

MEMORANDUM

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BKF Job Number: 20160074

Deliver To: Andrew Bielak, Project Manager
MidPen Housing Corp.

From: Lauren Boyle, Project Engineer
BKF Engineers

Subject: Cypress Point Hydromodification Management (HM) – Revision 2

Existing Conditions

The existing site is approximately 11 acres in Moss Beach, California and bordered by Carlos Street to the west, Lincoln Street to the east, 16th Street to the North and Sierra Street to the south. The site is relatively undeveloped and consists of several concrete slab-on-grade building foundations, native vegetation, unpaved service roads and water and electrical infrastructure.

The existing site slopes range from 10% to 50% with the high point on the east side of the property and the low point at the northwest corner. There is no existing storm drain, sanitary sewer or known gas infrastructure on the property. Storm water runoff is assumed to percolate on site and excess runoff surface flows towards Carlos Street and 16th Street, ultimately discharging to Montara Creek within the James V. Fitzgerald Area of Specific Biological Significance (ASBS) watershed area. Beside the 11 acre property, an additional 1 acre of offsite runoff drains through the project site and contributes to the overall tributary drainage area.

Project Description

The project proposes to construct 71 units of affordable housing on roughly 5 acres of the site. New improvements will include town homes and flats, a community building, at-grade parking and access roads, an entry road connection to Carlos Street, pedestrian pathways and new pervious landscaping.

Since the existing site does not currently connect directly to the public storm drain system, the project proposes a new connection to the existing storm drain main on Carlos Street, which ultimately outfalls to Montara Creek. Proposed storm drain infrastructure for the project will consist of storm drain lines approximately ranging from 12-inch to 21-inch diameter, inlets at low points throughout the hardscape and landscape areas, manholes at junction areas, building downspout connections, cleanouts and bio-retention infrastructure designed to comply with the development's dual requirements of stormwater treatment and Hydromodification Management (HM) requirements.

Hydromodification Management Requirement

As required by the Municipal Regional Permit (MRP) and the authority given to the Clean Water Program San Mateo, Projects creating one or more acres of impervious area in non-exempt regions of the County are required to attenuate runoff associated with the increase in runoff. This project is required to implement HM, see Attachment A: HM Applicability Worksheet and Attachment B: Hydromodification

Applicability Map. The goal of the HM program is to control the post-project flow to match pre-project runoff flow rate and duration from 10 percent of the pre-project 2-year peak flow up to the pre-project 10-year peak flow. The Bay Area Hydrology Model (BAHM) program is used to analyze the Project's flows as prescribed in the MRP. The project anticipates utilizing bio-retention areas as the main best management practice (BMP) treatment strategy for MRP and HM compliance. Stormwater attenuation will be achieved in the bio-retention areas by modifying the overflow riser structures and adding orifices to subdrain connections, thereby adding the storage and flow control necessary to meet HM.

HM Model

The project consists of one Point of Compliance (POC) for HM evaluation. The POC is consistent with the pre-project runoff drainage pattern where stormwater is directed to one discharge location at Montara Creek. The Pre-project tributary area land usage, including off-site run-on, is 10 acres pervious and 2 acres impervious. The post-project tributary area is broken into two watersheds: one draining toward the bioretention areas and another that bypasses the bioretention area and follows existing drainage patterns. Cumulatively the post-project land use will be 5 acres impervious and 7 acres pervious.

Preliminary modeling results, included as Attachment C, which are a direct output from the BAHM program show full compliance with the projects HM requirements. Peak flows are attenuated between the flow ranges of 0.49 to 11.07 cfs, 10% of the 2-yr up to the 10-yr storm.

HM Facilities

The size and number of orifices and riser heights were determined by the iterative BAHM modeling process to control the outflow of site runoff to match pre-construction rates. Design parameters for the risers and orifices (i.e. heights, orifice diameter, and number of orifices) were entered into the BAHM modeling program and the output was reviewed to confirm that the post-construction rate of runoff complied with pre-construction rates. This iterative process continued until the results were satisfactory.

HM occurs within the following treatment BMP facilities:

BMP #1

(For this preliminary analysis, site-wide treatment areas were consolidated into one assumed BMP)

- Bioretention Basin 6,500 square foot footprint
- 24-inch diameter riser from 0.5-feet above the bioretention area flowline
- 3:1 Side slopes
- 18" Bioretention Soil Mix Layer underlaid by 12-inch Class 2 Permeable with 6-inch sub-drain

BMP includes the following modifications for HM compliance:

- Deepen 24-inch diameter riser from 0.5-feet to 1.0-foot above the bioretention area surface
- Install a 3.5-inch diameter choke down orifice on the 6-inch sub-drain outfall terminus.

This configuration will be adjusted accordingly as more bioretention areas are introduced into the site plan. In each case, Project will fully comply with HM requirements by controlling the post-project flow to match the pre-project runoff flow rate and duration from 10 percent of the pre-project 2-year peak flow up to the pre-project 10-year peak flow.