HUMBOLDT COMMUNITY SERVICES DISTRICT
BOARD OF DIRECTORS
REGULAR SCHEDULED MEETING

AMENDED

AGENDA

DATE: **Tuesday, July 27, 2021**

TIME: **5:00 p.m.**

LOCATION: *In accordance with the Governor's Executive Order N-08-21 #42, HCSD Board of Directors shall conduct the District's business via teleconference.*

The open session segment(s) of the meeting, including Public Participation, may be joined through the Zoom Website (https://zoom.us) by clicking on "Join A Meeting" and entering the following Meeting ID then follow the prompts for Passcode and audio. Access may also be achieved by telephone only by dialing 1-669-900-9128 followed by the Meeting ID and Passcode below:

Meeting ID: 813 7232 6456
Passcode: 093281

Participation protocol:

- *Please use the MUTE function when not speaking*
- *Please use the "RAISE HAND" feature when wishing to be acknowledged for participation. Raise Hand feature is located in the lower right portion of the screen via the "REACTIONS" icon.*
- *Please do not speak out of turn; wait for the Board President to call upon you to share.*

A. CALL TO ORDER AND ROLL CALL

B. CONSENT CALENDAR

1. Approval of July 27, 2021 Agenda — *Pgs 1-2*
2. Approval of Minutes of the Regular Meeting of July 13, 2021 — *Pgs 3-5*

C. REPORTS

1. General Manager

   a) General Status Report — *Pgs 7-9*
   b) Elk River Estuary Enhancement Project Update — *Pgs 10-95*

2. Engineering

   a) Projects Update — *Pgs 97-98*

3. Superintendent

   a) June Construction Operations Department Report — *Pg 99*
   b) June Operations/Maintenance Department Report — *Pg 100*

4. Finance Department

   a) June 2021 Budget Report *Pgs 103-114*

5. Legal Counsel

6. Director Reports

7. Other

D. PUBLIC PARTICIPATION **

**Members of the public will be given the opportunity to comment on items not on the agenda by way of a Zoom meeting. Please use the information set forth above to participate. The Board requests that speakers please state their name and where they are from, be clear, concise and limit their communications to 3 to 5 minutes. At the conclusion of *all* oral communications, the Board or staff may choose to briefly respond with information in response to comments; however, the Brown Act prohibits discussion of matters not on the published agenda. Matters requiring discussion, or action, will be placed on a future agenda.

E. NON-AGENDA

F. NEW BUSINESS

F1. Consideration of canceling/re-scheduling the August 10th Board Meeting

G. OLD BUSINESS

H. ADJOURNMENT

Next Res: 2021-10
Next Ord: 2021-01

In compliance with the Americans with Disabilities Act, if you need special assistance to participate in this meeting, please contact Brenda Franklin at (707) 443-4558, ext. 210. Notification 48 hours prior to the meeting will enable the District to make reasonable arrangements to ensure accessibility to this meeting (28 CFR 35.102 – 35.104 ADA Title II).

Pursuant to §54957.5(a) of the California Government Code, any public record writings relating to an agenda item for an open session of a regular meeting of the Board of Directors, not otherwise exempt from public disclosure, are available for public inspection upon request at the District offices located at 5055 Walnut Drive, Monday through Friday (holidays excepted) during regular business hours.

DRAFT – MINUTES OF THE REGULAR MEETING
OF THE BOARD OF DIRECTORS OF THE
HUMBOLDT COMMUNITY SERVICES DISTRICT

The Board of Directors of the Humboldt Community Services District met in Regular Session at 5:00 p.m. on Tuesday, July 13, 2021, via tele/video conference in accordance with the Governor's Executive Orders N-08-21.

A. CALL TO ORDER AND ROLL CALL

Present upon roll call were Directors Benzonelli, Bongio, Gardiner, Hansen, and Matteoli. Staff in attendance: General Manager Williams (GM), Finance Manager Montag (FM), and Assistant Engineer Adams (AE).

B. CONSENT CALENDAR

A. Approval of July 13, 2021 Agenda
B. Approval of Minutes of the Meeting of June 22, 2021

DIRECTOR BENZONELLI MOVED, DIRECTOR MATTEOLI SECONDED, TO ACCEPT AND APPROVE THE JULY 13, 2021 CONSENT CALENDAR. MOTION CARRIED UPON THE FOLLOWING ROLL CALL VOTE:

AYES: BENZONELLI, BONGIO, GARDINER, HANSEN, MATTEOLI
NOES: NONE
ABSENT: NONE

C. REPORTS

1. General Manager

a) Status Report

GM reviewed his July 9, 2021 Memorandum summarizing:

- COVID: Staff is working on a technological solution to enable in person board meetings while maintaining compliance with COVID-19 staff restrictions, and accommodating public into the District offices.
- Elk River Estuary Enhancement Project: GM met with the City Manager on July 12, and although there remains disagreement on many subjects, progress is on the horizon. Since publication of this memorandum, COE staff provided the Ocean Outfall Analysis and other reports that are currently under review.
- Water Purchase and Wastewater Treatment Agreements: Currently evaluating outside council to assist with negotiations, and working toward establishing a conflict waiver in order to utilize the assistance of District Legal Counsel Plotz as well.
- On July 4, crews responded to a major leak ensuring ratepayers in the Pine Hill area had water flowing for their holiday celebration.

4. Finance Department

   a) June 2021 Check Register

      FM reviewed the report affirming no unusual expenses during the month of June.

E. PUBLIC PARTICIPATION

President Bongio invited the public to address the Board on any item not listed on the agenda or issues generally affecting District operations, which are within the jurisdiction of the Board. None.

G. NEW BUSINESS

1. Consideration of Adopting an Updated Revision to the District's (CalOSHA) COVID-19 Prevention Program (CPP)

   GM reviewed the corresponding agenda report and accompanying red-line version of the District's CPP to meet current CalOSHA guidelines and requirements.

   Public Comment: None

   IT WAS THEN MOVED BY DIRECTOR HANSEN, SECONDED BY DIRECTOR GARDINER, TO ADOPT THE UPDATED REVISION TO THE HCSD COVID PREVENTION PROGRAM AS OUTLINED BY CalOSHA. MOTION CARRIED UPON THE FOLLOWING ROLL CALL VOTE:

   AYES: BENZONELLI, BONGIO, GARDINER, HANSEN, MATTEOLI
   NOES: NONE
   ABSENT: NONE

2. Consideration of Approving an Update to the Water Hauler Guidelines and Application/Permit

   GM reviewed the proposed modifications emphasizing that the current practices present legal liabilities to both HCSD and HBMWD. By limiting supply to delivery within the HCSD Sphere of Influence (SOI), the liability is transferred to the hauler. The guidelines do not apply to emergency circumstances. A map of the District SOI will be added to the website.

   PUBLIC COMMENT: None

IT WAS THEN MOVED BY DIRECTOR MATTEOLI, SECONDED BY DIRECTOR HANSEN, TO ACCEPT THE REVISED WATER HAULING GUIDELINES AND APPLICATION/PERMIT. MOTION CARRIED UPON THE FOLLOWING ROLL-CALL VOTE:

AYES: BENZONELLI, BONGIO, GARDINER, HANSEN, MATTEOLI
NOES: NONE
ABSENT: NONE

H. ADJOURNMENT

There being no further business, IT WAS MOVED BY DIRECTOR HANSEN, SECONDED BY DIRECTOR MATTEOLI, TO ADJOURN. MOTION CARRIED UPON THE FOLLOWING ROLL CALL VOTE:

AYES: BENZONELLI, BONGIO, GARDINER, HANSEN, MATTEOLI
NOES: NONE
ABSENT: NONE

THE BOARD ADJOURNED ITS REGULAR MEETING OF JULY 13, 2021 AT 5:19 P.M.

_____
Submitted, Board Secretary

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MEMORANDUM

TO: Board of Directors

FROM: Terrence Williams, General Manager

DATE: July 23, 2021

SUBJECT: General Manager Report for July 27, 2021 Board Meeting

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COVID

The District has implemented the updated Covid Prevention Plan that was approved at the July 13, 2021 meeting. Fully vaccinated individuals are no longer required to wear masks indoors while working for the District. The District office remains closed to the public to protect the health and safety of District staff. On the heels of adopting the updated policy, the Delta variant and significant rises in new cases have prompted other parts of the state to reinstate masking protocols.

Los Angeles County Public Health reinstated mandatory masking for everyone while indoors, regardless of vaccination status. A press release dated July 15, 2021 indicates that Los Angeles has seen a seven-fold increase in new cases since the "June 15th reopening." There were 215 new cases in Los Angeles County on June 15th and 1537 new cases on July 15th. Although most of these cases are among unvaccinated individuals, there is no practical way to determine who is and who is not vaccinated when people walk into an establishment that is open to the public.

As of July 16th, the counties of San Mateo, Alameda, Contra Costa, Marin, San Francisco, Santa Clara, Sonoma, and the City of Berkeley are recommending that everyone wear masks indoors, regardless of vaccination status. Health officers are reporting significant increase in new cases since the mask mandate was lifted in CA on June 15th. These counties are considering requiring masks for all individuals while indoors.

For reference, Humboldt County currently has the highest level of active cases that we have seen since last February. Although the regulations are currently less restrictive than they have been, we may be required to don our masks again in the future.

Updating District Design and Construction Standards

On July 16, 2021, District staff met with McKinleyville CSD (MCSD) staff to discuss a joint project to update the Design and Construction Standards utilized by both agencies. HCSD and MCSD have a long history of collaboration. MCSD has used HCSD's Design and

Construction Standards since they were first adopted back in August, 1998. The current Standards were last updated in 2016 and need to be updated. MCSD has provided notes and requested updates. The current plan is for HCSD staff to review the current version of the Standards and determine the level of effort necessary to make the required updates. Once that initial assessment has been made, we will assess the capacity of HCSD staff to perform the work to update the Standards or if we will need assistance from an outside contractor. MCSD has agreed to share in the cost of this much needed project.

Hybrid Meetings

The feasibility of using the District's current equipment to conduct hybrid meetings has been assessed (thank you Michael). The results of several tests using different hardware and software configurations indicate that the current equipment and the acoustics of the Boardroom are not compatible. We have reached out to a local vendor to request a site assessment and quotation for retrofitting our space with the necessary equipment to conduct hybrid meetings. In the meantime, I strongly recommend that we continue to conduct meetings via Zoom.

Paymentus

During the January 12, 2021 meeting, the Board authorized staff to implement a new online payment processing system through provider Paymentus. With notifications, systems integration, training and testing completed the system has gone live. I used it to pay my bill this month and can attest that Paymentus is significantly superior to USA ePay. A flyer for the Paymentus payment option is included in this packet. Thank you Customer Service for all of your hard work!

Legal Counsel for Matters Concerning the City

The City's Legal Counsel is currently reviewing the draft Conflict Waiver that will allow District Legal Counsel to represent the District exclusively in matters concerning contract performance. We continue to collect and review proposals from qualified legal firms to represent the District in the renegotiation of contracts with the City. We will present those proposals and conduct interviews of the most qualified candidates at a future meeting.

A BETTER BILLING EXPERIENCE.

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Payments to the Humboldt Community Services District should be as simple and convenient as possible, which is why we want you to know that you can manage, pay and view your bills online via our all new digital payment system.

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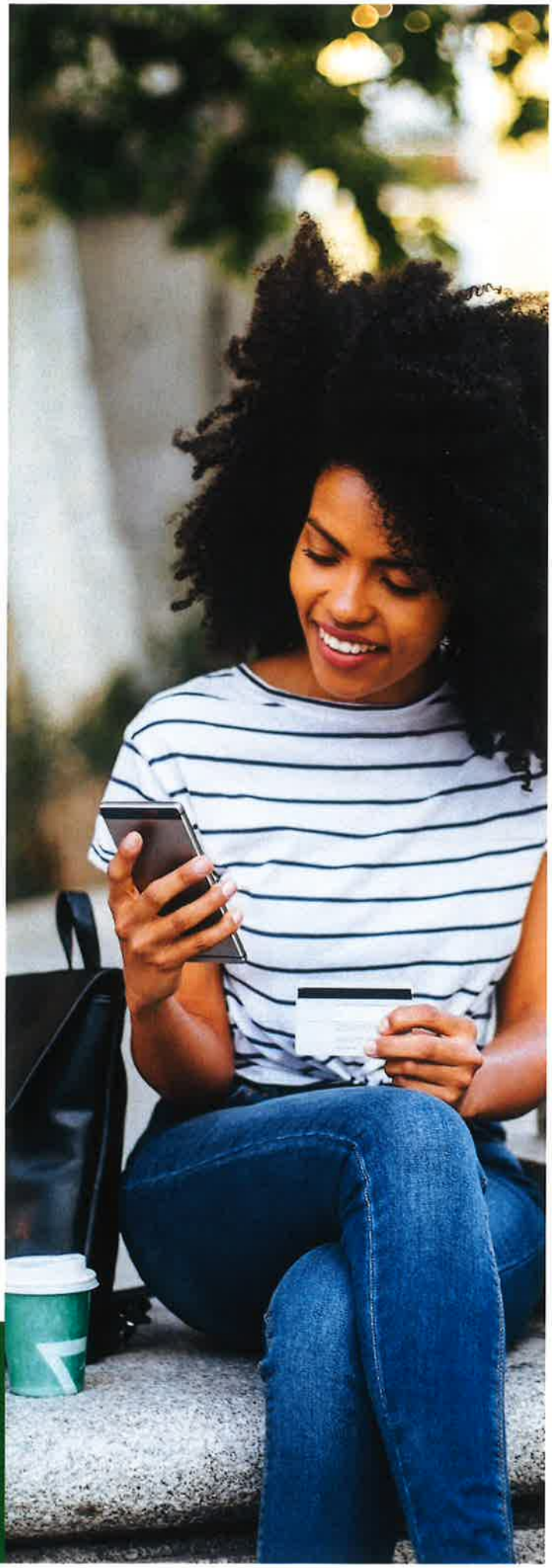
- **View your billing statement digitally**
- **Pay using Debit, Credit, eCheck/ACH, or by linking your PayPal, Venmo or Amazon Pay**
  (No fee for eCheck/ACH payments. $3.50 fee for all other payment Types.)
- **Also available:** one-time, non-registered pay



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Humboldt Community Services District

Dedicated to providing high quality, cost effective water and sewer service to our customers

MEMORANDUM

TO: Board of Directors

FROM: Terrence Williams, General Manager

DATE: July 23, 2021

SUBJECT: Elk River Estuary Enhancement Project Update

Eureka City Staff distributed a report on July 12, 2021 titled Ocean Outfall Evaluation Elk River Wastewater Treatment Plant (ERWWTP). That report and appendices are included with this packet. A review of that report follows.

Section 3.4 of the report discusses the Redwood Marine Terminal II (RMTII) existing ocean outfall (p. 5). The section establishes an outfall capacity of 30 MGD, because "the Harbor District indicated" as much and that 13 MGD of available capacity has been committed, leaving 17 MGD of uncommitted capacity. The report also indicates that the City would need 26.5 MGD for their peak day projected discharge and that the City reached out to the Harbor District with a culminating public meeting on Sept. 10, 2020. The result of that outreach is summed up by the following quote from the report, "The Harbor District Board indicated that they could not allocate sufficient capacity to accommodate the City's effluent."

GHD's report concludes that the use of the RMTII outfall is infeasible because the Harbor District said so. There are some major inconsistencies with the report and therefore this conclusion.

1) The 2016 Infrastructure Needs and Reuse on the Samoa Peninsula Redwood Marine Terminal II report prepared by SHN, CH2M and Hemphill Water Engineering firmly establishes the outfall capacity as 40 MGD.

2) The SHN report analyzes the ERWWTP flow patterns and establishes a Peak Daily Average Flow for a five-year 24-hour storm ($PDAF_5$) of 19.5 MGD and a Peak Instantaneous Flow attained during $PDAF_5$ (PIF_5) of 27.5 MGD. The SHN report shows that the appropriate daily demand volume for outfall capacity is 19.5 MGD because the City has an 8 MG surge pond that they use to equilibrate flows to the current outfall to ensure that flows only occur during ebb tides. The GHD report does not indicate where the 26.5 MGD capacity requirement estimate comes from except to say that there might be a power interruption or a mechanical issue.

3) I listened to the September 10, 2020 Harbor District meeting as available on the Harbor District website. City staff, and not the Harbor District Board, asserts that the Outfall Capacity is 30 MGD. Prior to the assertion City staff requested the Harbor

District disallow the City from discharging to the RMTII outfall and then asserts that there is not sufficient capacity on the RMTII outfall. Additionally, one of the Harbor District Commissioners chastises City staff for misleading the group because the Commissioner was at meetings with the Regional Waterboard where he heard the Waterboard tell City staff information that directly conflicts with information stated during that meeting.

The audio from the meeting can be found at the following link (https://humboldtbay.org/sites/humboldtbay2.org/files/GMT20200911-000124_awagschal-.m4a). The conversation regarding the outfall occurs between 1:35:00 and 2:05:00 of the audio file.

4) Section 4.2 of the GHD report asserts the following, "For the Eureka line we have assumed a pump capacity of 19 MGD is required, based on the SHN report, which states "To achieve appropriate minimum and maximum pipe velocities, it is assumed that the existing 8-MG equalization basin would be used to regulate flows to between 5 and 19 MGD."" This indicates that GHD agrees with the SHN assessment that the $PDAF_5$ is the appropriate flow rate for designing the ocean outfall and associated infrastructure.

