Appendix G:
Hydromodification Report

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City of San Jose
Hydromodification Report

Project Name:

PIERCY LIGHT INDUSTRIAL

455 PIERCY ROAD,

SAN JOSE, CALIFORNIA 95138

Prepared for:

INSITE PROPERTY GROUP

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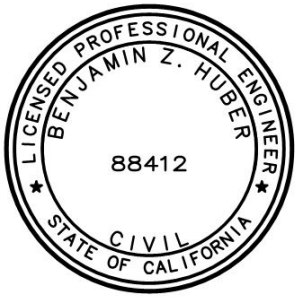
August 2021



Site Description and Drainage Patterns

The project is a development of 7.6-acres of existing landscaping on a 14.26-acre property along Piercy Road. Per City of San Jose Ordinance Number 29751, approximately 8 of the 14.26-acre site can be developed, while the remaining open space is a Planned Development zone. Most of the existing site is covered by landscape consisting of grass, weeds, and small native shrubs with slopes ranging from 2% - 30% in the developable area, and 30% - 50% in the Planned Development zone. The property includes southwest facing slopes on the northeast portion of the site, and a relatively level graded pad on the southwestern portion. A paved asphalt concrete road runs along the north and eastern edges of the property and an existing storm drain canal ("Evergreen Canal") captures and conveys stormwater from the eastern part of the site. The proposed development will consist of a new 121,600± square foot industrial building, a parking lot for trailer and car parking, and associated stormwater treatment facilities.

The existing drainage pattern for the site consists of stormwater sheet flowing from the northeast sloped area to the flat southwestern pad and into various inlets onsite. The water is then piped to the storm drain main along Piercy Road. The area above the Evergreen Canal flows into the concrete channel and is conveyed offsite.

In the proposed condition, the runoff from the 7.6-acre development will be directed towards catch basins in the parking lot and piped into three (3) separate bioretention areas at the northwest and southeast portions of the site. Once treated, the water will be discharged from the bioretention at a controlled rate through an orifice and riser, conveyed via storage pipe sloped at a minimum of 2% towards an orifice-controlled outlet structure, and discharged into the public storm drain system. The runoff from the Planned Development zone, below the Evergreen Canal, will flow towards a v-ditch at the base of a proposed debris flow wall located along the east side of the development where a catch basin downstream will capture and pipe it into the public storm drain system.

Hydromodification Design

The proposed development will introduce more impervious area on the property, leading to increased runoff rates and durations from storm events. In order to mitigate this increase in stormwater runoff, BAHM (Bay Area Hydrology Model) was utilized to design flow control structures to maintain the magnitude and duration of post-project flows to the same level as pre-project flows. Based on proposed land use and acreage, three (3) bioretention areas were designed with oversized outflow structures for the hydromodification requirements previously stated. Additionally, a 30" RCP storage pipe with an orifice-controlled outlet structure at the downstream end of the storm drain system was designed with BAHM to further mitigate the post stormwater runoff flow and duration. As this 30" RCP pipe is also serving as a distribution pipe out of the site that is sloped at 0.25%, the entire volume of the pipe is not being accounted for in storage volume. To determine the storage in the pipe we used a maximum ponding depth of 2' (based on orifice overflow height) at the downstream end. Based on the slope of the pipe this resulted in a ponding depth of 0.4' at the upstream end of the pipe. Calculating the instantaneous volume and both ends and deriving we were able to determine a total storage

volume of 1,965 cubic feet (against 3,925 when full). The figures below outline the specifications for the three bioretention systems and the storage vault designed through BAHM. The storage vault width has been manipulated to 0.98' to simulate our storage. Refer to the Storm Water Control Plan (included for reference) for the proposed Drainage Management Areas (DMAs) and Treatment Control Measure (TCM) numbers.

