

Baseline Data Analysis of the Thorgren Basin Retrofit

Authors: Erin Argyilan, Jennifer Birchfield, Tom Goyne, Nicole Grabos, Caitlin Soley, Jennifer Wunsh

Affiliation: Chemistry

The Thorgren Basin, located in Valparaiso, IN, was created as a component of the stormwater management system for the city. The basin's primary function is to collect stormwater from two separate regions of the Salt Creek Watershed after large storm events, that is then discharged through a single outlet. In its current state the basin has limited infiltration capabilities due to a lack of vegetation and pervious surfaces. The Save the Dunes Conservation Fund, a local non-profit group, provided a cost share opportunity to naturalize Thorgren basin. The goal of the summer 2011 project was to create a monitoring strategy for the basin, collect baseline water quality data to later evaluate the effectiveness of the retrofit, and provide public education and awareness of the project. Water quality and quantity parameters were evaluated on weekly sampling events within the interior and exterior of the basin. The water quality parameters analyzed include Total Suspended Solids (TSS), nitrates, Total Phosphorus (TP), Dissolved Oxygen (DO), pH, temperature, and conductivity. Benthic macroinvertebrates were also collected to assess the extent of biologic degradation. Water quantity was evaluated using discharge rates from the inlets and outlets of the basin, along with evaluating the retention rates after storm events. After examining the water quality parameters, the northern most inlet (21F and 21B) had the most inconsistent water chemistry values and was the main contributor to water pollutants such as nitrates, Total Suspended Solids (TSS), and E. coli bacteria. By the time pollutants reached the outlet, the data reflects a mild dilution of nutrients and sediment, whether it be absorbed by plant or macroinvertebrate life. The effectiveness of the retrofit will be noted by the decrease in these pollutants and water chemistry after future data is collected post-implementation caused by alterations in plant species and the internal structure of the basin.

Information about the Authors:

Erin Argyilan-Department of Geosciences, Indiana University Northwest, Jennifer Birchfield-Water Program Director, Save the Dunes Conservation Fund, Tom Goyne-Department of Chemistry, Valparaiso University, Nicole Grabos-Junior Geosciences Major, Indiana University Northwest, Caitlin Soley-Junior Civil Engineering Major, Valparaiso University, Jennifer Wunsh-Water Resources Specialist, Save the Dunes Conservation Fund

Faculty Sponsor: Tom Goyne

Student Contact: ngrabos@iun.edu