5) Considering the smaller available capacity value of 30 MGD and the larger peak flow value of 26.5 MGD (both asserted by City staff without supporting data), use of the RMTII outfall seems infeasible. Using the 40 MGD capacity or the 19.5 peak daily flow requirement established using engineering analysis in the 2016 SHN report, use of the RMTII ocean outfall appears feasible or at least worth looking into more thoroughly and not completely dismissed.

   40 MGD (estimated capacity)-13 MGD (committed capacity) = 27 MGD > 26.5 MGD (City Stated Peak Day Flow)

   or

   30 MGD (City stated capacity) – 13 MGD (committed capacity) = 17 MGD ~= 19 MGD (transmission infrastructure design size).

Using the 40 MGD stated capacity from the SHN report, the RMTII outfall has sufficient capacity to accommodate the committed capacity of 13 MGD and ERWWTP stated peak flow of 26.5MGD. Using the City's stated capacity of 30 MGD and the $PDAF_5$ established in the 2016 SHN report of 19.5 MGD, the RMTII outfall has nearly enough capacity to accommodate the ERWWTP needs. Considering that the $PDAF_5$ is a 24-hour peak flowrate, a surge pond at the 70-acre Harbor District facility or the inclusion of an emergency in bay discharge for very high flow events could allow the City to use the RMTII outfall. Both solutions could be implemented to ensure that the City always has somewhere to send effluent.

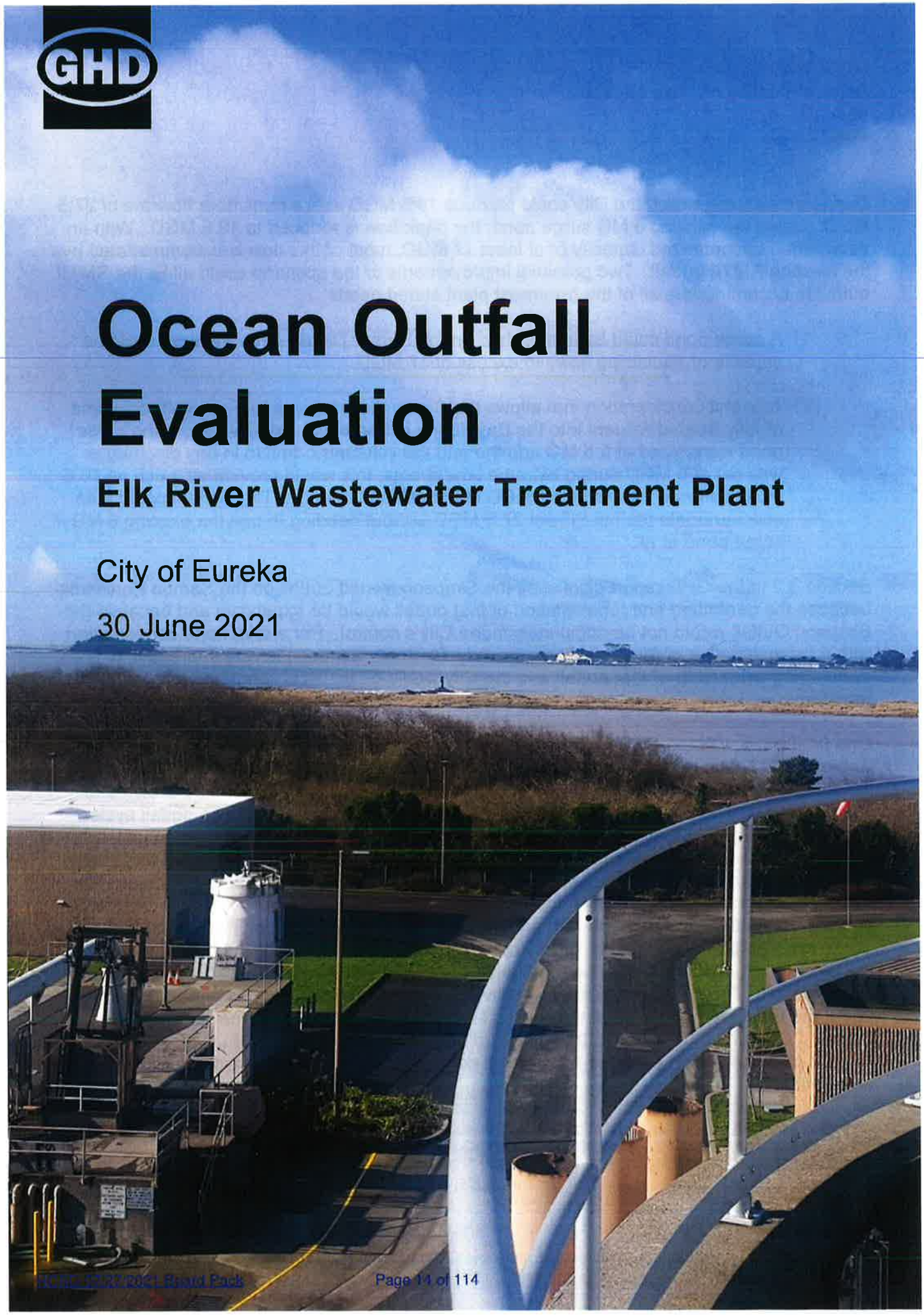
During an extreme event, the City could produce 19.5 MGD with a peak hour flowrate of 27.5 MGD. Using the existing 8 MG surge pond, the peak flow is reduced to 19.5 MGD. With an established uncommitted capacity of at least 17 MGD, most of this flow is accommodated by the existing RMTII outfall. Two potential improvements to the scenario could allow the RMTII outfall to accommodate all of the treatment plant stated needs.

1) A surge pond could be established on the Harbor District Property that would be capable of equalizing flows in excess of 17 MGD.

2) A permit consideration that allows the City to discharge up to a set limited volume of fully treated effluent into the Bay during extreme high flow events. If the surge pond were sized at 5.5 MG and the and the volumetric limit to in bay discharges was set at 5 MGD during extreme flow events, this would provide as much as 10.5 MGD buffer to the stated 17 MGD uncommitted capacity. The system could then accommodate the full PIF_5 of 27.5 MGD without needing to use the existing 8 MG surge pond at all.

Section 3.2 of the GHD report dismisses the Simpson owned outfall on the Samoa Peninsula because the permitting and rehabilitation of that outfall would be expensive and because the Simpson Outfall would not be completely in the City's control. Per a telephone conversation with a representative of Simpson Paper on July 13, 2021, Simpson is very interested in transferring ownership of that outfall and the City would be an ideal candidate for that transfer.

One final issue with the GHD report is that one of the appendices seems to be incomplete. Appendix C, Technical Review of Ocean Discharge Alternative for Elk River Wastewater Treatment Plant Effluent, September, 2020; produced for the City of Eureka by Brown and Caldwell (BC). The Executive Summary of the BC report indicates that, "The outfall system should have capacity to discharge the City flows while also receiving flows from other dischargers. The outfall system would need further hydraulic/pumping analyses if other large discharges would occur together with a City discharge." Section 4 of this report states, "For this preliminary evaluation BC developed order-of-magnitude capital costs for improvements to bring the outfall into operation with enough capacity for the City's peak wet weather flow." There is no portion of this report, or any other report made available to the public, besides the SHN report, that uses engineering analysis to estimate the hydraulic capacity of the ocean outfall. The statement in the Executive Summary indicates that, as of September 2020, the BC team believes that there is sufficient hydraulic capacity in the RMTII ocean outfall. I am pursuing access to the full report as I would like to see the analysis that led them to that conclusion because it is in stark contrast to the assertions made by City staff and GHD.



Ocean Outfall Evaluation

Elk River Wastewater Treatment Plant

City of Eureka

30 June 2021

Contents

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Appendices

1. Introduction

The City of Eureka (City) operates the Elk River Wastewater Treatment Plant (ERWWTP), which currently discharges highly treated effluent to Humboldt Bay. Under the direction of the North Coast Regional Water Quality Control Board (Regional Board), the City has been assessing the feasibility of alternatives to bring the City into compliance with the Enclosed Bays and Estuaries Policy (EBEP). One alternative that the City was requested to evaluate was discharging treated effluent directly to the Ocean, which would be regulated under the potentially less strict requirements of the California Ocean Plan.

The section below presents information on the existing ERWWTP outfall and its current influence on Humboldt Bay as well as options for continued maintenance. This is followed by an evaluation of the City's ocean outfall alternatives including use of the existing Redwood Marine Terminal (RMTII) outfall, Simpson Outfall, or a new outfall. The final sections, include an evaluation of capital and long-term operations and maintenance costs.

2. Existing Effluent Outfall and Bay Impacts

2.1 Introduction

ERWWTP effluent discharges to Humboldt Bay through an outfall structure consisting of a standpipe on Elk River spit, connected to a 48-inch-diameter pipe 4,100 feet in length, terminating in a multi-port diffuser. Figure 1 below shows the vicinity around the ERWWTP and the location of the standpipe and discharge pipeline relative to the Elk River Spit and Humboldt Bay Main Channel. The City has conducted a Biological Study of the Outfall area as well as initiated concept designs of the improvements to the outfall structures. These are discussed in more detail below.

Figure 1: Vicinity Map ERWWTP, Standpipe, and Outfall Pipe Location

2.2 Biological Evaluation

North Coast Regional Water Quality Control Board Order No. R1-2016-0001 (MRP Section V.III) requires the City to conduct a comparative evaluation of indigenous biota in the vicinity of the outfall at least once every 5 years. This study was most recently conducted in 2019 and compared marine macroalgae (seaweeds) and invertebrate species in the immediate vicinity of the City's outfall with marine macroalgae and invertebrate species in a control site located two miles south at Buhne Point. The Final Biological Study Can be found in Appendix A.

The study compared estimates of marine macroalgae cover and the abundance of relatively non-motile species (i.e. sea stars) between rocky intertidal habitats in selected study and control areas of Entrance Bay. The primary assumption for selecting the rocky intertidal study areas for study was that pollutants from the outfall, if present, should accumulate in these areas at a greater frequency and magnitude than at the control site and would likely result in noticeable physical or biological effects. The control site located two miles away from the outfall near the confluence of South Bay and Entrance Bay was assumed to be separate from direct influence of the discharge. The study found no evidence that suggested degradation of biota in the receiving waters from the City's effluent discharge (ZLA, 2019).

2.3 Existing Outfall Infrastructure Improvements

2.3.1 Submerged Effluent Pipe Diffuser Port Improvements

The City's existing outfall pipeline diffuser has 90, 3-inch-diameter ports, with a port spacing of 4 feet. The originally installed pipe had flaps over the ports. Recent diver inspection (SHN, 2017) determined that the flaps largely have failed. See Figure 2 for examples of the failure mechanisms of the existing port diffusers. The City is proposing discharge port improvements as part of ongoing system upgrades. The improvements would include installation of elastomeric Tideflex© check valves (manufactured by Red Valve, Inc., Pittsburgh, PA or a similar product), that would improve hydraulic and dilution performance over the range of anticipated effluent flows while preventing detrimental sediment intrusion into the diffuser during lower flows.

Figure 2: Underwater Images of the Diffuser Ports Planned for Replacement on the City's Outfall Pipeline (SHN, 2017)

2.3.2 Effluent Standpipe

The ERWWTP outfall pipe includes a standpipe structure located on Elk River Spit. The standpipe is connected to the outfall pipeline which extends another 4,100 feet into the Bay. A review of the existing protection of the Standpipe and connecting piping was conducted by GHD in 2019, and is included in Appendix B. The review was initiated due to recent degradation of the onshore and near shore rock armoring of standpipe structure, as seen in Figure 3, as well as the need to evaluate more resilient protection for the future. The evaluation considered the stable stone sizes, minimum crest width, and toe design details needed to protect an exposed section of an outfall pipe from the wave impacts associated with a 50-yr storm event. Figure 4 shows the wave forces of a winter high tide on the standpipe, which exemplifies the need for resilient solutions. The proposed improvements were developed to minimize the project footprint during construction and for the 50-year life of the project.

Figure 3: Example Damage to the Existing Near Shore Pipeline, Since Repaired

Figure 4: Standpipe on December 21, 2019 High Tide

2.4 Existing Outfall Summary

As presented above from the Biological Study, the existing outfall is not degrading the biota in the receiving waters from the City's effluent discharge. With the implementation of the port diffuser upgrades and outfall stabilization in conjunction with the City's planned treatment upgrades, the life of the existing outfall can be extended with no increased impact to the environment.

An Opinion of Probable Construction Cost was put together for the planned outfall improvements, using similar assumptions as the cost analysis presented below for the ocean outfall alternative. The cost estimate includes engineering, permitting, construction, and contingencies. There is no change in operations and maintenance costs associated with the planned improvements to the existing outfall, as costs would remain like those incurred today by the City for the ERWWTP. In addition, the City is planning on making improvements to the treatment system as well.

Table 1 ***Opinion of Probable Construction Costs for Planned Outfall Improvements***

Name	Unit	Quantity	Unit Cost	Total Cost
Outfall Improvements				
Tideflex valves and zinc anodes [1]	Ea	90	$2,300	$207,000
Diffuser excavation, cleaning, repairs, and check valve installation [2]	Ea	1	$1,035,000	$1,035,000
SubTotal				$1,242,000
Contingency (50%)				$621,000
Total Outfall Improvements Construction Cost				$1,863,000
Engineering, Legal, and Administration Costs (20%)				$372,600
Environmental Approvals and Permitting (15%)				$279,450
Total Outfall Improvements Capital Cost				$2,235,600
Standpipe Stabilization				
Standpipe Stabilization Construction [3]				$1,413,820
Contingency (50%)				$706,910
Total Standpipe Stabilization Construction Cost				$2,120,730
Professional Services Total				$341,040
Total Standpipe Stabilization Construction Cost				$2,461,770
TOTAL EXISTING OUTFALL IMPROVEMENT COSTS				$4,697,370

1) Tideflex values estimate taken from email quote from C. Mitchell, Red Valve, March 13, 2020, FOB Eureka with 5 percent extra valves (6 valves) for future repairs, taken from Brown and Caldwell, 2020 estimate for the RMT II outfall and adjusted for number of diffuser port for the City of Eureka a 15% mark up on materials was added to account for market increases in materials costs.

2) Includes equipment rentals and diver equipment and work boat mobilization and demobilization, with 10 days of standby time. Quote oral per V. Markytan, MM Diving. taken from Brown and Caldwell, 2020 estimate for the RMT II outfall and adjusted for number of diffuser ports, plus 15% for increase in materials costs.

3) Based on GHD Outfall Memo November , 2019.

The cost estimate above does not include the treatment upgrades that the City has committed to regardless of the final effluent outfall location. The cost estimates of the treatment upgrades are not available at this time but are anticipated to be similar for the ocean outfall and bay outfall based on the preliminary effluent water quality sampling, effluent modeling, and treatment evaluations ongoing as of Summer 2021.

3. Ocean Outfall Alternatives

3.1 Alternatives

The City examined the feasibility of three alternatives for ocean discharge which included discharging treated effluent through the existing Redwood Marine Terminal (RMTII) outfall, Simpson outfall, or a new outfall. All three would be regulated under the less strict requirements of the California Ocean Plan. The first alternative evaluated is the Simpson outfall, followed by a new outfall and the RMTII outfall.

3.2 Rehabilitation of Simpson Outfall

A previous evaluation was conducted on the feasibility of reusing the abandoned Simpson outfall (GHD 2019). The Simpson outfall would need to be repaired and extended, which would trigger an additional layer of regulatory authorizations. Given the history of litigation surrounding it, extension of the Simpson outfall may be viewed as

particularly controversial by the public as infrastructure is extended further into the Bay. The permit for use of the Simpson outfall is expired, and the outfall is not currently in use or being maintained. The use of the outfall would require a new permit, including all the associated work with permitting an essentially new outfall. Based on the initial review, the costs and environmental impacts of upgrading the Simpson outfall would far exceed those to connect to RMT II, which is currently in use.

In addition, the Simpson outfall would not be fully under City control, and the potential for contamination of the site due to its historic use would prevent the City from purchasing the land and infrastructure needed to control the operations. Thus, the Simpson outfall is considered to be an infeasible ocean outfall alternative.

3.3 New Ocean Outfall

The option of a new outfall was considered by the City. No specific location was identified for this report. However, regardless of location, a new outfall would require the following:

- New NPDES permit from the Regional Board
- Outfall siting studies and public outreach
- Land purchase and/ or easements
- Full environmental studies and CEQA
- Environmental permitting in the Coastal Zone
- Routing and design of pipeline up to 5 miles or more into the ocean
- Construction within the tidal zone and beyond

A new outfall would have greater environmental impacts as existing developed facilities could not be leveraged. The project would also have much higher costs for similar reasons. Thus, a new outfall is considered to be an infeasible ocean outfall alternative.

3.4 Existing RMT II Outfall

The Humboldt Bay Harbor, Recreation, and Conservation District (Harbor District) was contacted in regards to the condition and capacity of the existing outfall pipe. Upgrades to port diffusers and other improvements would be required to increase the likelihood of compliance with the California Ocean Plan. The Harbor District indicated the outfall capacity of RMTII is approximately 30 million gallons per day (MGD). Current uses and planned commitments to the RMTII outfall sum approximately 13 MGD, which leaves only 17 MGD of uncommitted capacity.

