

C1.02 – Runoff Biogarden

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Project Sponsor: City of San Marcos



Introduction

- A biogarden is a natural and discrete water infiltration system.
- This project is analyzed and designed at **Crockett Elementary School** in San Marcos, Texas in the **Edwards Aquifer Zone**
- The biogarden will be located on the west side of campus.

Constraints

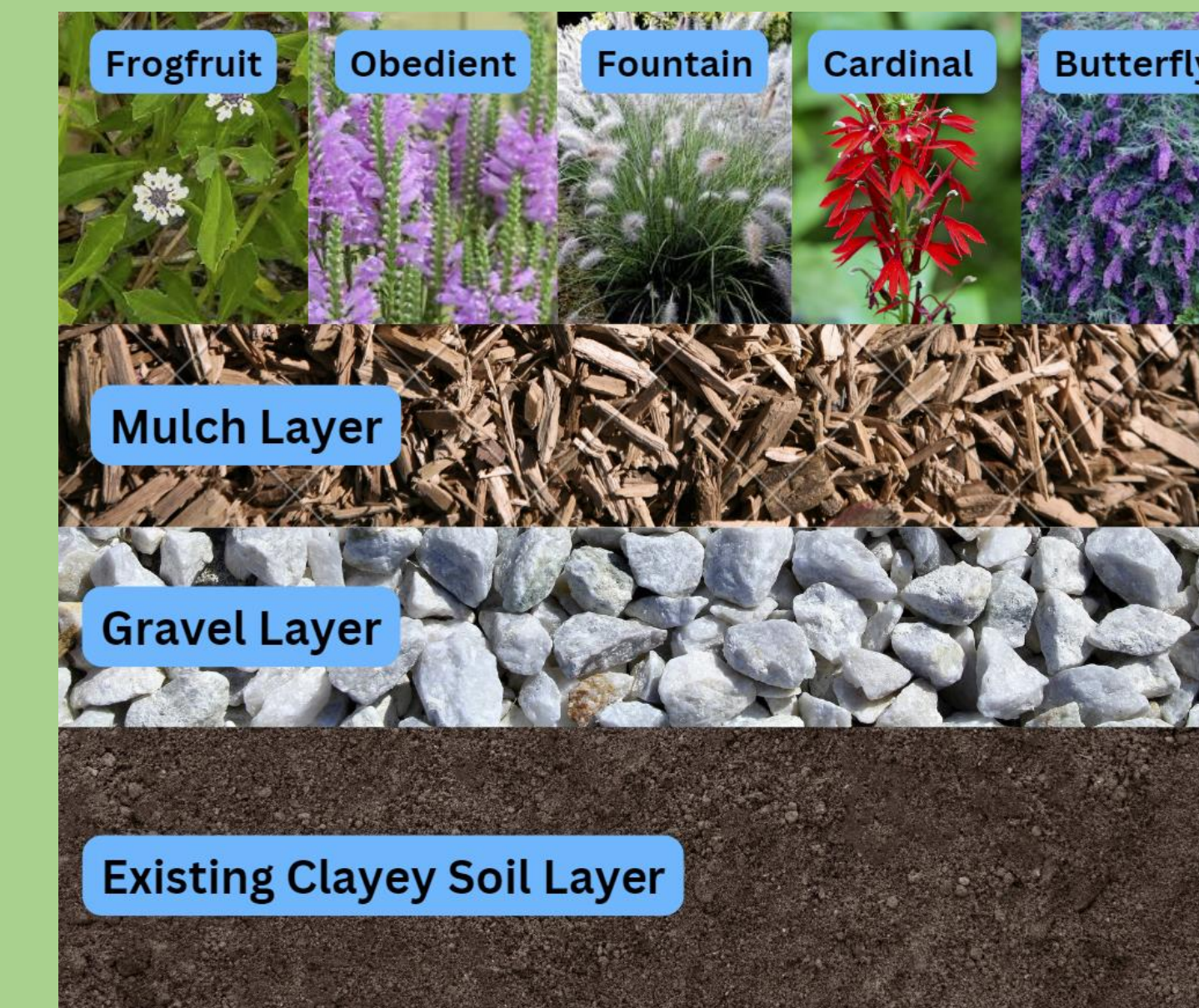
- Utility and sewer lines below
- Low-infiltration clayey soil
- Proximity to inlet and curbs as well as nearby trees
- Needs to adhere to **weather/climate adversity**

Group Picture



Proposed Plan

- The purpose of this project is to **design** a rain biogarden at the elementary school to **mitigate water** in areas such as sidewalks and roads.
- Our goal is to **educate** the community about affordable infiltration practices.
- This project will require **excavation** as well as the placement of a **gravel** and **mulch** layer with **native plants**.