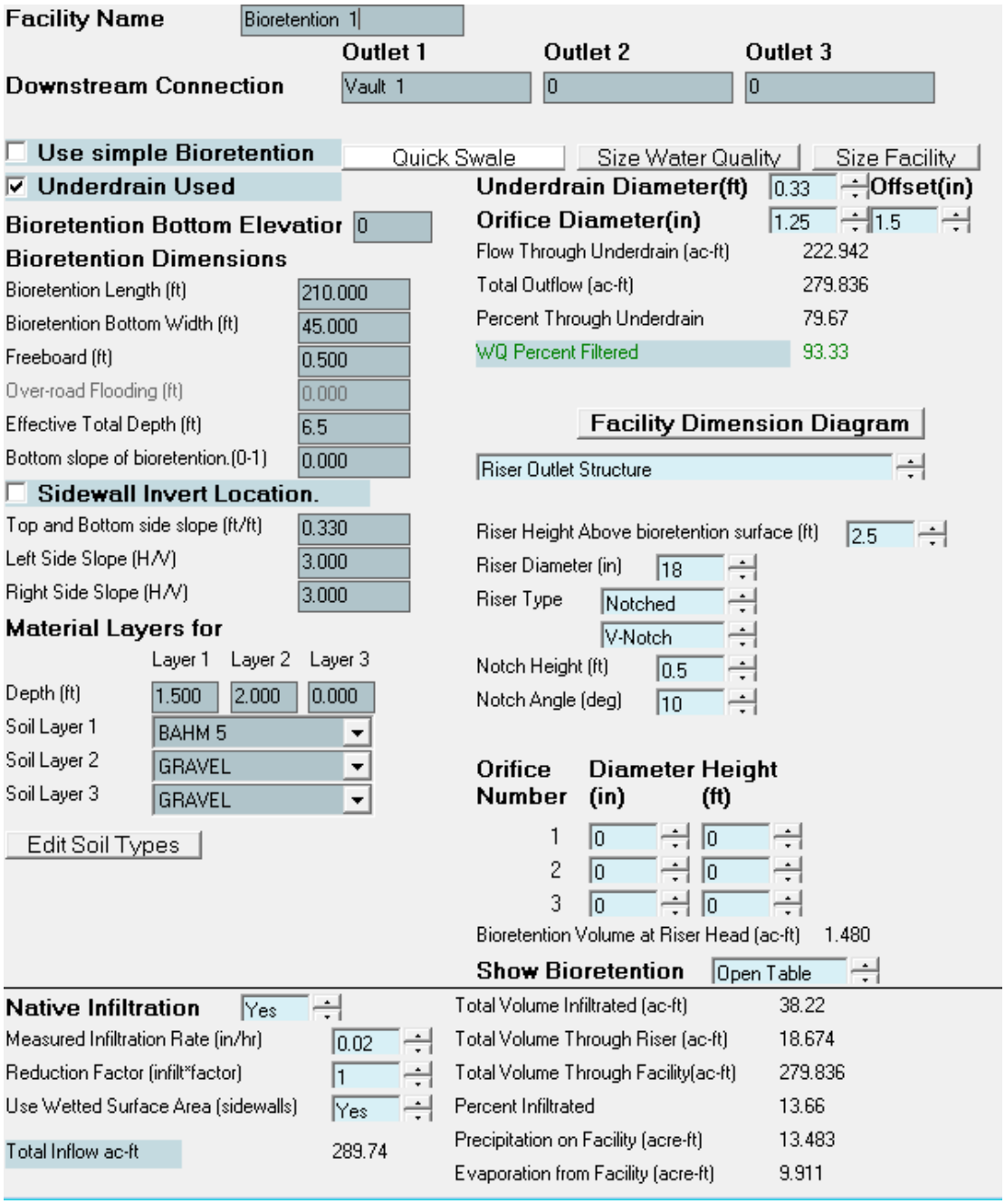


Figure 1: TCM #1 – Unlined bioretention with underdrain. Orifice controlled outlet structure (2.5' high, 18" riser with a 6" V-notch at the top and a 1.25" orifice placed 1.5" above the bottom of the gravel layer).