The City would require a commitment for peak day projected effluent discharge of 26.5 MGD, which would exceed the remaining capacity of the RMT II outfall. While the City can store and meter effluent flows to the outfall, mechanical issues, local electrical grid issues, or other unpredicted issues can create the situation where large volumes of stored flows may need to be discharged over a short period of time.

Additionally, the City's use of the RMT II outfall would limit and constrain future coastal dependent industrial uses on the Samoa Peninsula, in conflict with existing economic and land use development planning underway by the Economic Development Division of Humboldt County and the Harbor District. The City outreached to the Harbor District to gather input on the potential rededication of the remaining RMTII outfall capacity for municipal treated effluent discharge during the September 10, 2020 Harbor District Board meeting.

Outreach concluded existing and planned users of the RMT II outfall would limit the City's ability to reserve capacity for its peak flow. The Harbor District Board indicated that they could not allocate sufficient capacity to accommodate the City's effluent. Given the inability to depend on the RMT II outfall for discharge of the City's peak flow, the use of the RMT II outfall has been determined to be infeasible.

However, to meet the Regional Board requirement to evaluate an ocean alternative, the sections below present the infrastructure, permit needs, and costs for connecting the City's WWTP to the RMTII outfall. The project impacts and costs would be significantly higher for either of the other two alternatives considered as discussed in Sections 3.2 and 3.3 above.

4. Evaluation of Connection to RMTII Outfall

4.1 Background

GHD evaluated the components and costs that would be required to connect the City's system to the RMTII outfall. The basis for the analysis was the development of an opinion of probable construction costs (OPCC) for the connection via horizontal directional drilling (HDD) under Humboldt Bay. Disposal of the City's effluent via the existing ocean outfall would also require a new pump station and connection upgrades at the WWTP. The OPCC was developed consideration of Ocean Discharge Alternative for Elk River Wastewater Treatment Plant Effluent Technical Memorandum prepared by Brown and Caldwell dated September 21, 2020, which estimated costs for specific upgrades to the RMT II Ocean Outfall and associated infrastructure.

To develop the infrastructure needed to support the OPCC, GHD utilized the following information:

- Infrastructure Needs and Reuse on the Samoa Peninsula, Redwood marine Terminal II, (in particular, Table 6) prepared by SHN dated February 2016
- Technical Review of Ocean Discharge Alternative for Elk River Wastewater Treatment Plant Effluent prepared by Brown and Caldwell dated September 21, 2020.
- Construction costs from similar projects
- RS Means (https://www.rsmeansonline.com/SearchData)
- Discussions with GHD's specialist horizontal directional drilling (HDD) team

Figure 5 below shows the conceptual alignment for the HDD pipeline that would connect the ERWWTP to RMT II outfall.

Figure 5: Concept Pipeline Alignment Used for Cost Analysis (SHN, 2016)

4.2 Design and Cost Assumptions

Assumptions applied to the development of the OPCC are outlined below and include provisions for accuracy, site access, geotechnical conditions, horizontal direction drilling specification and anticipated requirements, and likely pump station costs and considerations.

Accuracy

- Rates utilized and developed in this OPCC are provided with an accuracy of +/- 30%.
- Quantities based on those provided in the technical documents listed above.

- The developed OPCC is based on construction occurring within 12 months from the date of this memo. Rates and amounts do not include escalation.

Site Access

- GHD has assumed site access will be unrestricted, road access is generally available for the full length of the sewer lines and access to the connecting ends of the pipe is unrestricted. HDD entry and exit pits have sufficient access for the required equipment and materials handling/storage.

Geotechnical Conditions during Construction

- The sub-marine geology is alluvial/sediments/muds for the full path of the HDD i.e. no rock, cobbles or boulders have been allowed for. Geotechnical investigations are needed to determine the geology of the proposed HDD path if this alternative is to be considered further.
- No dewatering will be required in trenches.

Horizontal Directional Drilling

- The HDD pipe would be 30" ID / 36" OD HDPE, or 30" ID / 32" OD fusible PVC.
- No casing is required in the HDD, based on above.
- Sufficient space for the HDD equipment and materials is available at the entry and exit pits.
- Based on HDPE or fusible PVC pipe 3200 ft is nearing the feasible limit of length for the HDD. If an alternative HDD alignment of greater length is utilized this may affect the feasibility of the HDPE or fusible PVC, which may significantly increase costs.

Pump Station Costs

- A combination of cost estimates from similar projects, RS Means data, cost curves provided in industry literature and discussions with water and sewer engineers have assisted in arriving at the opinion of costs for the pump stations.
- For the Eureka line we have assumed a pump capacity of 19 MGD is required, based on the SHN report, which states "To achieve appropriate minimum and maximum pipe velocities, it is assumed that the existing 8-MG equalization basin would be used to regulate flows to between 5 and 19 MGD."
- The cost of pump stations could vary significantly from those used in this estimate based on configuration, type of pump station, number of pumps, amendments to size of equalization basin etc. To arrive at a more accurate opinion of cost for pump stations at least concept level design should be completed.

General

- No property purchase is included.
- Sewer lines do not include for collection lines from communities.
- No back-up power for pump stations i.e. permanent onsite generators.
- Electricity is available near to pump station locations.

The cost estimate for infrastructure needed to connect the ERWWTP to the RMTII outfall is a Class 5 Estimate as defined by the AACE International Recommended Practice No. 18R-97. A Class 5 Estimate is for the concept screening level, and the expected accuracy of range of the estimate is -20% to -50% on the low and +30% to +100% on the high end. As there are significant unknows as presented above, and materials prices are expected to increase significantly in the coming years, a 50% contingency was used with the OPCC presented in Appendix D.

4.3 Permitting Evaluation

Regulatory approvals likely required for implementation of an Ocean Outfall Alternative are summarized in

Table 2. Given the environmental risk of a potential frac-out associated with horizontal directional drilling beneath and across Humboldt Bay, long-term pumping to the Samoa Peninsula and associated greenhouse gas emission, and the likelihood of public concern in relation thereto, the recommended CEQA document would be an Environmental Impact Report. Supporting biological and cultural resource investigations would also be necessary to support impact assessment under CEQA. The State Lands Commission would require a lease. The annual lease fee would not be determined until the application was submitted and reviewed by the State Lands Commission. Given development would occur in the Coastal Zone and span various jurisdictions (local, state, and appeal), a consolidated Coastal Development Permit submitted to the Coastal Commission is recommended.

To support NPDES permit review, an updated dilution analysis would be conducted. Results of the dilution modeling would be incorporated into a Marine Biological Resources Evaluation, which would be submitted to NMFS and CDFW for review.

Depending upon specific locations of work areas included in final designs, additional approvals may also be required. If HDD work areas or other project elements are ultimately located adjacent to Humboldt Bay or in waters or wetlands, compliance with the Clean Water Act Sections 401 and 404 would also be required. Humboldt County may also require a Use Permit for any HDD work areas on the Samoa Peninsula, depending upon the specific location of planned construction.

For the purposes of regulatory planning, the following activities have been excluded:

- It is assumed permanent impacts to wetlands, ESHA, and other Sensitive Natural Communities can be avoided, as the ERWWTP site, proposed pipeline alignment, and RMTII site are already developed; thus a Habitat Mitigation and Monitoring Plan is not included in this projection.
- It is assumed that the waters of Humboldt Bay can be avoided through the use of HDD technology; thus approval from the California Department of Fish and Wildlife via a 1602 permit under the Fish and Game Code and a review for compliance with the California Endangered Species Act is not included in this projection beyond the typical field work and evaluations completed for CEQA.
- While standard CEQA cultural resource investigations and notifications will be conducted, it is assumed, that sub-surface cultural resource investigations will not be needed.
- Given there is no federal permit, consultation under Section 7 of the Endangered Species Act is not included, which would include a Biological Assessment/Biological Opinion with NMFS. Coordination with NMFS and CDFW is included, as both agencies would, at minimum, be invited by the Coastal Commission to comment on the Coastal Development Permit during interagency review and consultation.
- It is assumed for the cost estimate that permits from the following agencies would not be needed, which could change under further evaluation: Regional Board CWA 401 Permit, USACE CWA 404 Permit, Humboldt County Use Permit, Endangered Species Act Section 7 Consultation and Biological Assessment.
- Legal costs are estimated at 5% of environmental approvals and permitting costs.

Table 2 ***Summary of Environmental Approvals and Permitting Likely to be Required***

Approval – Likely Required	Cost
CEQA – Environmental Impact Report	$275,000
Special Studies	
Biological Investigations	$50,000
Cultural Resource Investigation	$10,000
Frac-Out Contingency Plan	$25,000
State Lands Lease	$5,000
Coastal Development Permit – Consolidated Submission to CCC	$25,000
Coordination with CDFW and NMFS (CDP interagency consultation)	$15,000
Report of Waste Discharge and Supporting Analysis	$50,000
Marine Resources Biological Evaluation	$15,000
Ocean Dilution Modeling	$50,000
Sub-Total	**$520,000**
Legal and City Staff Costs	$26,000
Contingency (30%)	$156,000
Total [1]	**$702,000**

1) Class 5 estimate accuracy of range is -20% to -50% on the low and +30% to +100% on the high end. A contingency of 30% was included for permitting costs.

4.4 Opinion of Probable Construction Costs

The total OPCC for the City to connect to RMT II outfall, including outfall improvements is $28,614,900, which includes construction contingency (50%) and engineering and construction management. The full cost break down for the GHD OPCC for connecting the City's treatment system to the peninsula can be found in Appendix D. The basis for the RMT II repair cost can be found in Brown and Caldwell's memo in Appendix C with the updated cost included in Appendix D and the regulatory cost estimate can be found in Appendix E to arrive at a total estimate for effluent disposal via the ocean outfall, which is presented in Table 3.

Table 3 ***Opinion of Probable Construction Costs***

Element	Capital Cost[1]
Redwood Marine Terminal Repairs and Improvements Cost Estimate (Appendix D)	$3,105,000
Opinion of Probable Cost for HDD Under Humboldt Bay and WWTP Improvements (Appendix D)	$24,807,900
Regulatory Cost Estimate (Appendix E)	$702,000
TOTAL	**$28,614,900**

Similar to the cost estimate for the City's existing outfall, the cost estimate above does not include the treatment upgrades that the City has committed to regardless of the final effluent outfall location. The cost estimates of the treatment upgrades are not available at this time but are anticipated to be similar for the ocean outfall and bay outfall based on the preliminary effluent water quality sampling, effluent modeling, and treatment evaluations ongoing as of Summer 2021. In addition, these is a high likelihood the materials costs will continue to increase significantly over the next several years. Also, multiple assumptions regarding technologies or other potential system partners should change increasing costs.

5. Ocean Outfall Operations Evaluation

Following initial construction, pumps would be required to get treated effluent from the ERWWTP wastewater treatment plant (WWTP) under Humboldt Bay and to the Samoa Peninsula. Initial estimates indicate a long-term energy requirement of approximately 150,939 annual kilowatt hours (kwh) for the 20-year projected flow, which would result in cumulatively substantial energy consumption, greenhouse gas (GHG) emissions, and potential impacts to the environment. Provisions for power outages would also need to be included into the project design, such as back-up power generation.

5.1 Economic Costs

In addition, there would be annual costs for maintenance of the pump station, pipeline, and outfall, as well as service fees to the Harbor District for use of their facilities. Table 4 below summarizes both the annual costs and the present value over the 50 year life of the project. The costs below do not take into account capital replacement, which could be extremely high given over 2 miles of new pipeline will be laid within seismically active areas.

Table 4 Operations and Maintenance Activity Costs for Ocean Outfall System

Operations and Maintenance Activity	O&M Cost
Energy Consumption Required for Pumping (2021 @ current flows)	$17,998
Additional Operations Staff	$50,000
Pump Station Annual Maintenance and Inspection (estimated as .5% of Pump Station Capital Costs)	$34,000
Pipeline Annual Maintenance and Inspection (estimated as .5% of Pipeline Capital Costs)	$14,500
Annual Cost for RMT II Maintenance	$100,000
Annual Cost to Harbor District for Use of RMT II[1]	$200,000
TOTAL Annual Cost	**$416,248**
Present Value of Annual Costs over 50 Infrastructure Life	**$16,487,488**

1) Estimate only. Actual costs would depend on future rate negotiations between the City and the Harbor District.
2) Analysis included 2% inflation rate and a 3% nominal discount rate.

5.2 Environmental Costs

Pacific Gas and Electric (PG&E) Company's Carbon Footprint calculator was use to estimate the GHG emissions from the proposed pumping of effluent under the Bay. According to PG&E, it is common to approximate emissions from electric usage through the use of an average emissions rate such as the California Public Utilities Commission (CPUC)-approved ClimateSmart electric emissions rate of 0.524 pounds of carbon dioxide per kWh. This reasonable approximation is based on the average emissions rate for PG&E's electric portfolio, consistent with the emissions rate that is independently certified and registered each year with the California Climate Action Registry (see www.climateregistry.org). Based on an annual energy use of 150,939 kwh, the estimated carbon dioxide emissions are 79,092 pounds of carbon dioxide per year or an additional 4 million pounds over the life of the project.

6. Summary

The City evaluated three ocean outfall alternatives in addition to the existing Bay outfall in this report. The most viable outfall was the RMT II outfall, although obtaining a commitment for its use is unlikely.

Here are the key findings from the RMT II Alternative evaluation:

- Discussions with the Harbor District indicate the City cannot obtain a commitment for the required capacity to ensure long term operations.
- The ocean discharge alternative would considerably increase the City's greenhouse gas emissions to move water across the Bay, by almost 80,000 pound per year.
- Construction of the Bay crossing would have a significant footprint and potential environmental impacts.
- The estimated Capital cost alone is almost $29 million and the 50 year life cycle cost for the Ocean Outfall Alternative is estimated at $45,102,000.

As presented above, the City's existing outfall has shown no evidence of degradation of biota in the receiving waters near or afield the outfall. In addition, the City has a plan to maintain and improve the existing outfall pipe to further protect Humboldt Bay at much lower costs than the RMT II alternative. Thus, the ocean alternative is not being considered further for evaluation by the City.

7. References

AACE International Recommended Practice No. 18R-97. February 2005. Cost Estimate Classification System – As applied in Engineering, Procurement, and Construction for the Process Industries, TCM TCM Framework: 7.3 – Cost Estimating and Budgeting.

GHD. November 2019. Elk River Wastewater Treatment Plant Outfall Project, Outfall Protection Memo

GHD. 2019. Final Wastewater Compliance Pre-Feasibility Analysis Technical Memorandum. Prepared for the City of Eureka.

Ocean Discharge Alternative for Elk River Wastewater Treatment Plant Effluent Technical Memorandum prepared by Brown and Caldwell dated September 21, 2020

PG&E's ClimateSmart program, authorized by the California Public Utilities Commission in Decision 06-12-032.

SHN. December 2017. Elk River Wastewater Treatment Plant Outfall Inspection Report for Order R1-2016-0001: Special Provision VI.C.2.a

Zack Larson & Associates, Elk River Wastewater Treatment Plant Outfall Biological Survey Report, 2019.

Scope and limitations

This report: has been prepared by GHD for City of Eureka and may only be used and relied on by City of Eureka for the purpose agreed between GHD and City of Eureka.

GHD otherwise disclaims responsibility to any person other than City of Eureka arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

This opinion is only that; it represents GHD's best judgment as a design professional, based upon GHD's recent experience, the limited factors known to GHD at the time of preparing this opinion, and is supplied only for City guidance. If the City desires a higher level of confidence in predicting anticipated construction cost than provided in this opinion, the City should retain the services of a professional estimator for this purpose.

It is required that additional site investigations, engineering analysis and design, environmental impact studies, and other applicable studies be performed prior to developing a more accurate cost analysis. The costs provided are based on gross assumptions and should not be used for detailed budgeting by the City, its personnel, or its consultants. The purpose of this document is only to provide a high level budget evaluation. GHD does not guarantee the accuracy of the opinion as compared to the ultimate actual bids or cost to the City.

There may be assumptions made that were mistakenly omitted from the above list. If you have any questions regarding this opinion of probable construction costs, please contact Rebecca Crow at Rebecca.crow@ghd.com.

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ghd.com

→ The Power of Commitment

Appendix A

Elk River Wastewater Treatment Plant Outfall Biological Survey Report, August 2019

Elk River Wastewater Treatment Plant Outfall Biological Survey Report

Order R1-2016-0001: Monitoring and Reporting Program Section V.III

Prepared for: City of Eureka
Elk River Wastewater Treatment Plant
4301 Hilfiker Lane
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Prepared by: Zack Larson & Associates
Environmental Consultants
P.O. Box 1400
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Table of Contents

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Introduction

The City of Eureka (City) Elk River Wastewater Treatment Plant (ERWWTP) discharges treated municipal wastewater effluent into Humboldt Bay (Figure 1). Effluent is discharged from the ERWWTP through a 48-inch pipe under Elk River Spit to an outfall diffuser system that terminates[1] in a navigation channel near the entrance to Humboldt Bay (Entrance Bay). North Coast Regional Water Quality Control Board Order No. R1-2016-0001 (MRP Section V.III) requires the City to conduct a comparative evaluation of indigenous biota in the vicinity of the outfall at least once every 5 years.

