is used for agricultural activities. The other 6% of the remaining area has structural developments.

Additionally, the Pine watershed region has an average of 500 miles of both streams and rivers flowing through the region, and in the same region, there are other extra lakes in that region (Pine River Watershed, 2017). The shoreline of the Pine River water Pond has an extension of an average of 12 miles, and in the same region, the elevation level is over 500 feet above sea level. Ideally, the start of the Pine River from Minnesota starts with a relatively lower gradient that gains momentum with its continuous flow. Moreover, the Pine River generally flows towards the northwest direction and drains the water into the Ossipee lake, and the river is also linked to the Saco River. Moreover, there is the presence of the Arthur Fox Dam that regulates the water levels in that area, and ideally, the purpose of the dam is to ensure that no damages arise to the shorelines of the Pine River Pond, and this ultimately prevents floods in the region.

**2.2 Physical Characteristics**

**2.2.1 Surficial Geology**

Subsequently, the underlying layers in the pond are made up of rocks and sand, with a slight mixture of organic materials. Additionally, the common feature within the Pine River is the sand aquifers that are present, and are tick in nature. Moreover, gravel and sand aquifers supply water majorly.

**2.2.2 Soil Erosion Potential**

The Pine River Pond has over 8,500,000 m3 volume of water, and the flushing rate of the water body is over 2.1, and the course of the flow is towards the northwest region. Subsequently, the pond has 15 islands within it, and its approximate depth is 15 feet across the water body, with the deepest end recording 55 feet in depth. Subsequently, the area has hydrologic soils that can easily be washed away; this means that the soil in this case does not easily allow water to permeate, and the degree of erosion is relatively higher. Generally, the type of soil and the possibility of erosion are crucial factors to consider when one has developmental plans. Additionally, for this case, the soil around the Pine River Pond has a lower degree of infiltration indicating that the likelihood of pollution is relatively high for the water bodies around that area. Moreover, the Pine River Pond comprises soil A and B, whereby soil type A has the highest possibility of being eroded while soil type B has a relatively lower chance of being washed away (Squam Lakes Association, 2019). However, the mixture of the two soils shows that the possibility of erosion is moderately higher.

**2.3 Population**

Ideally, Wakefield is the major locational area of Pine River Pond watershed area has 129 persons per square mile while Ossipee that covers the major Watershed region has approximately 61 individuals per square mile. Finally, Effingham covers a smaller portion of the watershed area has 38 individuals per square mile of the land surface. Additionally, there was a slight increase in the population size of both the Ossipee and Wakefield region from 9423 to 9494 over a grace period of 9 years. Moreover, the highest population increase was from 1970 to 2019.

**2.4 Land Cover**

Back in 2010, it was evident that more than 840 acres in Wakefield Hampshire had an impervious covering, a clear indication of the developmental progress that has taken place in the area. Subsequently, the area in town covers approximately 3.3% of the total land in the area. And the housing units are approximately over 3,500 (New Hampshire Employment Security, 2018). Additionally, around the year 2005 in Ossipee over 3,400 acres of land had developed structures.

**2.5 Lake Morphology and Morphometry**

The size of the Pine River Pond is approximately 570 acres, and its location is in Wakefield town. Moreover, the pond has a complex morphology because of its vast stretching shoreline that covers 12 miles this further inhibits the flow of water, the mean depth of the Pine River Pond is 15 feet, and the deepest end is approximately 55 feet. Conclusively, the volume of water is 8,547, 500m3, and the flush rate is at 2.2 times a year, the moderate flushing rate of the Pine River Pond signifies the reduction in time for the settling of pollutants because of a relatively average rate of the water replacement.

**References**

New Hampshire Employment Security. (2018). *Wakefield, NH*. <https://www.nhes.nh.gov/elmi/products/cp/profiles-htm/wakefield.htm>.

Pine River Watershed. (2017, October). *Pine River Watershed; Restoration and Protection Strategy Report*. <https://www.pca.state.mn.us/sites/default/files/wq-ws4-33a.pdf>.

Squam Lakes Association. (2019, December). *Squam Lakes; Watershed Management Plan*.