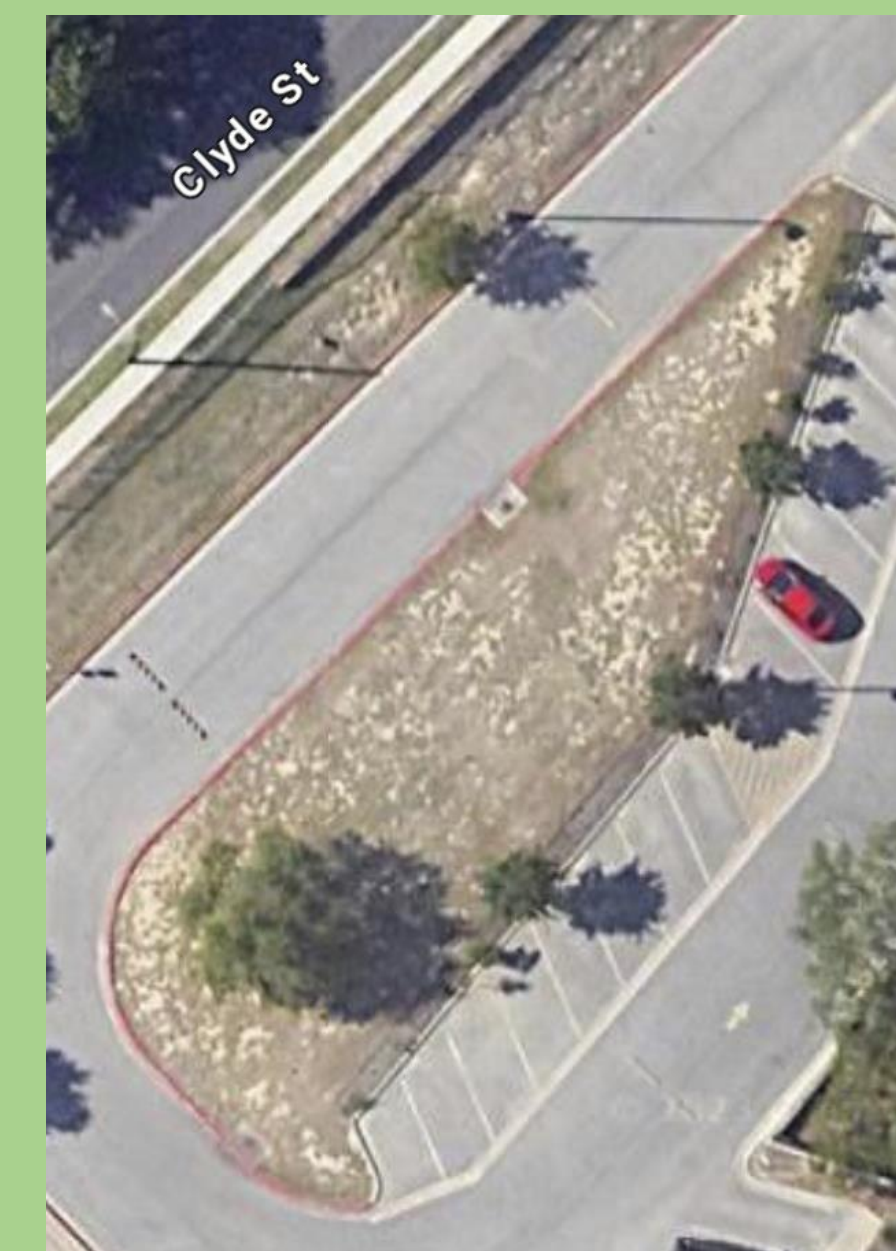


Design Alternatives

Pervious Concrete – A more expensive, low maintenance, and long-lasting approach to rainfall infiltration. This is not as educational and does not promote sustainability practices.