This study compared marine macroalgae (seaweeds) and invertebrate species in the immediate vicinity of the ERWWTP outfall (RSW-001-SP and RSW-001-USCG) with marine macroalgae and invertebrate species in a control site (RSW-002-BP) located two miles south at Buhne Point (Figure 2).[2] The sites are located within the marine waters of Entrance Bay and contain rocky shore habitats with similar biological communities for comparative analyses. Sites were visited during minus tides in June 2018, November 2018 and March 2019. The relative abundance of ecologically important organisms in the middle and low rocky-intertidal zones of RSW-001 and RSW-002 sites was estimated and compared and qualitative assessments[3] of animals and habitats were made. The purpose of the study is to identify any evidence of biological resource degradation attributable to ERWWTP discharge.

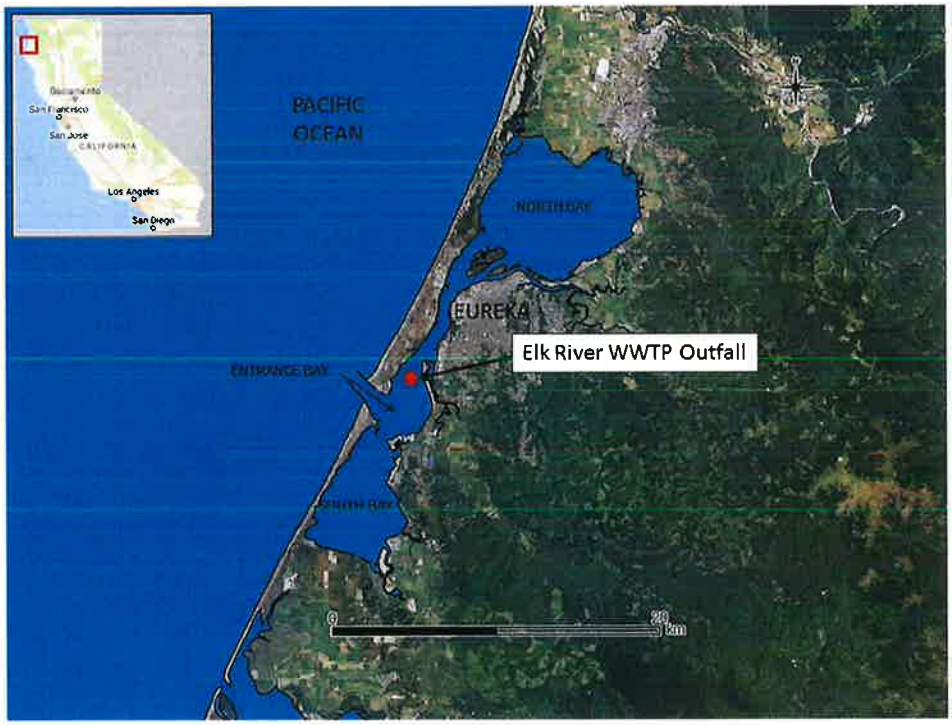

Figure 1. Location of Humboldt Bay and its sub-bays (North Bay, Entrance Bay, South Bay). The approximate location of the ERWWTP outfall in Entrance Bay is indicated by the red dot.

[1] Approx. 40.76734 N/ -124.20979W (NAD83) estimated in the field by ZLA

[2] RSW-001-SP, RSW-001-USCG, and RSW-002-BP refer to the outfall standpipe, US Coast Guard Station, and Buhne Point, respectively.

[3] This refers to Order R1-2016-0001 MRP Section V.III; Objectionable aquatic growths, floating particulates or grease and oil, aesthetically undesirable discoloration of the ocean surface, color of fish or shellfish.

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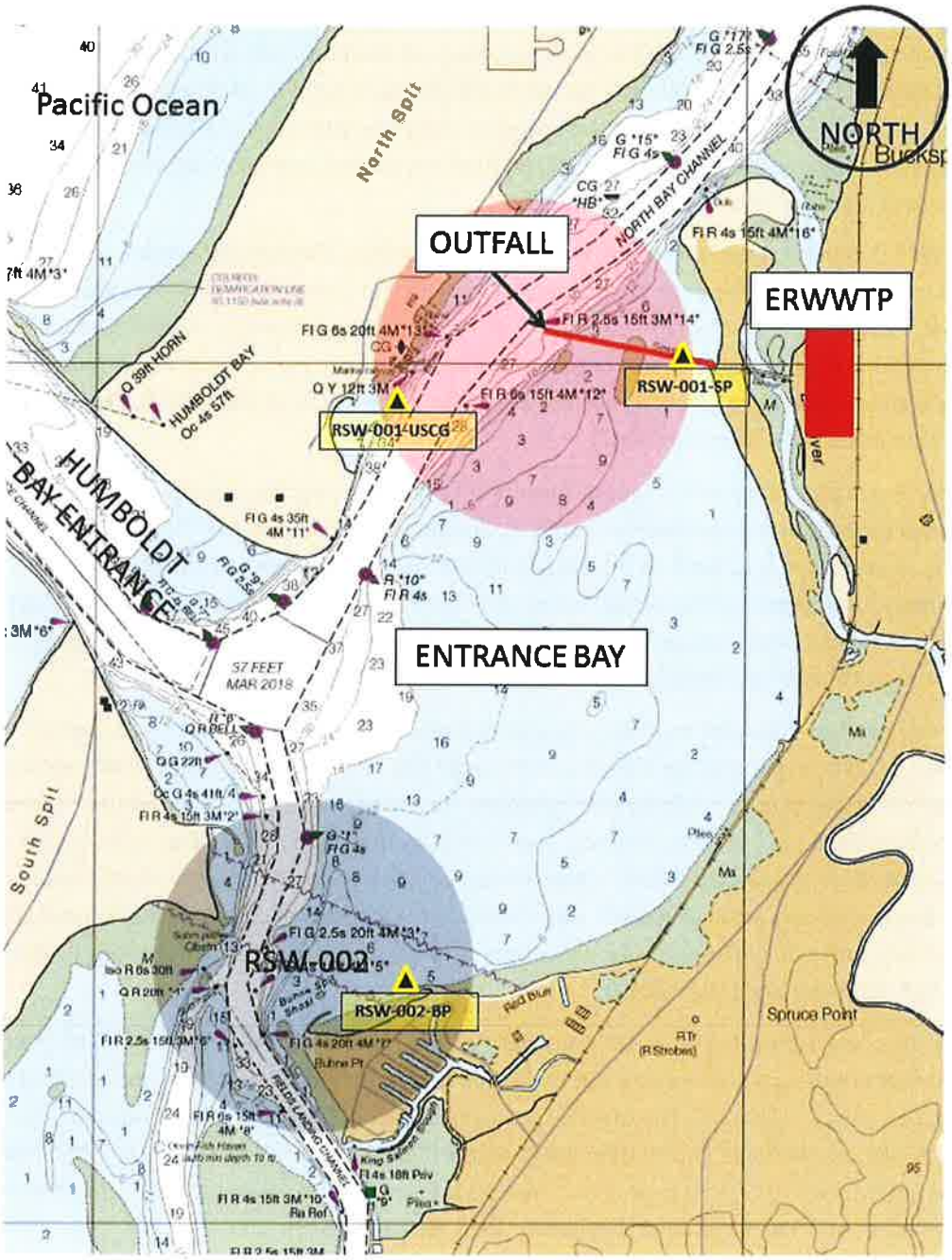

Figure 2. Location of the study sites RSW-001-USCG (US Coast Guard Station)/RSW-001-SP (outfall standpipe) and control site RSW-002-BP (Buhne Point) in Humboldt Bay. The red line represents the outfall pipe and the black triangles are the fixed sampling sites (plots). Adapted from NOAA *Humboldt Bay* Marine Chart (18622, 56th Ed., Apr 2019).

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Study Area

Humboldt Bay is the second largest enclosed bay in California and the largest port between San Francisco and Coos Bay, Oregon. The bay includes three sub-basins, or sub-bays; North Bay, Entrance Bay, and South Bay (Figure 1). Three-quarters of Humboldt Bay's 52-mile shoreline is composed of artificial structures while one-quarter of the shoreline remains natural (Laird 2018, Laird 2010). Entrance Bay consists of a single deep shipping channel and does not contain complex tidal flats found in the other sub-bays (Barnhart 1992).

The ERWWTP outfall is located on the north side of Entrance Bay. The deepest portion of Humboldt Bay is located in Entrance Bay where the federal navigation channel is maintained by annual dredging (Laird 2018, USACE 2012). Tidal currents are strongest in Entrance Bay with current velocities between 3-6 feet per second (Barnhart et al. 1992). Most of Entrance Bay is armored, particularly the entrance channel. Tidal flats comprise less than 10% of its surface area. The surface area of Entrance Bay remains relatively constant over a tide cycle (Barnhart 1992).

The ERWWTP outfall includes a 352-foot diffuser that terminates near the bottom-center of the Entrance Bay navigation channel approximately 4,100 feet west-north-west of the ERWWTP (Laird 2018, SHN 2017). A standpipe is located on the outfall pipe at the western shore of Elk River Spit approximately 2,300 feet from the outfall terminus (Figure 3). Rock armor covers about 500 feet of pipe to the west of Elk River Spit, including the standpipe section. A crescent shaped shoal, depicted in Figure 2, runs north to south between the rock armor section and the navigation channel.

Entrance Bay habitats consist of marine rocky shores (rock armor), sandy beaches, soft-bottom subtidal areas, and tidal flats. In general, the habitats in Entrance Bay have been intensely altered and are degraded from development not limited to industrial uses, dredging, shipping infrastructure, and a reduced tidal prism from armoring. Although Humboldt Bay may account for 30 percent of California's eelgrass (*Zostera marina*) and the State's largest eelgrass population, the amount of eelgrass beds in Entrance Bay is relatively small (Gilkerson and Merkel 2017). Pockets of eelgrass have been mapped on the north and south side of the entrance and account for 2 percent of eelgrass in the bay (Gilkerson and Merkel 2017, Schlosser and Eicher 2012).

The study sites near the outfall (RSW-001) and Buhne Point (RSW-002) share similar habitat traits with respect to rock armoring substrate size and type, salinity (marine), tidal influence, and proximity to the Humboldt Bay entrance channel. The marine resources of Humboldt Bay have been studied over decades and various data and information are available in the literature and from local organizations (Gilkerson and Merkel 2017, Schlosser and Eicher 2012, Fritzsche and Cavanagh 1995, Barnhart et al. 1992, Monaco et al. 1990, Boyd 1982, Boyd et al. 1975, Monroe 1973).

The dominant soil types mapped by NRCS in the immediate upland areas adjacent to the Entrance Bay include Samoa-Clambeach complex (0-50 percent slopes) and Oxyaquic Udipsamments-Samoa complex (0-50 percent slopes) on Buhne Point and the North, South and Elk River Spits. The area has Mediterranean climate; winters are mild and wet, and summers are relatively dry with frequent fog. The mean annual precipitation of the area is 35-80 inches and the mean annual temperature ranges from 50-55 ^{o}F (NRCS 2018).

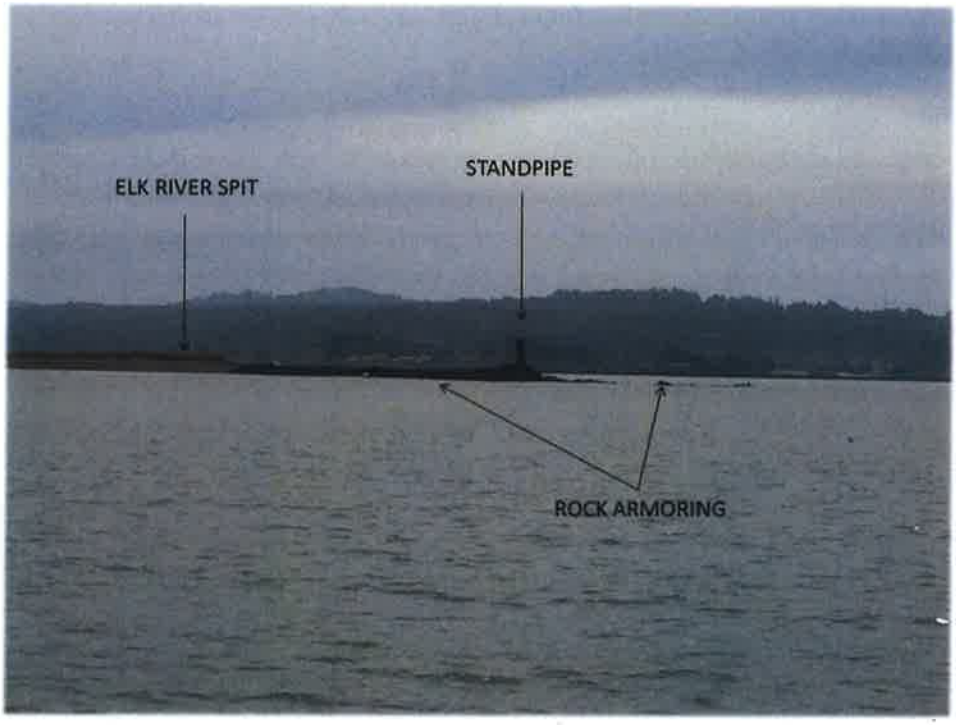

Figure 3. Image of Elk River Wastewater Treatment Plant Outfall Standpipe, Humboldt Bay, California.

Methods

The relative abundance of ecologically important organisms was estimated using fixed plots in targeted assemblages during low tide events in the spring and fall. Surveys included photoplot imaging from a quadropod (Richards and Davis 1988), crab trapping, and hook and line fish sampling. Surveys occurred on 6/26/2018, 11/8/2018, 11/9/2018 3/17/2019, 3/18/2019 and 3/19/2019. Additional observations of habitats and species present in the study and control sites were recorded.

Photoplots

Photoplots (50cm x 75cm) were used to survey target species measured as percent cover (Appendix A). A quadrapod was used to ensure consistent imaging of plots (Appendix B). Camera set-ups include a waterproof digital camera (GoPro Hero 5). Photoplot and sea star plot surveys were performed in the intertidal area along the outfall pipeline standpipe (RSW-001-SP), the intertidal area west of the outfall near the U.S. Coast Guard Station (RSW-001-USCG), and the intertidal area at Buhne Point (reference site – RSW-002-BP) (Table 1).

The quadrapod apparatus, constructed of PVC pipe, was used to support the camera at a constant height and orientation to ensure consistent framing of each 50x75cm plot. Plots were established randomly in the middle and low intertidal zones within each study site. The lens of the camera was aligned to provide coverage of the entire plot. The quadrapod was placed over each plot with plot numbers and time-stamps captured in the image. The point-intercept method was used with point contacts quantified by superimposing a uniform grid of 100 dots (and/or 50 dots x2) on the digital image. The digital image was manipulated (converted to 4000px by 3000px) to provide complete

coverage of the plot imaged within the quadrapod frame. Layering was not scored separately resulting in 100% total cover.

Sea Star Plots

A 25m x 5m plot was marked with a soft tape along the rocky intertidal areas (Table 1, Appendix A). Total counts of sea stars (*Pisaster ochraceus*) were made, color was noted, and total lengths (or diameter – leg tip to leg tip) were measured. One plot per study site was surveyed in fall (2 plots) and spring (3 plots) events (Table 1). Less common sea stars were also noted in the results section.

Table 1. Summary of photoplots and sea star plots monitored in rocky habitats of RSW-001 and RSW-002.

SITE NAME	GPS LOCATION (Approx.)	FALL (11/2018)		SPRING (3/2019)	
		ALGAE	SEA STAR	ALGAE	SEA STAR
RSW-001 USCG	40.76428/-124.21936	4 plots	1 plot	5 plots	1 plot
RSW-001 Standpipe	40.76712/-124.20272	no data	no data	5 plots	1 plot
RSW-002 Buhne Point	40.74253/-124.21816	4 plots	1 plot	4 plots	1 plot

Crab Trapping and Hook and Line Surveys

Baited 30-inch x 10-inch recreational crab traps were fished[4] at RSW-001 locations (during three sampling events from in fall 2018 and spring 2019 (Table 2, Appendix C). Species captured were measured across the carapace, inspected for any objectionable growth or discoloration, photographed and released (Appendix D).

Table 2. Crab trapping information for RSW-001.

Site Name	Date	GPS Location	# Traps Fished	Time Fished
RSW-001	11/8/2019	40.77530/-124.20673	4	12 hours
RSW-001	11/9/2019	40.76920/-124.20850	3	4 hours
RSW-001	3/19/2019	40.76889/-124.20411	3	4 hours

Hook and line sampling occurred during the dates and locations identified in Table 3. Fishing occurred during high and outgoing tides from motorized and unmotorized vessels using baited hooks (Appendix C).

Table 3. Hook and line sampling information for RSW-001. See Appendix C for locations on aerial imagery.

Site Name	Date	GPS Location	Tide	Time Fished
RSW-001	11/8/2019	40.77413/-124.20614	high slack	2 hours
RSW-001	11/9/2019	40.76734/-124.20974	outgoing	2 hours
RSW-001	3/19/2019	40.76894/-124.20536	outgoing	2 hours

[4] The recreational fishery for all rock crab species, including rock crab (Cancer antennarius), yellow crab (Cancer anthonyi) and red crab (Cancer productus) is open year-round, statewide.

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Results

Marine macroalgae and invertebrate species compositions were similar between the study and control sites during fall and spring sampling dates (Figures 4, 5). Ochre sea stars were slightly larger and more abundant at RSW-001-SP site than the more publicly accessible RSW-001-USCG and RSW-002-BP sites (Figures 6, 7).

Nine Dungeness (*C. magister*) crab and 16 rock crab (*C. antennarius, C. productus*) were captured during the crab trapping surveys in the immediate vicinity of the outfall and diffuser. The appearance, size and color of crab specimens caught appeared normal and specimens were vibrant (Figure 8, Appendix D). Hook and line surveys did not produce any results.

