



April 12, 2018

Laura Richstone
Project Planner
San Mateo County Planning and Building Division
455 County Center
Redwood City, California 94063

Subject: Redwood Glen Diversion Point Maintenance Procedure Plan

Dear Ms. Richstone:

This letter is in response to a request the County made to Redwood Glen regarding the assessment of potential biological impacts associated with the Redwood Glen Diversion Point Maintenance Procedure Plan for Redwood Glen Diversion Plan (plan). This letter includes a description of our understanding of the proposed plan and our conclusions regarding the potential impacts to biological resources caused by plan implementation.

Project Understanding: Maintenance procedures occur at both the Hoffman Creek diversion location and the Piney Creek diversion location, including visual inspections, minor repairs, and sediment removal. A description of repair and sediment removal activities at each diversion location follows.

Hoffman Creek Diversion Maintenance: Repairs have not been required at Hoffman Creek in recent history. If repairs should become necessary, it is anticipated that they will consist of resetting a stainless bolt or replacing a pipe flange. No chemicals/toxic substances will be involved in the repair procedures and all work, with the exception of bolt replacement, will occur outside the creek channel. Bolt replacement will involve minimal work by hand using a box wrench.

Sediment removal at Hoffman Creek occurs twice annually, including in mid-spring (i.e., March or April) and following the first winter storm event (i.e., October or November). The Hoffman Creek diversion structure consists of a stainless-steel sink attached to a redwood (*Sequoia sempervirens*) log across the creek. Sediment entrained in the diversion line extending from the stainless steel sink to the raw water tank accumulates in a series of three 55-gallon plastic drums used for settling the sediment. To remove the sediment, the 55-gallon drums are flushed one at a time. Discharge is trickled through the rocks on the bank of Hoffman Creek to reduce turbidity associated with the cleanout. The resulting discharge into Hoffman Creek from each drum is estimated to be 7.4 cubic feet of water containing approximately 0.28 cubic feet of sediment. As a result, a total of about 0.85 cubic feet of sediment enters the creek. Sediment scooped out of the stainless steel sink is deposited and spread outside the bank of the creek.

Piney Creek Diversion Maintenance: At the Piney Creek diversion, leafy debris is occasionally cleared from the clogged ports. Clearing is conducted by hand. Repairs at the Piney Creek diversion include replacement of piping when necessary. Occasionally, PVC glue is required on pipe joints for these repairs. The glue is added to the pipe outside the creek channel and allowed to fully cure prior to installing the pipe in the creek. No other chemicals/toxic substances are required for repairs. All work occurs outside standing or flowing water.

Sediment removal at Piney Creek occurs twice annually, including in mid-spring (i.e., March or April) and following the first winter storm event (i.e., October or November). The Piney Creek diversion structure consists of a concrete dam across a narrow (approximately 4-foot) bedrock notch. The Piney Creek diversion structure includes a 2-inch diameter diversion port and bypass port and a 4-inch diameter sediment sluice port. Sediment at Piney Creek accumulates behind the concrete dam where a

Redwood Glen Diversion Maintenance Plan Biological Impacts
April 12, 2018

maximum volume of approximately 13.5 cubic feet can accumulate at the level of the bypass port. This accumulation is removed by opening the cap on the sluice port and letting water and sediment flow through. Depending on conditions this can result in a maximum initial discharge of sediment and water mixture of up to 13.5 cubic feet. Once the creek flow through the sluice port equalizes (after about 45 seconds), the structure is rinsed with an additional approximately 50 gallons of water. The entire sediment removal procedure at Piney Creek, under normal conditions, is estimated to discharge approximately 152 gallons of water containing approximately 2 cubic feet of sediment.

Conclusions

Repairs at both Piney Creek and Hoffman Creek would not result in significant impacts to biological resources. We carefully discussed the maintenance activities with Redwood Glen, and we cannot think of any instance that repairs would cause significant impacts. We have recommended measures to protect water quality that have been incorporated into the maintenance plan, such as glueing pipe outside of the creek zone and conducting work outside of the creek zone, as feasible. The repairs are minor and short in duration, no heavy equipment is required to conduct the repairs, the majority of the repairs occur outside the creek channel or outside of standing/flowing water, and no chemicals/toxic substances could come in contact with the water during the repairs.

Sediment removal at Piney Creek and Hoffman Creek is also not expected to result in significant impacts to biological resources. The normal discharges associated with the sediment removal are very small. They cause an initial increase in turbidity that is very short in duration and is localized at the initial discharge location. We have also recommended measures to protect water quality that have been incorporated into the maintenance plan, such as returning sediment-laden water to the creek through a natural filter (rocks and creek bank vegetation). Importantly, this maintenance method returns previously trapped sediment to the creek system. Natural sediment flow is an important component to stream health and diversion points can interrupt that flow. The proposed maintenance plan, under normal conditions, does not remove sediment from the system. During most storm events, the sediment and water continue to flow over the Piney Creek diversion and the sediment does not accumulate any more than under normal circumstances. In the event of an extreme storm event where the sediment does accumulate and the diversion dam fills with 13.5 cubic feet of sediment, we have recommended that Redwood Glen remove the sediment using hand tools and spread it outside the bank of the creek. Redwood Glen has agreed to incorporate this measure into the plan.

We also requested that Redwood Glen consult the hydrologist on this issue, because impacts to the hydrology or geomorphology of the creek could also impact biological resources. The hydrologist (Balance Hydrologics) determined that the discharge would not impact the hydrology or geomorphology of the creek (Balance Hydrologics 2018)¹.

Our professional opinion is that the maintenance plan incorporates protection measures and that implementation of the maintenance plan will not result in significant impacts to biological resources.

¹ Balance Hydrologics. 2018. Sediment Management at Point of Diversions on Piney and Hoffman Creeks.

Redwood Glen Diversion Maintenance Plan Biological Impacts
April 12, 2018

If you have any questions or need additional information, please contact me at (805) 215-876 or lhuff@migcom.com or Tay Peterson at (650) 400-5767 or tpeterson@migcom.com at your convenience.

Sincerely,

A handwritten signature in black ink that reads "Lauren Huff". The signature is written in a cursive style with a large, stylized "L" and "H".

Lauren Huff
Senior Biologist