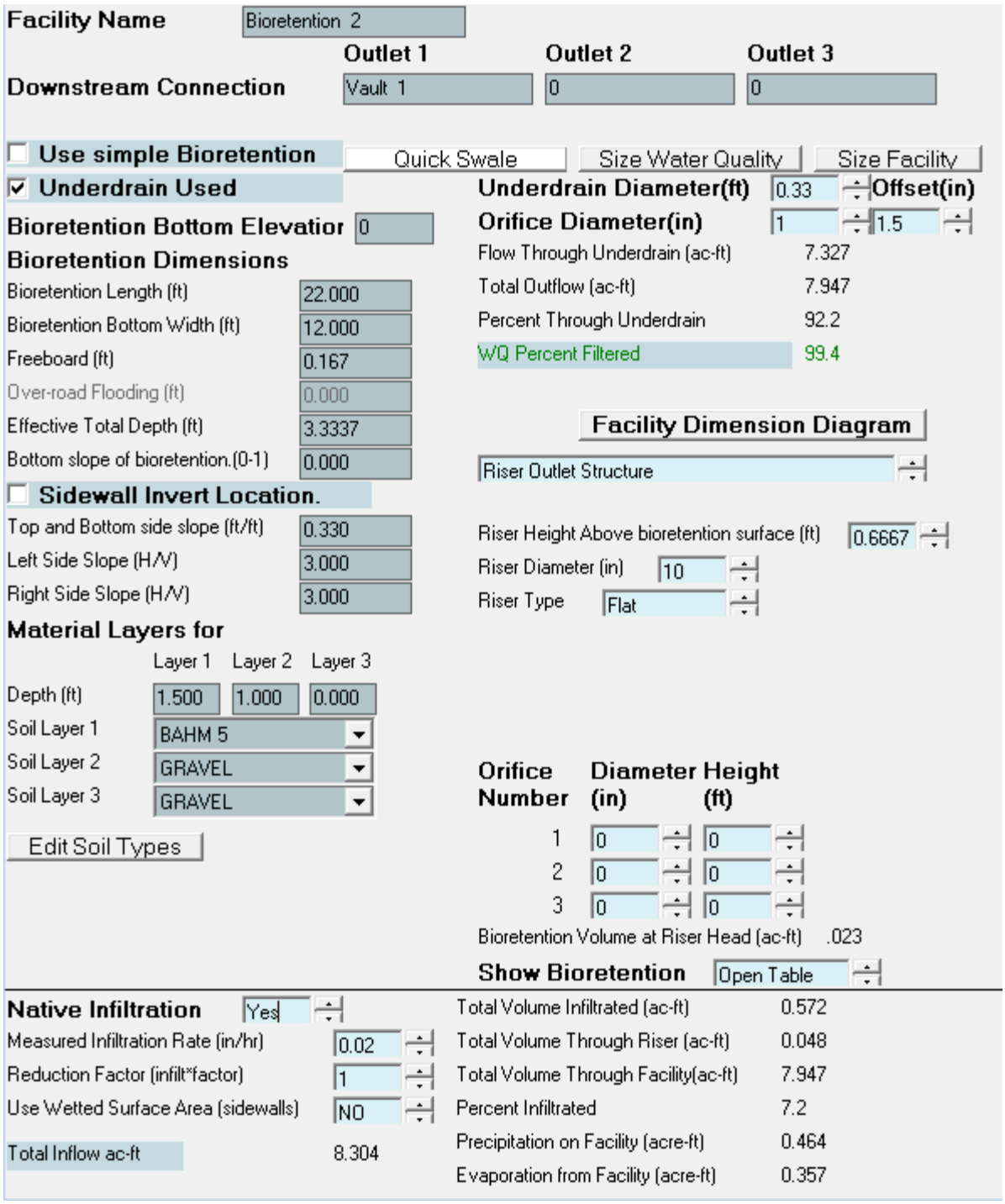


Figure 2: TCM #2 – Unlined bioretention with underdrain. Orifice controlled outlet structure (0.67' high, flat 10" riser at the top and a 1.0" orifice placed 1.5" above the bottom of the gravel layer).