Three California sea lions were observed within 100 meters of the outfall and diffuser along with numerous species of sea birds. Although avian surveys were not part of this study cursory observations of birds identified in the RSW-001 (19 March) included California gulls (9)(*Larus californicus*), black oystercatchers (2)(*Haematopus bachmani*), black turnstones (13)(*Arenaria melanocephala*), brant (>150 ind.)(*Branta bernicla*), common loon(2) (*Gavia immer*), glaucous gull(4)(Larus glaucoides), western grebe (1)(*Aechmophorus occidentalis*), and surf scoter (4)(*Melanitta perspicillata*).

Discussion

This study compared estimates of marine macroalgae cover and the abundance of relatively non-motile species (i.e. sea stars) between rocky intertidal habitats in selected study and control areas of Entrance Bay. The primary assumption for selecting the rocky intertidal study areas for study was that pollutants from the outfall, if present, should accumulate in these areas at a greater frequency and magnitude than at the control site and would likely result in noticeable physical or biological effects. The control site located two miles away from the outfall near the confluence of South Bay and Entrance Bay was assumed to be separate from direct influence of the discharge.

Navigation channel dredging occurred in late summer and fall 2018 (L. Zerlang, pers. comm.) prior to site surveys and it is unknown how this may have affected fishing success, crabbing or other results. The area surrounding the outfall in RSW-001 was busy with private, commercial and tanker boat traffic while surveys were being conducted. Vessels as large as 550 feet run through the navigation channel in front of the outfall. The area south of the outfall is dangerous to sample due to the marine conditions and current velocities over shallow water. The remote site near the outfall standpipe contained a greater species diversity and larger and more abundant sea stars than the other study and reference sites. Differences between the study areas may be attributable to human disturbance since recreational fishing and crabbing from the rocks, beach combing and other activities were frequently observed.

Conclusion

No floating particulates, grease, discoloration of water or crustaceans, or observations of an objectionable nature were observed during plot surveys, vessel-based crab trapping, hook and line sampling or travel to and from sites. This study found no evidence that suggested degradation of biota in the receiving waters from the ERWWTP discharge.

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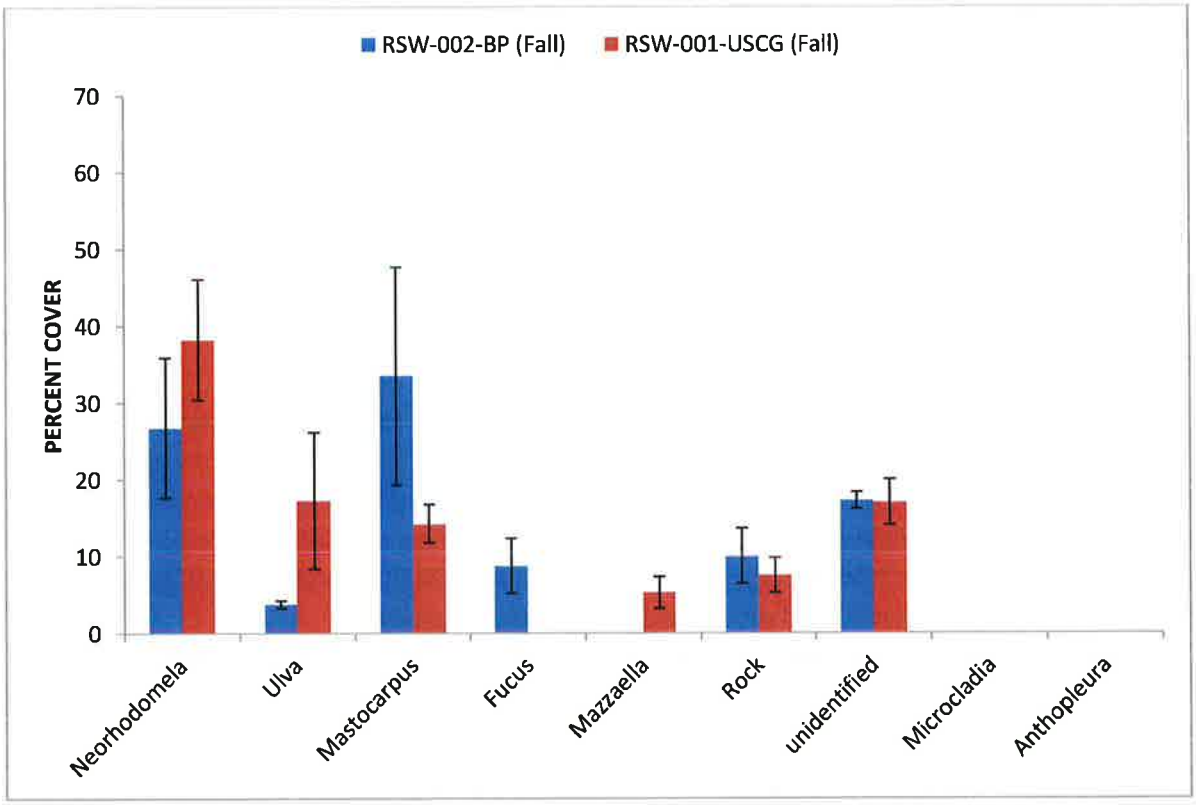

Figure 4. Results from fall 2018 photoplot surveys.

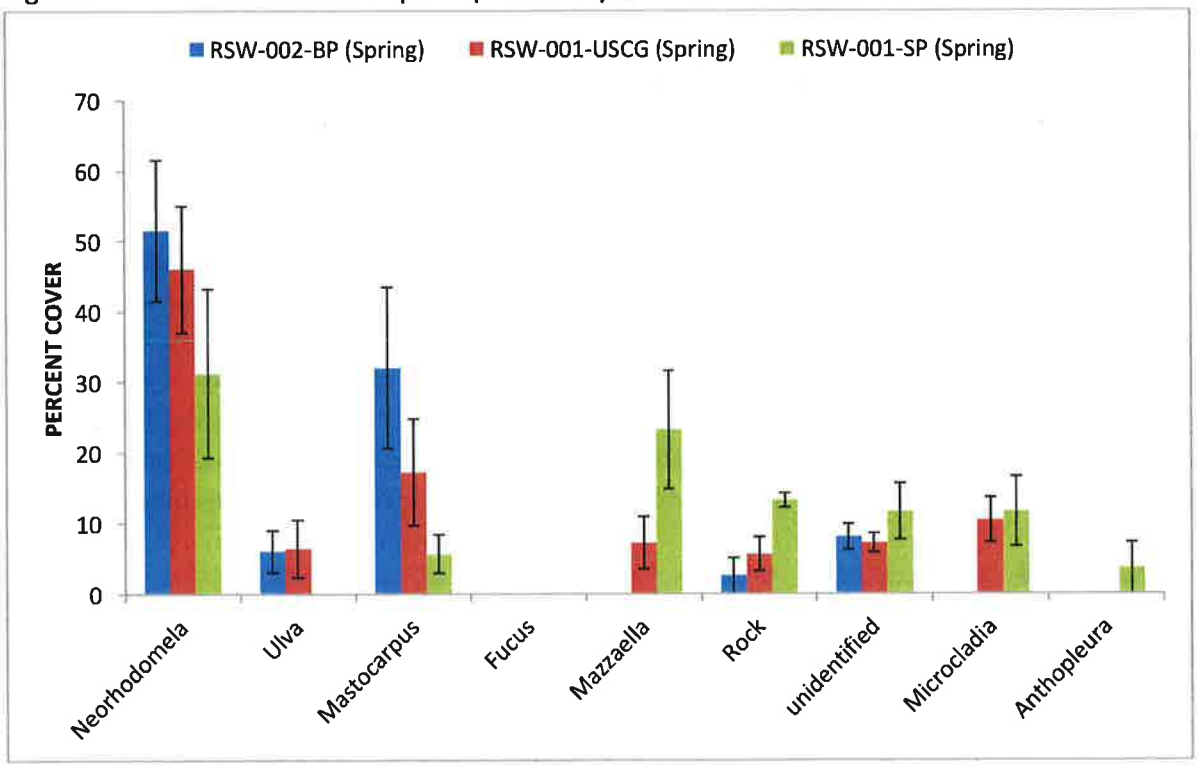

Figure 5. Results from Spring 2019 photoplot surveys.

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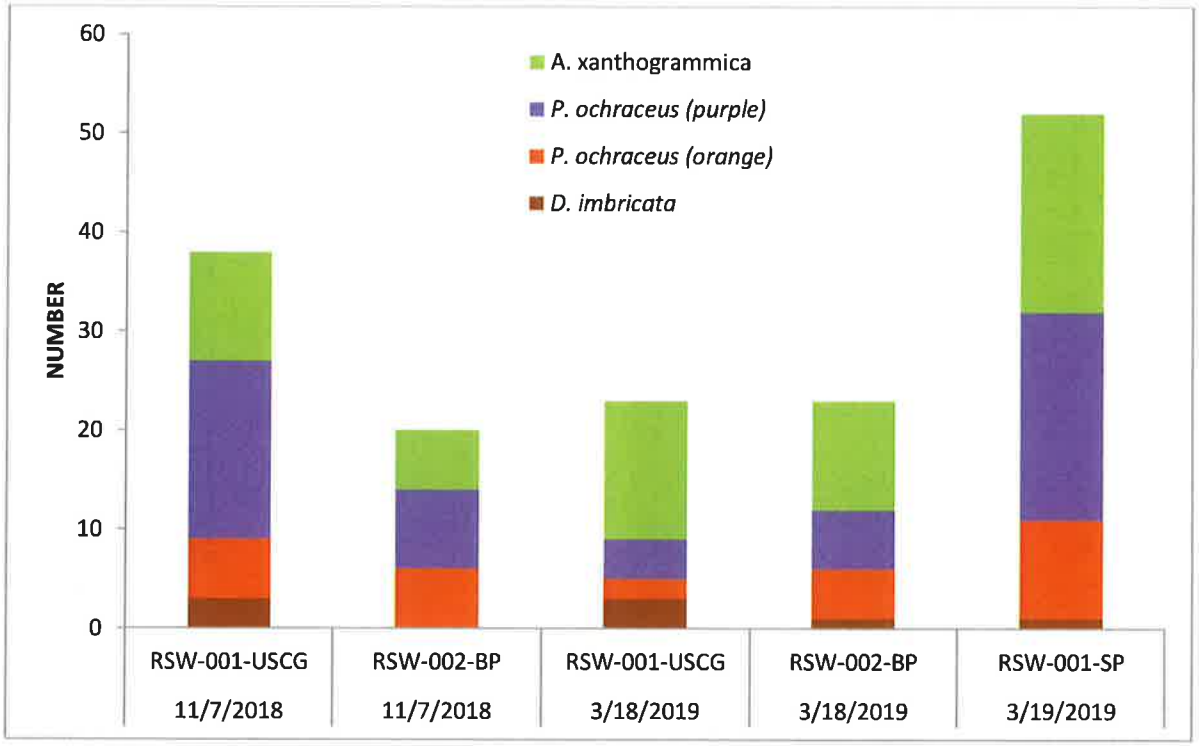

Figure 6. Numbers of starfish observed RSW-001-USCG, RSW-001-SP and RSW-002-BP plots.

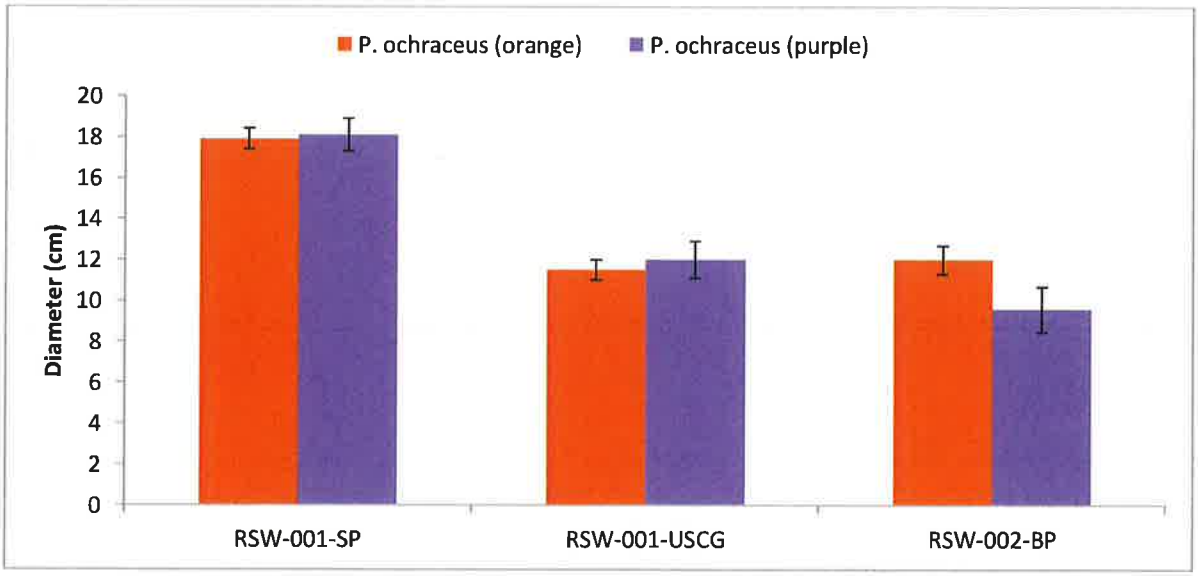

Figure 7. Total lengths of sea stars observed inRSW-001-USCG, RSW-001-SP and RSW-002-BP plots.

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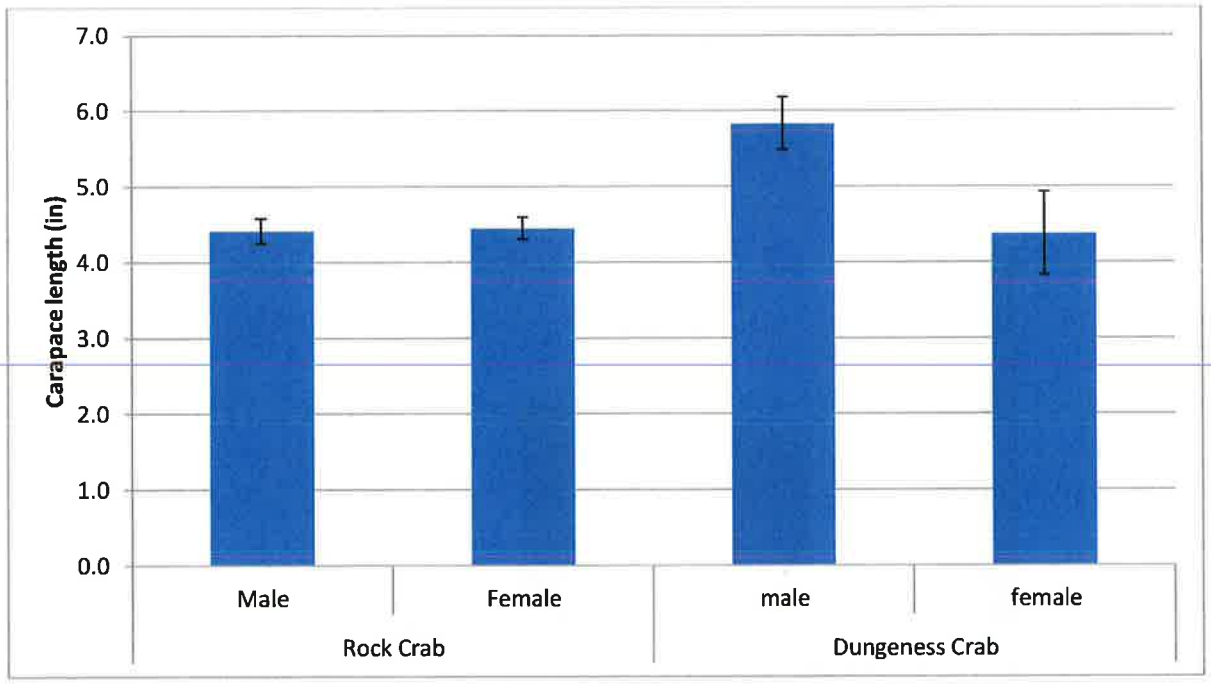

Figure 8. Average sized of rock crab and Dungeness crab observed during crab trapping surveys in RSW-001.

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References

Barnhart, Roger A., Milton J. Boyd, and John E. Pequegnat. 1992. The Ecology of Humboldt Bay, California: An Estuarine Profile. U.S. Fish and Wildlife Service Biological Report 1.121 pp.

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Schlosser, S., and A. Eicher. 2012. The Humboldt Bay and Eel River Estuary Benthic Habitat Project. California Sea Grant Publication T-075. 246p.

