Annual Report for the Stream Maintenance Program in 2019 (Year 3)

Prepared by:
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San Francisco Bay Regional Water Quality Control Board Permit Order No. R2-2017-0028
California Department of Fish and Wildlife Streambed Alteration Agreement Notification
No. 1600-2012-0207-R3 and No. 1600-2012-0202-R3

JANUARY 2019
**Project Background**

The Marin County Flood Control and Water Conservation District (District) maintains 37 miles of stream channels, several basins, and numerous flood control facilities in Marin County. The District has developed a Stream Maintenance Program (SMP) to guide and permit maintenance activities implemented within the County flood control zones and associated municipal jurisdictions for the purpose of flood control.

The SMP includes five types of maintenance activities: (1) vegetation management, (2) sediment and debris removal, (3) erosion control, (4) facilities maintenance and repair of flood control structures, and (5) levee maintenance. These activities are carried out to maintain flow capacity of the creek channel. The SMP does not include large capital improvement projects, large sediment removal projects (e.g. Novato Creek sediment removal), or new bank stabilization projects using rock rip-rap. Work is performed between June 15 and October 15.

The geographic extent of the SMP includes eight program areas: seven flood control zones and one County Service Area (Figure 1):

- Flood Control Zone 1 – Novato
- Flood Control Zone 3 – Richardson Bay
- Flood Control Zone 4 – Bel Aire and Strawberry Circle
- Flood Control Zone 5 – Stinson Beach
- Flood Control Zone 6 – San Rafael Meadows
- Flood Control Zone 7 – Santa Venetia
- Flood Control Zone 9 – Ross Valley
- County Service Area 13 – Upper Lucas Valley

All project areas are in eastern Marin County, except for Flood Control Zone 5, which is in Stinson Beach in West Marin. Each project area includes several sites, which are differentiated based on stream reaches and habitat types. Each site was classified as being tidally-influenced or not and was furthered classified as to habitat type as identified in a Biological Assessment completed for the program (Biological Assessment for Routine Flood Control Maintenance Activities, June 2012).

No aspect of the SMP is implemented in areas where the County or its municipal partners do not have direct legal jurisdiction or landowner permission. Maintenance work occurs on lands where the County and/or its municipal partners own the land outright in fee title or hold legal easements. In a limited number of sites, vegetation maintenance activities may occur on private parcels for which the District and/or its municipal partners annually receive written landowner right-to-enter permissions in order to perform maintenance activities.

**Data Collection**

In 2019, a new data collection method was developed and piloted as a means of documenting that annual maintenance meets the Regional Water Quality Control Board requirements. Trimming or removal of native vegetation was categorized by size and type (or feature class). Size was divided into three different categories: small (<15 linear feet (LF)), medium (15-30 LF), and large (30-45 LF). Type was further divided into downed tree, dead tree (standing), downed branches, low branches, natural debris (clumps of smaller vegetative material), native species blocking flow in channel that require maintenance, and erosion. Invasive species that
were removed were reported in general as a size category based on square feet (ft^2): small (<25 ft^2), medium (25-100 ft^2), and large (100-400 ft^2).

**SMP CEQA and Program Permits**

- **California Environmental Quality Act (CEQA)**- The East Marin project sites are included in the CEQA Initial Study/NegDec (IS/MND) dated June 6, 2012- State Clearing House #2012022053. The projects in Stinson Beach are covered under the Addendum IS/MND to Easkoot Creek Sediment Removal State Clearing House #2007-092065.

- **SF Bay Regional Water Quality Control Board (RWQCB)** Order No. R2-2017-0028: July 20, 2017. The District was issued a five year programmatic permit for the SMP program. 2019 is the third year of maintenance under this permit.

- **California Department of Fish and Wildlife (CDFW)**: Routine Maintenance Agreement No. 1600-2012-0207 (East Marin) and 1600-2012-0202-R3 (Stinson Beach West Marin permit issued in 2012 was extended in 2017 until Dec. 31, 2020.

- **United States Army Corps of Engineers (USACE)**: The USACE issues permits for the projects contained within the SMP on an “as-needed basis” depending whether the project falls within Corps jurisdiction. If Special Status Species are involved the Corps permit may include consultation from National Marine Fisheries Service or US Fish and Wildlife Service.
Figure 1: Map of Marin County Flood Control and Water Conservation District program areas.
2019 Program Implementation

In 2019 the District’s Stream Maintenance Program (SMP) activities included sediment/debris removal, and vegetation maintenance in creeks and around a pump station. A total of 29 sites had work completed in them, with sediment removal activities completed at eight sites, vegetation maintenance completed at 22 sites, one pump station was maintained (Lynwood). Total linear feet (LF) of impact for both vegetation and sediment maintenance was 4,256 LF.

Sediment removal occurred on concrete engineered channels (1,275 LF) and earthen engineered channels (935 LF). Total sediment removal in cubic yards (CY) was 735 CY. See Appendix B for a list of all project sites, linear footage of vegetation cut/removed, or sediment removed and cubic yards (CY) of sediment removed per site. All tide gates were checked, but none had to be cleaned or repaired this year. All pump stations were also checked, but only Lynwood (1-LYC) required work in water (for access). Work at Lynwood consisted of trimming cattails (Typha sp.) and then removing French broom (Genista monsplenssula) as part of the eco-uplift (i.e. mitigation). Vegetation maintenance mainly consisted of removing downed branches from the creek channel to not impede flow in vulnerable constrained locations. This removal reduced the chances of flooding to the neighboring residents. Removing low branches and trimming native species (e.g. cattails) blocking the flow of water were the next two categories that made up the majority of 2019 vegetation maintenance work.