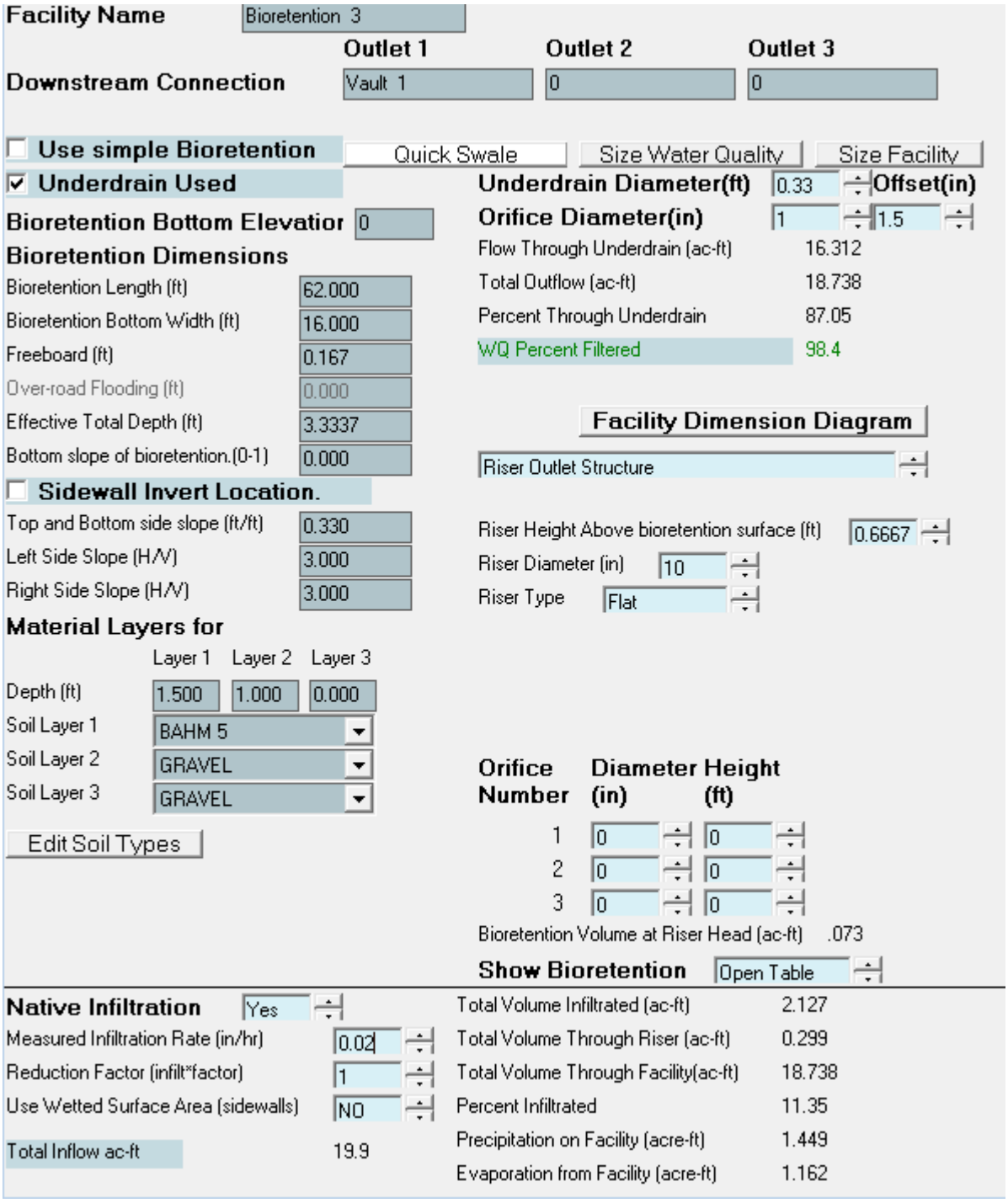


Figure 3: TCM #3 – Unlined bioretention with underdrain. Orifice controlled outlet structure (0.67' high, flat 10" riser at the top and a 1.0" orifice placed 1.5" above the bottom of the gravel layer).