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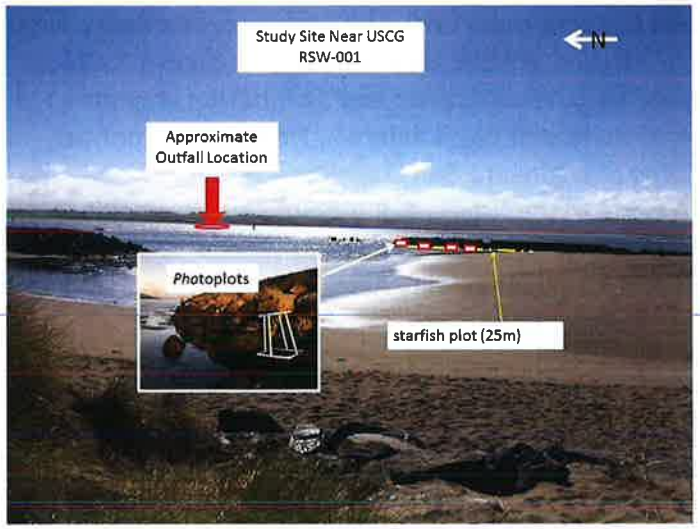
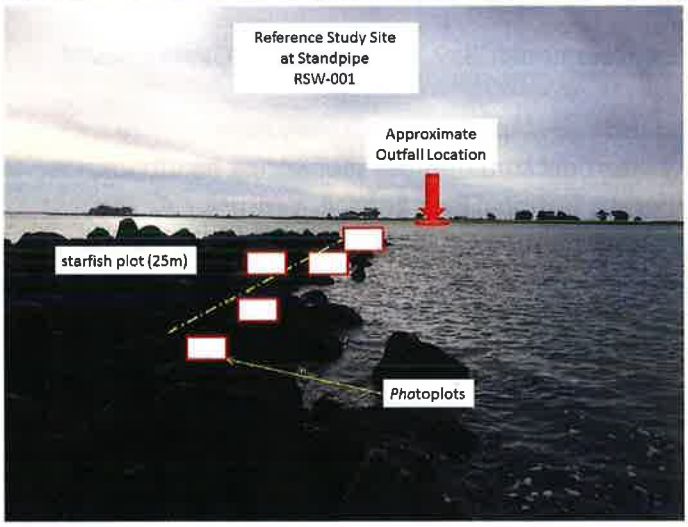
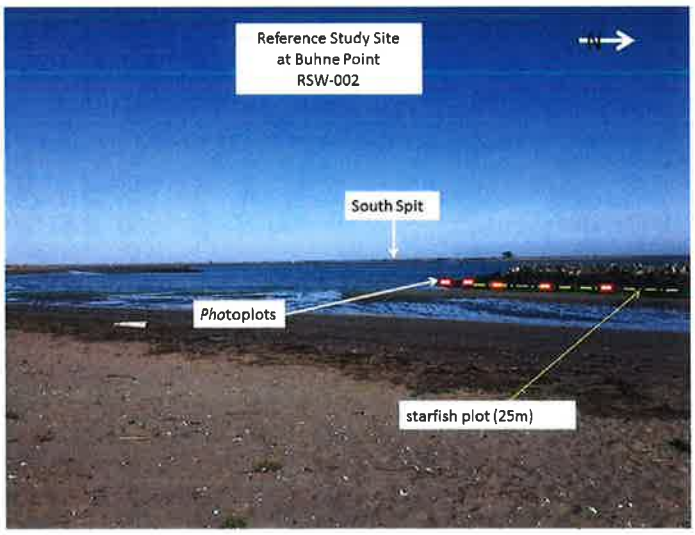
State Water Resources Control Board. 1979. Water Quality Control Policy for the Enclosed Bays and Estuaries of California. 12p.

Appendix A: Site photos of Photoplots and Sea Star Plots







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Appendix B: Images of Photoplots from RSW-001-USCG, RSW-001-SP, and RSW-002-BP

FALL 2018 RSW-001-USCG _Plot 1 	FALL 2018 RSW-001-USCG _Plot 2 	FALL 2018 RSW-001-USCG _Plot 3 (DAMAGED)	FALL 2018 RSW-001-USCG _Plot 4 
FALL 2018 RSW-002-BP_Plot 1 	FALL 2018 RSW-002-BP _Plot 2 	FALL 2018 RSW-002-BP _Plot 3 	FALL 2018 RSW-002-BP _Plot 4 
SPRING 2018 RSW-002-BP Plot 1 	SPRING 2018 RSW-002-BP Plot 2 	SPRING 2018 RSW-002-BP Plot 3 	SPRING 2018 RSW-002-BP Plot 4 

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SPRING 2018 RSW-001-SP Plot 1

SPRING 2018 RSW-001-SP Plot 2

SPRING 2018 RSW-001-SP Plot 3

SPRING 2018 RSW-001-SP Plot 4

SPRING 2018 RSW-001-SP Plot 5

SPRING 2018 RSW-001-USCG Plot 1

SPRING 2018 RSW-001-USCG Plot 2

SPRING 2018 RSW-001-USCG Plot 3

SPRING 2018 RSW-001-USCG Plot 4

SPRING 2018 RSW-001-USCG Plot 5

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Appendix C: Locations of Crab Trapping and Hook and Line Fish Sampling

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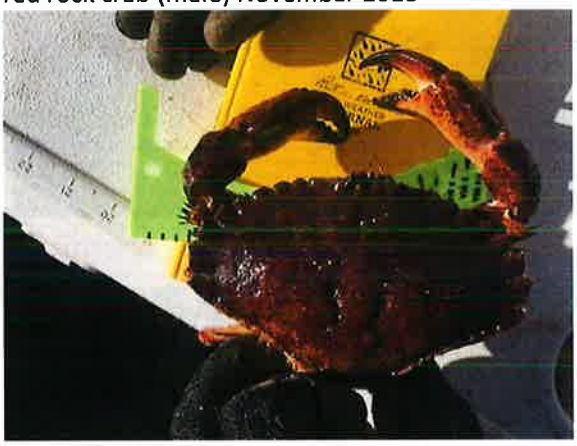
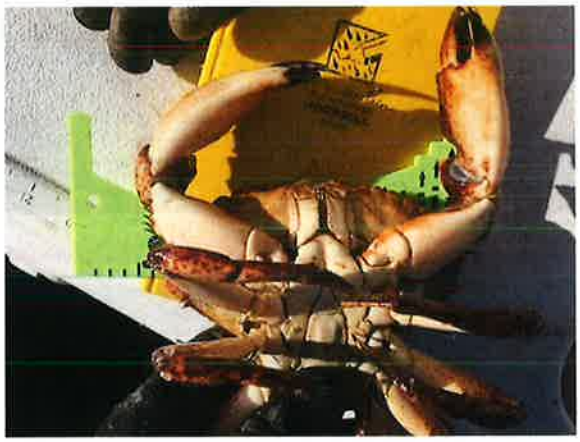
Appendix D. Images of Crab Caught Near the Outfall (RSW-001)

Dungeness crab (male) November 2018

red rock crab (male) November 2018





Pacific rock crab (male) November 2018

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Dungeness crab (male) March 2019

red rock crab (female) March 2019

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Appendix B

Elk River Wastewater Treatment Plant Standpipe Stabilization Analysis, November 2019

PROJECT NAME:	Elk River Wastewater Treatment Plant Outfall Project	**CLIENT:**	City of Eureka
PREPARED BY:	Tom Gillespie	Date:	November 9th, 2019
CHECKED BY:	Jesse Davis, PE	Date:	November 13th, 2019
REVIEWED BY:	Brian Leslie	Date:	November 15th, 2019

1. Executive Summary

Based on a review of existing protection of the Elk River Wastewater Treatment Plan Outfall protection system on the Elk River Spit, the design appears undersized leading to the need for numerous repairs. After review of the existing wave climate with a focus on extreme events, we believe that the primary layer of rock protection should be upsized from 0.5 tons to approximately 2 tons (primary layer). Also proposed is a 500 pound under layer and falling apron for stability. Design guidance used to derive these values were that of standard coastal engineering design of a rubble mound groin. The proposed design would increase the footprint of the structure a total of 20 feet in width for the length of repair (120 feet). The length of repair was from the landward extent of the existing rock bayward to an elevation of approximately -5 feet MLLW. Further consideration of extending the rock protection landward may be warranted in the future as an increase in water levels may increase the vulnerability of flanking the structure on this end.

The cost of the proposed protection would be approximately $2.18M. It is assumed that construction would be accomplished from the land with conventional earthwork equipment.

2. Introduction

The purpose of this document is to provide design guidance for the protection of an exposed section of an outfall pipe from wave impacts. This outfall originates at the City of Eureka Elk River Wastewater Treatment Plant (WWTP) and discharges into Humboldt Bay in Eureka, California. The pipeline has been repaired two times in recent history (i.e. Armor Project 1 and 2) and now requires another repair. The current protection system consists of 0.5 ton rock structure, as shown in Figure 1.

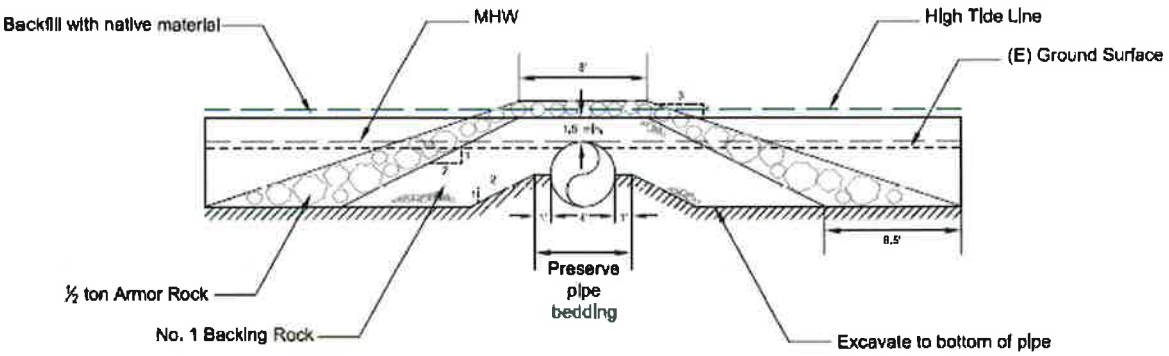


Figure 1 Existing outfall protection (City of Eureka, 2009)

The exposed section of the pipe is at the Elk River Spit on either side of the outfall standpipe where rock armoring has been previously placed over exposed sections of the pipe (refer to Figure 2). The rock has been displaced and the pipe is presently exposed along an approximately 120 foot segment from STA 19+10 to 20+30 (SHN, 2017). This document provides a conceptual design to repair this segment of the outfall.

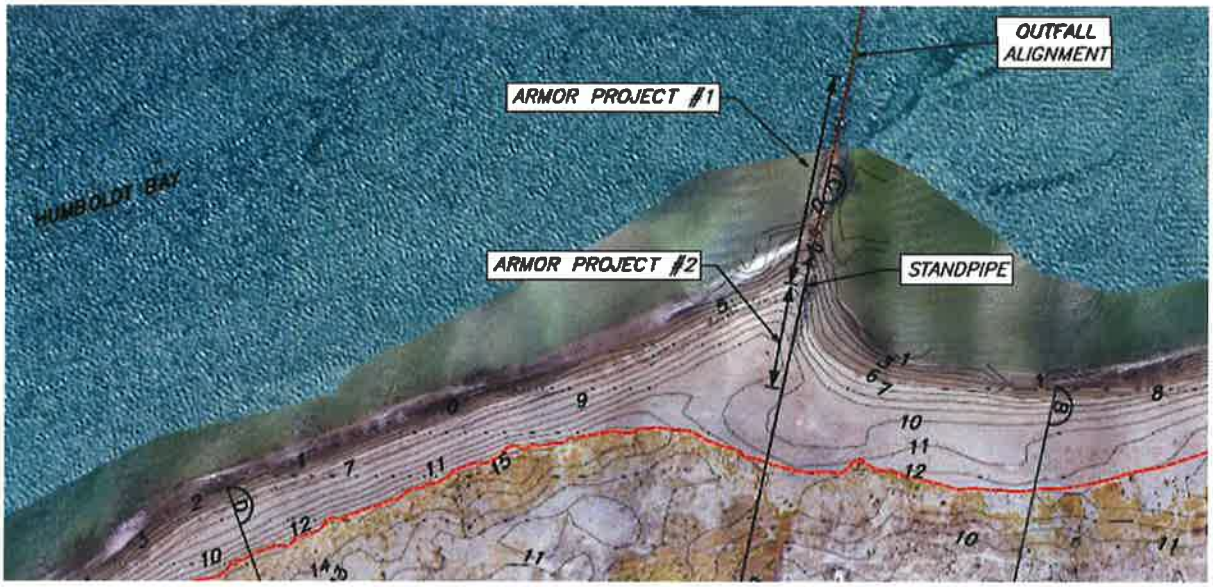


Figure 2 Eureka Elk River Wastewater Treatment Plant Outfall Project Location (SHN, 2017)

3. Outfall Protection Design

Rock protection of the outfall would mirror that of design of a rubble mound groin. Based on our findings, the appropriate sized rock for the primary armor layer is about 2 tons. This is based a 5.0ft Hs and 17.0s Tp. Parameters guiding the design of this armoring solution are presented in Table 1. For further detail, please refer to the design calculation presented in Attachment B (GHD, 2019).

Table 1 Rubble Mound Structure Design Parameters

Item	Value	Notes
Armorstone Placement	2-Layer, random placement	Gradation range, armor stone transition details, testing, % use of existing stone, placement tolerances, and inspection requirements to be determined during detailed design.
Median Armorstone Size	W_{50} = 3,800 lbf (D_{50} = 2.8ft)	
Median Underlayer Size	W_{50} = 500 lbf (D_{50} = 1.4ft)	
Underlayer Placement	2-Layer, random placement Min. layer thickness = 3ft	
Geotextile	Required, puncture resistant	
Crest Width	Minimum of 4 armor stones	12ft minimum crest width due to geometry of bedding & underlayers
Toe Stone Size	Upper end of selected gradation	Build a falling apron with a minimum width of ~16ft. This is based on a scour depth of 8ft that was observed in Figure 11 of SHN, 2017.

Concept drawings are presented in Attachment A. The extent of the repair and drawings are based on the areas of displaced armor stone identified by SHN in the latest inspection report (2017). This covers stations 19+10 to 20+30.

4. Other Design Considerations

4.1 Increasing Water levels & Beach Scour

High water levels, caused by high tides and storm surge, are known to occur in the project area. This can lead to inundation of the outfall (Figure 3) and when coupled with wave action, may lead to an increase in scour at the interface of the beach dune and armor terminus. In fact, this back-cutting of the existing armor can already be observed in a June 2018 aerial image of the groin (Figure 4). With sea level rise, this will become more common and may lead to the exposure and undercutting of the eastern segments of pipeline. Hence, any long term design solutions should consider not only the repair of the existing, exposed section of the outfall pipe, but also a likely increase in beach scour to the east of the existing limits of armor stone. Extending the rubble mound structure landward towards the dune or a buried marine mattress could protect this segment of pipeline from future scour.

Figure 3 Inundation of armor (SHN, 2017)

Figure 4 Erosion Observed at East End of Armor Stone (Google Earth, 2019)

4.2 Material sourcing

It is anticipated that armor stone would be sourced from local quarries, such as the Mercer-Fraser quarry in Bridgeville or the Kernen quarry near Blue Lake. These are both within an hour of the project site.

For the underlayer material, reuse of existing armor stone is recommended provided it is compatible with the gradations presented in Table 1. It is understood the existing armoring consists of 800 tons of 0.5-ton rock and 850 tons of No. 1 backing rock from the 2009 repairs (CCC, 2009), and 0.5 to 1 ton rock and 400 to 1,000 lb rock from the 1988 protection works (City of Eureka, 2013; SHN, 2017).

4.3 Project footprint

It is understood that one of the key difficulties of this project will be securing a permit to undertake the necessary armor repair and outfall protection works. One way this can be managed is by ensuring the project footprint does not exceed what currently exists, or failing this, minimizing the additional footprint required. Accordingly, a relatively steep side slope of 1.5:1 (H:V) has been selected to minimize the project footprint. It should be noted that this is steeper than what is assumed in the design calculations in Attachment B. However, the design calculations are conservative in that they assume no wave overtopping; therefore, the stable stone size has not been modified. As water levels rise, wave overtopping will increase and the armor stone will be required to resist less wave energy. In addition, the 1.5H:1V slope is a steeper grade than what was previously specified in the 2009 repairs (City of Eureka, 2013) and results in an armored width of 70 feet when accounting for an anticipated scour depth of 8 feet.

The 1981 as-built drawings depict a maximum armor stone footprint of 50 feet. The conceptual outfall design depicted in Attachment A represents an increase of 20 feet to the current footprint, which is at its widest near the standpipe. Increasing the slope further is not advised given the potential to reduce structural stability. However, the following additional work during the detailed design phase may result in a decrease in footprint.

1. The apron/toe width shown is based on a scour depth of 8 feet that was observed approximately 50 feet to the north of the pipeline (SHN, 2017). The apron/toe width may be optimized by reviewing historic survey data to determine the maximum scour depth observed alongside the pipeline.
2. Additionally, the apron/toe width along the south side of the pipeline may be optimized based on a review of the same data. A preliminary review of historic aerials on Google Earth shows this to be the updrift (accretional) side of the outfall, which may allow for a shorter, south side apron width.