At 16 sites, 446 LF of potential vegetation maintenance were identified. These areas consisted of downed trees, downed branches, or low branches that could potentially impede channel flow, but were deemed to not need immediate removal. No action was taken in 2019, but these areas will continue to be monitored (see Appendix B, Monitor column).

Due to the temporal impact of vegetation maintenance to allow channel flow during the winter, an eco-uplift (i.e. mitigation) is required. The 2019 eco-uplift consisted of removing invasive species and trash. Invasive species removed consisted of acacia (Acacia sp.), bamboo (Phyllostachys sp.), Harding grass (Phalaris aquatica), English ivy (Hedera helix), fennel (Foeniculum vulgare), French broom, Himalayan blackberry (Rubus armeniacus), Mexican fan palm (Washingtonia robusta), Pampas grass (Cortaderia jubata), and privets (Ligustrum sp.). Removed trash consisted in large part of homeless camps and abandoned mattresses. Where possible, the eco-uplift occurred in the same zone as the vegetation maintenance. A total of 17,347 ft² of eco-uplift was required in 2019 (1:1.1, acres disturbed to acres enhanced). We exceeded this requirement, with an eco-uplift of 62,912 ft². As most of the vegetation maintenance occurred in Zone 1, most of the eco-uplift also occurred in Zone 1.

SMP work was conducted by several groups with varying expertise, including: County of Marin Department of Public Works Roads crews, Conservation Corps North Bay (CCNB), Students and Teachers Restoring a Watershed (STRAW), local municipalities (e.g. City of Mill Valley), and private contractors to manage and implement prescribed maintenance activities.

CNDDB Reporting
In 2019 no special status species were observed during the pre-project surveys or daily site walk-throughs; therefore, no sightings were reported to the California Natural Diversity Database (CNDDB).

Photo Monitoring
Photos monitoring was conducted at each of the eight-sediment maintenance site (see Appendix C). As some maintenance sites encompassed larger areas or various work areas, representative photos were chosen.
Photos were taken during initial creek walks to identify the condition of the creek channel and any vegetation needed to be removed/trimmed and non-native species to be removed. After work within the 29 sites was completed, photos were taken of a representative area to show the completed work. As the work varies based on current conditions and there are many sites, some photos are not available.

**Avoidance, Minimization and Mitigation Measures (AMMs)**
The pre-project notification submitted to the resource agencies for the 2019 work contained a list of AMMs applicable for each site in accordance with the prescriptions contained within the Biological Assessment completed for this program. At each of the sites the Environmental Coordinator oversaw the implementation of these practices as part of the overall project.

**Appendices**
Appendix A: Program Maps
Appendix B: 2019 Project Sites and Work Completed
Appendix C: Before & After Photos of 2019 Sediment Removal and Vegetation Maintenance Projects
APPENDIX A
Program Maps
No Work on this section to protect Dixie Outdoor Classroom (DOC).
Flood Risk Assessment required prior to any work.
No Work on this section to protect Dixie Outdoor Classroom (DOC). Flood Risk Assessment required prior to any work.
APPENDIX B
2019 Project Sites and Work Completed
<table>
<thead>
<tr>
<th>Site ID</th>
<th>CREEK</th>
<th>2019 VEG REMOVAL (LF)</th>
<th>2019 ECO UPLIFT NEEDED (SF)</th>
<th>2019 ECO UPLIFT (SF)</th>
<th>MONITOR (LF)</th>
<th>2019 SED REMOVED (LF)</th>
<th>2019 SED REMOVED (CY)</th>
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APPENDIX C
Before & After Photos
Sediment Removal and Vegetation Maintenance
SEDIMENT REMOVAL

Zone 1
Vineyard Creek (1-VIN)
- Pre-project
- Post-project

Zone 3
Crest Marin Creek, Lauren Basin (3-CRE-2)
- Pre-project
- Post-project
Nyhan Creek (3-NYH-1)

Pre-project

Post-project

Nyhan Creek West Fork - Tam Valley Elementary School (3-NYH-2)

Pre-project

Post-project
Area 3 (above): confluence of Sutton Manor Creek Channel and an un-named tributary.

Area 4 (above): 60 feet downstream of the Sutton Manor confluence with the un-named tributary; left is pre-project, right is post-project.

Area 5 (above): upstream of double 6-foot metal culvert on right bank; left is pre-project, right is post-project.
Area 8 (above): ~130 feet downstream from the steel culvert outlet (Area 5); left is pre-project, right is post-project.

Zone 7
Sunny Oaks Drain (7-SOD)

**Pre-project**

**Post-project**

North Section (above)

South Section (above)
Zone 9
Corte Madera Creek (9-CMC-3)

Pre-project

Post-project

Larkspur Creek (9-MAG-3)

Pre-project

Post-project
Zone 1
Arroyo Avichi Creek (1-AA-1)

Pre-project

Arroyo Avichi Creek (1-AA-2)

Pre-project
Baccaglio Basin (1-BB-1)

Pre-project

Post-project

Photo Unavailable

Cut small branch blocking the channel flow.

Cheda Creek (1-CHE-2)

Pre-project

Post-project

Ignacio Creek (1-IGN)

Pre-project

Post-project
Lynwood Creek (1-LYC)

Pre-project

Post-project

Novato Creek (1-NOV-1)

Pre-project

Post-project

Photo Unavailable

Photo Unavailable

Removed small black acacia tree in creek (eco-uplift).

Novato Creek (1-NOV-2)

Pre-project

Post-project
English Ivy was removed from the trees (eco-uplift).

Cut and cleared low branches of willows and palms.
West Creek (4-WEST-2)

Pre-project

Post-project

Zone 5

Easkoot Creek (5-EAS-3)

Pre-project

Post-project
CSA-13
Miller Creek (CSA-13-MC)

Pre-project

Post-project