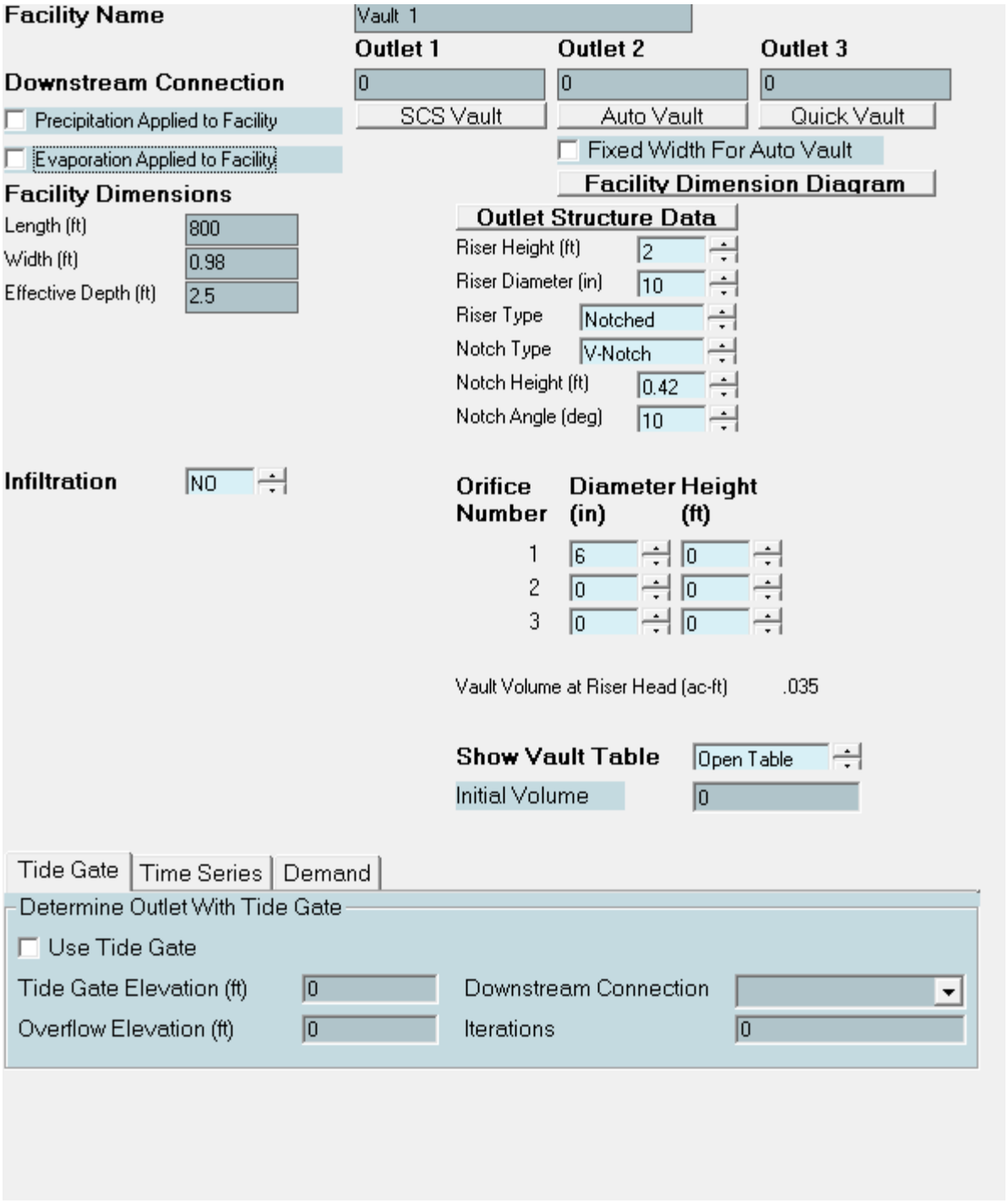


Figure 4: Storage Vault – 30” RCP pipe (2’ high, 10” riser with a 5” V-notch at the top and a 6” circular orifice at the bottom of the structure).

BAHM Modeling

Pre-Project

The pre-project conditions of the site are broken up into two points of compliance (POC). The first POC consists of the entire proposed project site as well as the open space Planned Development zone that flows toward the debris flow wall and into the public storm drain system on Piercy Road. The land uses are comprised of “C/D, Grass, Mod (5-10%)” and “C/D, Grass, Ste (10-20%)” for the pervious surfaces and “Roads, Mod (5-10%)” and “Sidewalks, Flat (0-5%)” for the impervious surfaces. The second POC encompasses the area above the Evergreen Canal that conveys stormwater offsite and does not converge with the developed stormwater runoff. The land use for this area is “C/D, Grass, Ste (10-20%)”.

Mitigated

The mitigated conditions are separated into five (5) different land use basins as well as an impervious and pervious lateral flow basin (DMA 6). Drainage management areas 1, 2 and 3 are modeled independently such that runoff is routed towards their respective bioretention facilities and ultimately conveyed to the 30” RPC storage pipe (storage vault) representing Point of Compliance 1. DMAs 5, 7, and 9 that are not directed towards the onsite storage vault, but still enter the public storm drain system on Piercy Road, are modeled as one land use basin with their corresponding areas cumulatively shown. When attempting to separate these drainage management areas into individual land use basins in BAHM, the model was unable to successfully run and data output was not provided. Therefore, these areas were combined into one basin and connected to Point of Compliance 1. DMAs 4 and 8, representing the area above the Evergreen Canal, are also modeled as one land use basin for the previously stated reason, and connected to Point of Compliance 2 since the water is not directly discharged into the public storm drain system. Lastly, DMA 6 is modeled as an impervious and pervious lateral flow basin due to the existing paved road along the northern edge of the DMA and the existing landscape, respectively. Stormwater from these lateral flow basins is then directed to the storage vault.

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