4.4 Outfall protection

During the detailed design stage, consideration must be given to the potential damage that may be incurred on the reinforced concrete pipe (RCP) outfall, both during construction and due to the static loading of the armor stone that will be placed atop the pipe. The following guidance is recommended:

- A structural engineer should verify that the RCP outfall can withstand the anticipated dead loads from the armored section as well as the more dynamic (and additive) wave loads.
- Partially backfill around the sides of the concrete RCP outfall with granular material to prevent lateral movement during construction.
- Voids in the underlayer and armor layer are to be progressively filled with sand such that voids are uniformly filled throughout the revetment. The top layer of the underlayer rock is not to be buried by backfilled sand such that interlocking between the underlayer and rock armor can occur. Each layer of rock armor is not to be buried by backfilled sand such that interlocking between adjacent units of rock armor can occur.
- The method of placing shall produce a dense, evenly distributed blanket with a minimum of voids and shall ensure the maximum interlock between adjacent rocks.
- Stone should not be dropped from a height greater than approximately 1 foot. The equipment used in placing the stone shall be suitable for handling materials of the sized required including the ability to place the stone over its final position before release and if necessary pick up and reposition the stone. Moving stone by drifting or manipulating the stone down the slope should not be permitted.
- The contractor should be solely responsible for determining satisfactory means and methods to safely and effectively place the stone.
- The contractor should be solely responsible for preventing any damage to the existing pipeline during construction.

5. Means and Method of Construction

A high level means and methods of construction of the proposed rock protection is presented below:

1. Remove and stockpile existing rock armor from around the outfall on the beach
2. Excavate a trench on either side of the outfall pipe to allow for toe construction. Create temporary stockpile of trenched sand. Work is to be completed with a long arm excavator.
3. Truck delivery of rock and other construction materials to the site. Phase deliveries to only result in small temporary stockpile on beach. Standard off-road trucks with about 16 CY capacity are assumed.
4. Construct rock protection – install geotextile fabric at base of trench, install bedding stone, underlayer, armor, and primary layer rock. Rock is to be placed via excavator.
5. Site restoration – backfill sand over rock with trenched sand as needed.

It is assumed that all work could be completed by land based equipment with consideration of construction phasing given to tides, wave action and resulting water levels. As such, no barge or other marine equipment has been considered at this stage.

6. Cost estimate

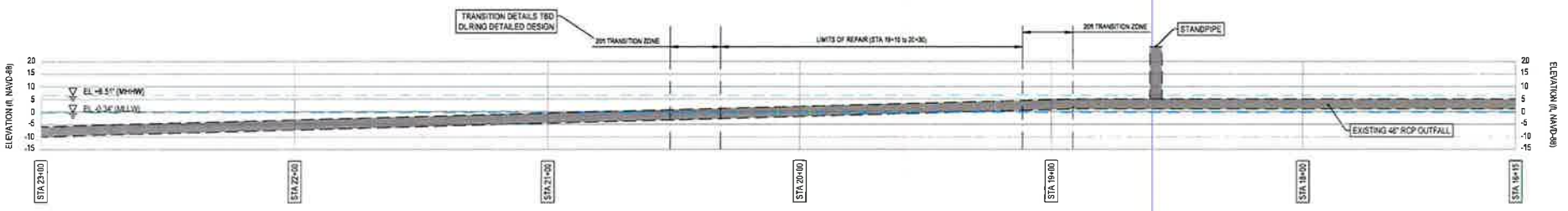
In order to help the City assess the financial viability of the Project, a preliminary estimate of the probable cost of construction has been prepared and presented in Attachment C. The protection is estimated to cost $2.18M.

These estimates were based upon specialist knowledge and past experience on similar projects and the assumed methodology presented in Section 5. However, it should be noted that these are estimates and the level of confidence for each cost element will increase as the Project progresses.

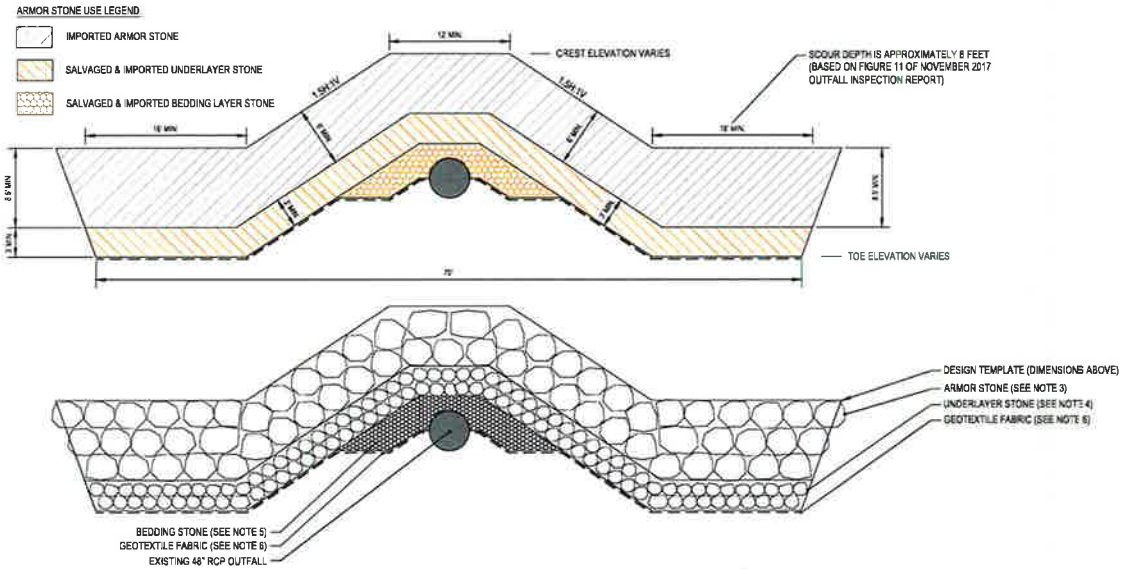
7. References

1. California Coastal Commission (CCC), 2009. Emergency Permit No. 1-09-043-G. November 6, 2009.
2. City of Eureka, 2009. Wastewater Outfall Stabilization Bid No. 2010-8. Prepared September 25, 2009.
3. City of Eureka, 2013. 1989 Rock Slope Armor Cap Repair at Elk River WWTP Outfall. Letter to James R. Baskin, California Coastal Commission. April 2, 2013.
4. GHD, 2019. Calculation ER-01 Outfall Protection Design. October 24, 2019.
5. SHN, 2017. Elk River Wastewater Treatment Plant Outfall Inspection Report. Reference 017055, Prepared for City of Eureka, December 1, 2017.

ATTACHMENT A – Conceptual Design Drawing



PROFILE VIEW ALONG OUTFALL ALIGNMENT
1" = 20' (SEE NOTE 2) C-01 (1)



TYPICAL OUTFALL REPAIR SECTION
1" = 6' C-01 (1)

LEGEND:

—— —— EXISTING 48" RCP OUTFALL PIPE

——— DESIGN TEMPLATE

GENERAL NOTES:

1. ALL ELEVATIONS ARE REFERENCED TO NAVD-88.
2. PROFILE VIEW OF OUTFALL ALIGNMENT AND ALL ELEVATIONS WERE SCALED FROM FIGURE 9 OF SHN CONSULTING ENGINEERS NOVEMBER 2017 OUTFALL INSPECTION REPORT. NO EXISTING GROUND DATA IS SHOWN (IT IS NOT PROVIDED BETWEEN STA 16+00 TO 22+00 IN THE SHN REPORT FIGURE.
3. ARMOR STONE W50 = 3,800 lbs; D50 = 2.88.
4. UNDERLAYER STONE W50 = 500lb; D50 = 1.48
5. BEDDING LAYER STONE = CALTRANS CASS III STONE.
6. NON-WOVEN, CLASS 1 GEOTEXTILE FABRIC PER AASHTO M288. MINIMUM 18" LAP BETWEEN ROLLS.

QUANTITY ESTIMATE:

1. THE BELOW QUANTITY ESTIMATES ARE IN-PLACE QUANTITIES AND ASSUME THE FOLLOWING.
   1.1. STONE DENSITY = 165 lb/ft³
   1.2. POROSITY = 37%
   1.3. +10% CONTINGENCY
2. ARMOR STONE = 33 tons/lf
3. UNDERLAYER STONE = 13.5 tons/lf
4. BEDDING STONE = 3 tons/lf
5. GEOTEXTILE FABRIC = 66 ft²/lf

No	Issue	Drawn	Approved	Date
01	CONCEPTUAL DESIGN - NOT FOR CONSTRUCTION	JWD	TC	NOV 2019

Bar is one inch on original size sheet

GHD inc
718 Third Street
Eureka CA 95501 USA
T 1 707 443 8325 W www.ghd.com

Drawn: Jesse Davis	Designer: Jesse Davis
Drafting Check:	Design Check: Tom Gillespie, Victor Trivdo
Project Manager: Brian Lasilla	Date: November 2019

This document shall not be used for construction unless signed and sealed for construction.

Scale: 0 6" 1' AT ORIGINAL SIZE

Client: City of Eureka
Project: Elk River WWTP Outfall
Title: Conceptual Design - Typical Section
Project No. 11151283
Original Size: 34"x22"
Sheet No: OUTFALL REPAIR DESIGN CONCEPT
Sheet 1 of 1

Plot Date: 13 November 2019 - 2:15 PM Plotted By: Jesse Davis Filename: C:\Users\jesse\Desktop\Outfall Design\Eureka Outfall Concept Design_191113_SHN1.dwg

ATTACHMENT B – GHD Calculation ER-01

PROJECT NAME:	Elk River Wastewater Treatment Plant Outfall Project	**CLIENT:**	City of Eureka
CALCULATED BY:	Tom Gillespie	Date:	October 23rd, 2019
CHECKED BY:	Jesse W. Davis	Date:	October 24th, 2019
REVIEWED BY:	Michael R. Barnett	Date:	October 24, 2019

1. Purpose

The purpose of this calculation is to determine the stable stone sizes, minimum crest width, and toe design details needed to protect an exposed section of an outfall pipe from the wave impacts associated with a 50-yr storm event. This outfall originates at the City of Eureka Elk River Wastewater Treatment Plant (WWTP) and discharges into Humboldt Bay in Eureka, California. The location of interest is at the Elk River Spit on either side of the outfall standpipe where rock armoring has been previously placed over exposed sections of the pipe (refer to Figure 1). It is understood this rock armoring does not provide sufficient protection to the pipe given it is presently exposed in some sections (SHN, 2017), such that additional armoring is necessary to form a complete and functional groin.

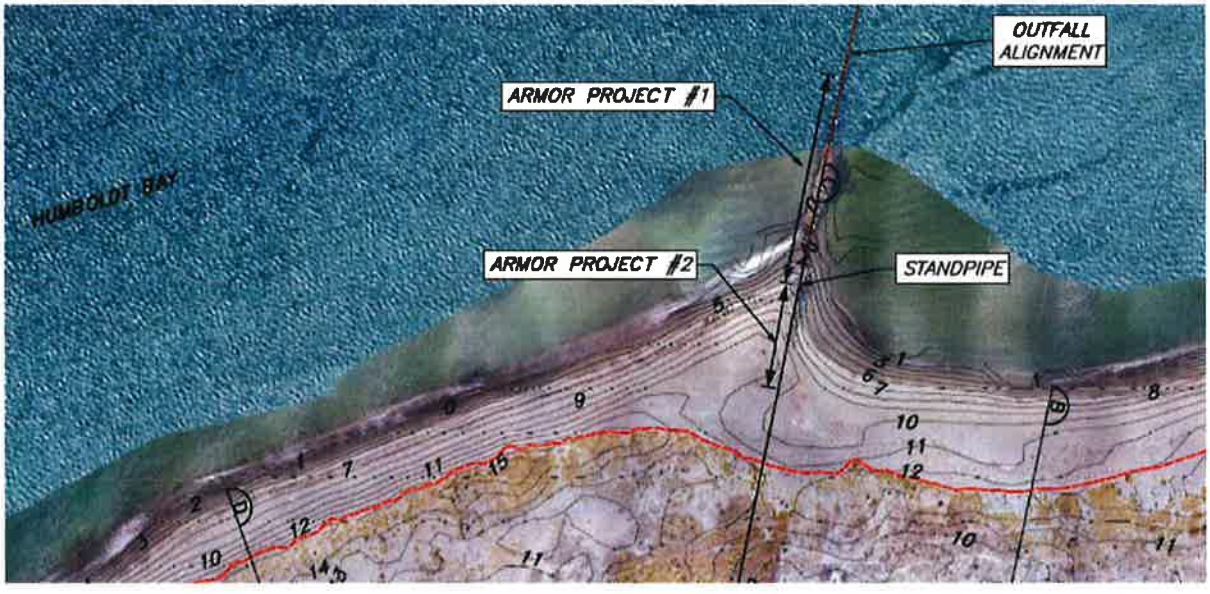


Figure 1 Location of interest (SHN, 2017)

2. Results

Table 2.1 Groin Design Parameters

Item	Value	Notes
Armorstone Placement	2-Layer, random placement	Gradation range, Testing, placement tolerances, and inspection requirements to be determined during detailed design.
Median Armorstone Size	3,800 lbf	
Median Underlayer Size	500 lbf	
Geotextile	Required, puncture resistant	
Crest Width	Minimum of 3 armor stones	~10ft minimum width
Toe Stone Size	Upper end of selected gradation	Build a falling apron a minimum of ~10ft in width

Disclaimer: this calculation only looks at the minimum stable stone size due to wave action and does not constitute a detailed design; nor does it determine whether an additional cushioning layer of stone may be necessary to prevent damage to the outfall.

3. Methodology

The groin was designed using the following inputs, assumptions, references, and methodology:

- The minimum stable armor unit size is determined assuming a 2-layer random placement using input from the following references:
    - *Coastal Engineering Manual, Part II, Chapter VI* (USACE, 2015)
    - *Design of Rock Armoured Single Layer Rubble Mound Breakwaters* (Hald et al., 1998)
    - *The Rock Manual* (CIRIA, 2007)
- The groin slope is assumed to be 2H:1V. An impermeable core is assumed.
- The minimum stable stone size is conservatively determined assuming no wave overtopping.
- The rock density is assumed to be 2,650 kg/m^3 (165 lb/ft^3)
- The bay bottom is assumed to consist of an erodible sandy layer.
- The stable armor unit size is determined assuming the design swell wave height occurs at the 50-yr design water level allowing for 2050 sea level rise under a high emissions scenario. It is assumed waves are not depth limited.

4. Calculation Details

4.1 Environmental Design Criteria

The design water levels and wave heights are presented below in Table 2 and Table 3.

Table 2 Design Water Levels (ESA, 2019)

Return Period (years)	% Annual Chance	Design Water Level (ft NAVD-88)	2050 Sea Level Rise (ft, high scenario)	2050 Design Water Level (ft, NAVD-88)
100	1	10.2	1.9	12.1
50	2	10.0		11.9
10	10	9.6		11.5
5	20	9.3		11.2
2	50	8.9		10.8
1.01	99	8.2		10.1

Table 3 Design Wave Heights at Project Site (ESA, 2019)

Wave condition	Location	Significant Wave Height (ft)	Peak Wave Period (s)
Swell (generated offshore)	Seaward of Spit	5.0	17.0
Wind (fetch limited)	Seaward of Spit	4.0	3.0

Nearshore wave heights are needed for the design of stable shore protection alternatives. The Coastal Engineering Manual, Part II, Chapter II (USACE, 2015) provides guidance on how to reduce a depth limited wave height located at the toe of the structure. Specifically, a depth-limited wave height of 0.6 times the water depth is recommended.

It has been conservatively assumed that the nearshore design waves provided by ESA will occur during periods of elevated water levels, such that they can propagate to the toe of the structure without being limited by depth.

4.2 Armorstone Sizing

The minimum stable armor unit weights were determined using both the Hudson and Van der Meer equations for 2-layer, randomly placed stone. The results are shown below. GHD recommends utilizing the more conservative results from the Van der Meer equation. Calculation details are provided in Attachment A.

Table 4.4 Minimum Stable Armor Rock Size

Method	W_{50}	D_{50}
Hudson	1,300 lbf	2.0 ft
Van der Meer	3,800 lbf	2.8 ft

4.3 Filter Layers

The groin design includes an armorstone layer, underlayer stone, and geotextile fabric. The median underlayer stone diameter and layer thickness requirements are outlined below.

- **Filter Layer**. The D_{50F} filter layer diameter shall be half of the D_{50A} armor layer; or approximately 1.4ft. This corresponds to rock with a median weight of 500lb and a minimum layer thickness of approximately 3ft.
- **Geotextile Fabric**. Geotextile fabric shall be a non-woven, puncture resistant fabric typically used for shoreline applications.

4.4 Crest Width

The crest of a revetment typically consists of a minimum of 3 armor stones that are the same size as those used on the seaward face. Depending upon the wave runup and overtopping rates, this width may need to be increased to ensure a stable configuration. Given this design is for a groin rather than a revetment with landward assets, no consideration of wave runup and overtopping is deemed necessary. Rather, the crest will be sufficiently wide to cover the pipe and standpipe.

4.5 Toe Stone

4.5.1 Sizing

The size of the toe stone is dependent upon the relative depth of the toe; the ratio of water depth above the toe divided by the water depth in front of the toe. As the relative depth increases, the stone size decreases (see Figure 2). Depending on water levels, the toe of the groin may be located in shallow water with a relative toe depth of less than 0.4. Therefore, the minimum D_{50} toe stone should not be reduced and should be in the upper end of the selected gradation.