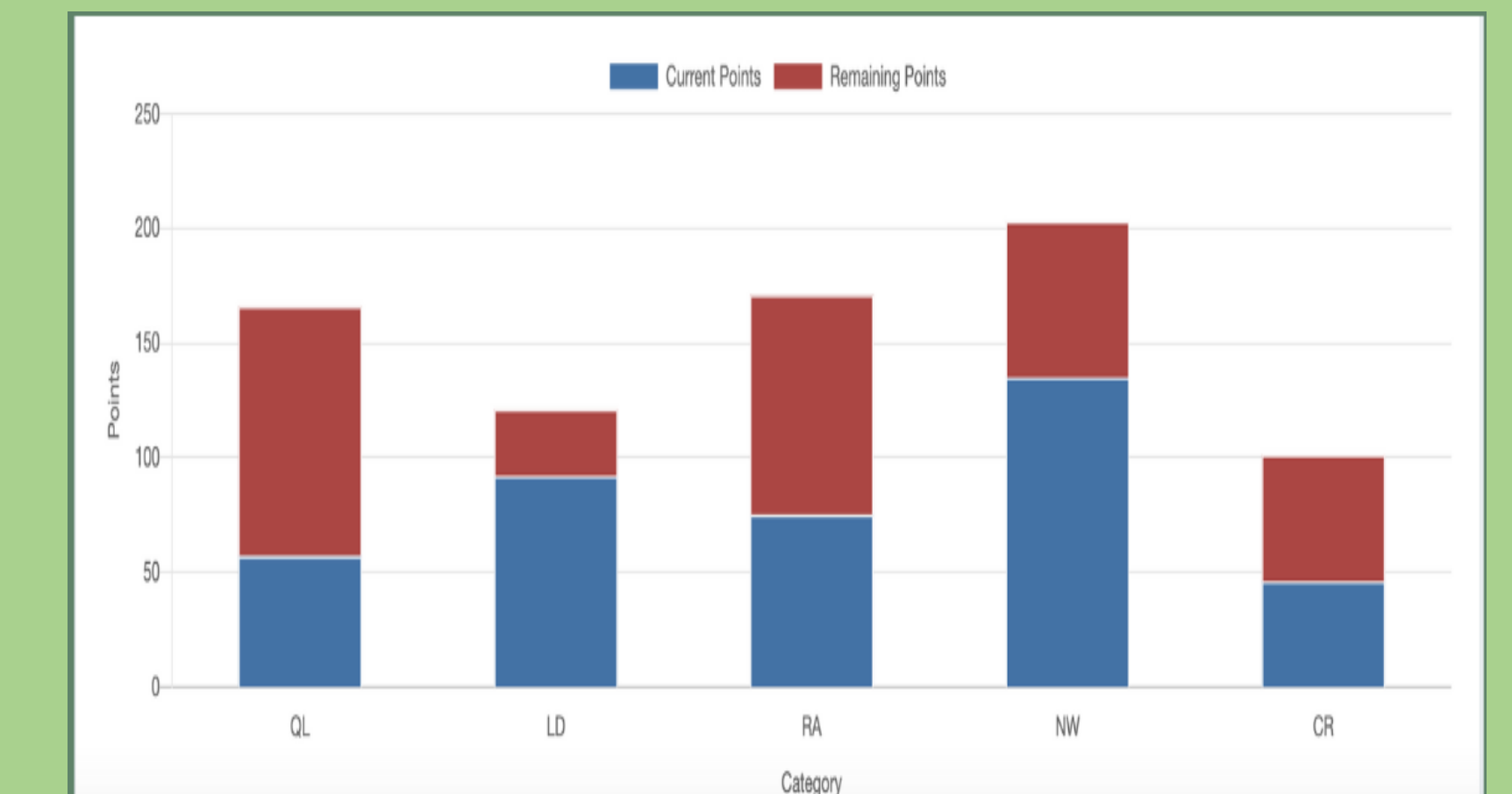
Non-Native Plants and Materials – Enhance the biogarden and have the best infiltration rates. This may require more maintenance and could increase competition for resources among native species.

Site Images



Sustainability Summary

Envision Framework: Utilizing non-native materials **54%**



Summary Cost

Capital Costs (Construction)
= **\$8,918.31**

Annual Maintenance Costs
(Replacement of some plants)
= **\$111.96**

2-yr Interval Maintenance Costs
(Mulch and gravel replacement)
= **\$1,538.02**

Total 25-year Life-Cycle Cost
= **\$30,942.50**

Design II Plan

- Test soil properties in the winter and spring months at the school.
- To build a model to educate kids and adults about water runoff prevention methods.