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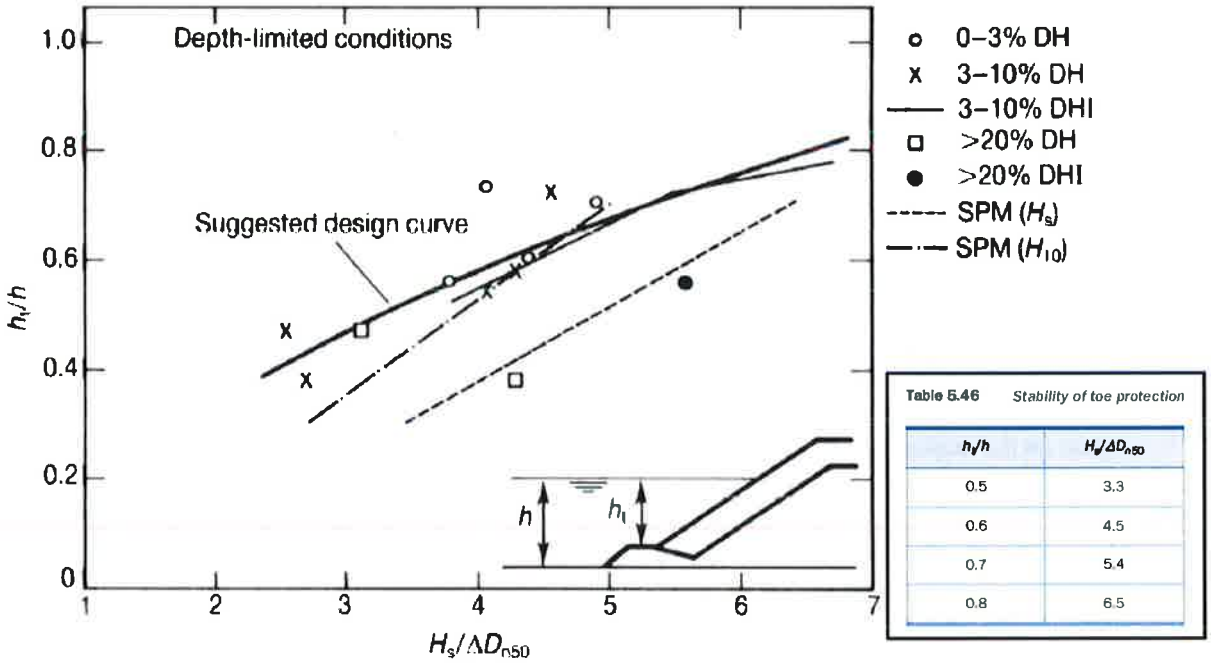

Table 5.46 *Stability of toe protection*

h_t/h	$H_s/\Delta D_{n50}$
0.5	3.3
0.6	4.5
0.7	5.4
0.8	6.5

Figure 2 Toe Stability as a Function of Relative Toe Depth (CIRIA Rock Manual, 2007)

4.5.2 Toe Design Details

Toe scour is most critical in shallow water, where the water depth at the toe is less than twice the design wave height. Where the substrate is erodible, the toe is typically terminated below the estimated scour depth and/or a falling apron is adopted such that sacrificial stones drop into the scour hole created in front of the groin. Given the Elk River Spit is primarily sand, GHD recommends constructing a falling apron that is a minimum of three armor stone diameters wide as shown in Figure 3.

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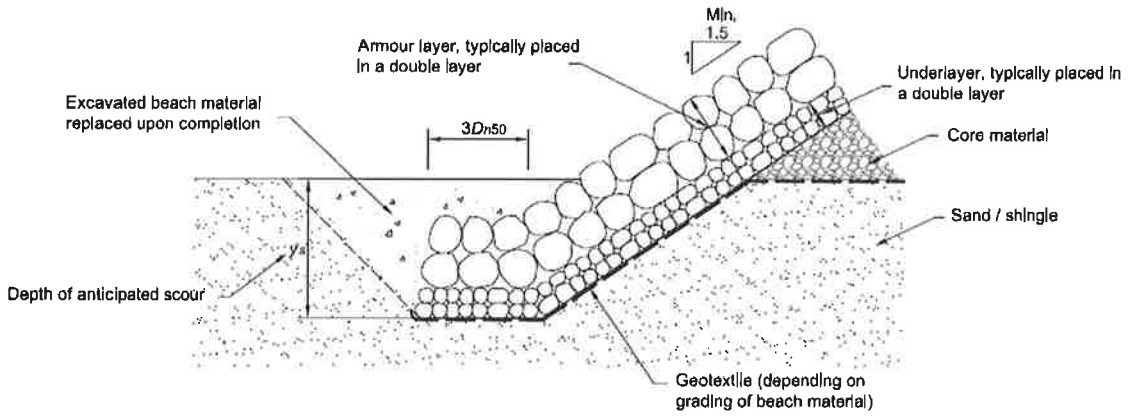

Figure 3 Typical Falling Apron Toe Detail for Erodible Foreshore (CIRIA, 2007)

5. References

1. CIRIA, CUR, CETMEF, 2007. The Rock Manual. The use of rock in hydraulic engineering (2nd Edition). C683, CIRIA, London.
2. ESA, 2019. Elk River WWTP Enclosed Bays and Estuaries Compliance Feasibility Study, Climate Change Readiness Study: Work Plan and Vulnerability Assessment. Prepared for City of Eureka, June 2019.
3. SHN, 2017. Elk River Wastewater Treatment Plant Outfall Inspection Report. Reference 017055, Prepared for City of Eureka, December 1, 2017.
4. United States Army Corps of Engineers (USACE), 2015. Coastal Engineering Manual, Part II, Chapter 2. EM 1110-2-1100. Last Revision: 30 September 2015.

ATTACHMENT A – Armor Stone Stability Calculations

ARMOR ROCK STABILITY FOR NON-OVERTOPPED SLOPES

Purpose:
The purpose of this calculation is to estimate the stable stone size required for two layer, non-overtopped slopes using the procedures outlined in the *Coastal Engineering Manual*. Specifically, both the Hudson and Van der Meer equations are used to determine the median stone stable stone size.

Assumptions:
The following assumptions apply to this calculation.

- No overtopping of the structure slope.
- 2H:1V slopes.
- Waves are not depth limited.

CALCULATION BY: Jesse W. Davis **DATE:** October 24, 2019

CHECKED BY: Tom Gillespie **DATE:** October 24, 2019

REVIEWED BY: Michael Barnett **DATE:** October 24, 2019

Input Parameters:

$H := 5 \cdot ft$ Design wave height

$T := 17 \cdot s$ Design wave period

$slope := 2$ Revetment slope

$\rho_s := 2650 \cdot \frac{kg}{m^3}$ density of stone

$\rho_w := 1025 \cdot \frac{kg}{m^3}$ density of water

$L_o := \frac{g \cdot T^2}{2 \cdot \pi}$ deep water wave length

$N_z := 7500$ number of storm waves

$\Delta := \frac{\rho_s}{\rho_w} - 1$

Hudson Forumula:

The median stable armor stone is calculated using CEM Table VI-5-22. The Hudson stability coefficient is selected from the following values.

K_D-values by SPM 1984, $H = H_{1/10}$.

Stone shape	Placement	Damage, D [4] = 0-5%	
		Breaking waves [1]	Nonbreaking waves [2]
Smooth rounded	Random	1.2	2.4
Rough angular	Random	2.0	4.0
Rough angular	Special [3]	5.8	7.0

$K_D := 2$

$$W_{50} := \frac{\rho_s \cdot g \cdot H^3}{K_D \cdot slope \cdot \left(\frac{\rho_s}{\rho_w} - 1\right)^3}$$

$W_{50} = 1297.4 \cdot lbf$

$$D_{50} := \left(\frac{W_{50}}{\rho_s \cdot g}\right)^{\frac{1}{3}}$$

$D_{50} = 2 \cdot ft$

Van der Meer Forumula:

The median stable armor stone is calculated using CEM Table VI-5-23. The permeability and damage coefficients are selected from Figures VI-5-11 and Table VI-5-21.

$P := 0.1$

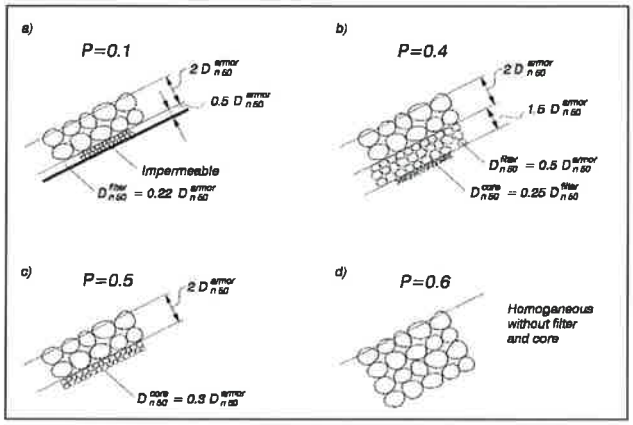

Figure VI-5-11. Notational permeability coefficients (van der Meer 1988)

$S_{dw} := 2$

Damage level by S for two-layer armor (van der Meer 1988)

Unit	Slope	Initial damage	Intermediate damage	Failure
Rock	1 : 1.5	2	3–5	8
Rock	1 : 2	2	4–6	8
Rock	1 : 3	2	6–9	12
Rock	1 : 4 – 1 : 6	3	8–12	17

$$\xi_m := \frac{1}{\sqrt{\frac{H}{L_o}}} \cdot \frac{1}{slope}$$

$$\xi_{mc} := \left(6.2 \cdot P^{0.31} \cdot \sqrt{\frac{1}{slope}}\right)^{\frac{1}{P+0.5}}$$

$$D_{n50} := \begin{cases} \dfrac{H}{\left(\Delta \cdot 6.2 \cdot S^{0.2} \cdot P^{0.18} \cdot N_z^{-0.1} \cdot \xi_m^{-0.5}\right)} & \text{if } \xi_m < \xi_{mc} \\ \dfrac{H}{\Delta \cdot S^{0.2} \cdot P^{-0.13} \cdot N_z^{-0.1} \cdot \sqrt{slope} \cdot \xi_m^{P}} & \text{otherwise} \end{cases}$$

$D_{n50} = 2.8 \cdot ft$

$$W_{VanderMeer} := \rho_s \cdot g \cdot D_{n50}^{3}$$

$W_{VanderMeer} = 3759.4 \cdot lbf$

Table VI-5-23
Rock, Two-Layer Armored Non-Overtopped Slopes (van der Meer 1988)

Irregular, head-on waves

$$\frac{H_s}{\Delta D_{n50}} = 6.2 \cdot S^{0.2} P^{0.18} N_z^{-0.1} \xi_m^{-0.5} \quad \text{Plunging waves : } \xi_m < \xi_{mc} \qquad \text{(VI-5-68)}$$

$$\frac{H_s}{\Delta D_{n50}} = 1.0 \cdot S^{0.2} P^{-0.13} N_z^{-0.1} (\cot\alpha)^{0.5} \xi_m^{P} \quad \text{Surging waves : } \xi_m > \xi_{mc} \qquad \text{(VI-5-69)}$$

$$\xi_m = s_m^{-0.5} \tan\alpha \qquad \xi_{mc} = \left(6.2\, P^{0.31} (\tan\alpha)^{0.5}\right)^{1/(P+0.5)}$$

where

H_s	Significant wave height in front of breakwater
D_{n50}	Equivalent cube length of median rock
ρ_s	Mass density of rocks
ρ_w	Mass density of water
Δ	$(\rho_s/\rho_w) - 1$
S	Relative eroded area (see Table VI-5-21 for nominal values)
P	Notional permeability (see Figure VI-5-11)
N_z	Number of waves
α	Slope angle
s_m	Wave steepness, $s_m = H_s/L_{om}$
L_{om}	Deepwater wavelength corresponding to mean wave period

Validity:

1) Equations VI-5-68 and VI-5-69 are valid for non-depth-limited waves. For depth-limited waves H_s is replaced by $H_{2\%}/1.4$.
2) For $\cot\alpha \geq 4.0$ only Eq VI-5-68 should be used.
3) $N_z \leq 7,500$ after which number equilibrium damage is more or less reached.
4) $0.1 \leq P \leq 0.6$, $0.005 \leq s_m \leq 0.06$, $2.0\ tonne/m^3 \leq \rho \leq 3.1\ tonne/m^3$
5) For the 8 tests run with depth-limited waves, breaking conditions were limited to spilling breakers which are not as damaging as plunging breakers. Therefore, Eqs VI-5-68 and VI-5-69 may not be conservative in some breaking wave conditions.

Uncertainty of the formula: The coefficient of variation on the factor 6.2 in Eq VI-5-68 and on the factor 1.0 in Eq VI-5-69 are estimated to be 6.5% and 8%, respectively.

ATTACHMENT C – Preliminary Estimate of the Probable Cost of Construction

Eureka WWTP Outfall Armor Upgrade Project
Opinion of Probable Construction Cost

Version 11/14/2019

Item	DESCRIPTION OF WORK	QUANTITY Quantity	Unit	Rate	TOTAL Amount
	Construction				
1	**Mobilization and Preliminaries**			**Sub-total**	**$ 72,500**
1.1	Mobilization & Demobilization (land and marine)	1	LS	$ 20,000.00	$ 20,000
1.2	Preliminaries (construction plans, safety plans etc.)	1	LS	$ 10,000.00	$ 10,000
1.3	Initial Construction Survey	1	LS	$ 7,500.00	$ 7,500
1.4	Construction Permits (e.g. 404)	1	LS	$ 15,000.00	$ 15,000
1.5	Sediment and Erosion controls (land and marine)	1	LS	$ 10,000.00	$ 10,000
1.6	Traffic Control (land and marine)	1	LS	$ 10,000.00	$ 10,000
1.7	Working barge, mantis crane, tug and workhorse boat for duration of marine work	0	Day	$ -	$ -
2	**Construct / Improve Site Access**			**Sub-total**	**$ 20,000**
2.1	Site access	1	LS	$ 20,000.00	$ 20,000
3	**Site preparation**			**Sub-total**	**$ 60,950**
3.1	Remove and stockpile existing armor rock	3,000	Ton	$ 11.50	$ 34,500
3.2	Excavate trench on either side of outfall for toe installation	2,300	CY	$ 11.50	$ 26,450
4	**Construct Uprades to Groin**			**Sub-total**	**$ 1,252,370**
4.1	Scour protection ACB mattress (if needed)	0	CY	1,414	$ -
4.2	Place geotextile filter fabric	16,500	sq ft	1.00	$ 16,500
4.3	Place bedding layer stone	480	Ton	$ 175.00	$ 84,000
4.4	Place underlayer (from existing material)	1,080	Ton	$ 11.50	$ 12,420
4.5	Additional underlayer (if needed)	1,080	Ton	$ 175.00	$ 189,000
4.6	Sand backfill (if needed)	1,150	CY	$ 11.50	$ 13,225
4.7	Armor rock	5,280	Ton	$ 175.00	$ 924,000
4.8	Sand backfill (if needed)	1,150	CY	$ 11.50	$ 13,225
5	**Post-Construction**			**Sub-total**	**$ 8,000**
5.1	Earthworks (final shaping)	1	LS	$ 3,000.00	$ 3,000
5.2	Native plantings	1	LS	$ 2,000.00	$ 2,000
5.3	Maintenance (12 months)	1	LS	$ 3,000.00	$ 3,000
	Construction Total				**$ 1,413,820**
6	**Professional Services**			**Sub-total**	**$ 341,040**
6.1	Geotechnical Investigations	1	LS	$ 20,000	$ 20,000
6.2	Topographic and Bathymetric Survey	1	LS	$ 10,000	$ 10,000
6.3	Design	5%		$ 1,413,820	$ 70,691
6.4	Permiting	5%		$ 1,413,820	$ 70,691
6.5	Construction Management	10%		$ 1,413,820	$ 141,382
6.6	Special Inspections and Testing	2%		$ 1,413,820	$ 28,276
	Professional Services Total				**$ 341,040**
7	**Contingency**			**Sub-total**	**$ 424,146**
7.1	General Construction Contingency	30%		$ 1,413,820	$ 424,146
	Contingency Total				**$ 424,146**

***Prices based on 2018**

Grand Total	$ 2,179,006

Appendix C

Technical Review of Ocean Discharge Alternative for Elk River Wastewater Treatment Plant Effluent, September, 2020

Brown AND Caldwell

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Technical Memorandum

Prepared for: City of Eureka

Project Title: Ocean Discharge Alternative

Project No.: 152526.300.301

Technical Memorandum

Subject: Technical Review of Ocean Discharge Alternative for Elk River Wastewater Treatment Plant Effluent

Date: September 21, 2020

To: Brian Gerving, Director of Public Works, City of Eureka
Jesse Willor, Engineer, City of Eureka

From: William K. Faisst, Ph.D., P.E., Vice President, Brown and Caldwell

Copy to: Rebecca Crow, P.E, Project Manager, GHD
Art Molseed, P.E, Project Manager, Brown and Caldwell
Linda Sawyer, Ph.D., P.E, Senior Process Engineer, Brown and Caldwell

Prepared by: _____
William K. Faisst, Ph.D., P.E., Vice President
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Reviewed by: _____
Matthew J. DeBoer, Brown and Caldwell, Senior Associate

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Executive Summary

As part of the City of Eureka (City) response to the North Coast Regional Water Quality Control Board (Water Board) Cease and Desist Order (Order NO. R1-2016-0012), the City has agreed to consider an effluent discharge to the Pacific Ocean for Elk River Wastewater Treatment Plant (ERWWTP) effluent. An ocean discharge would replace the existing effluent discharge to Humboldt Bay. At a desktop accuracy level, Brown and Caldwell (BC) evaluated such a discharge to determine if the existing ERWWTP effluent quality would, upon discharge, conform to requirements under the Water Quality Control Plan Ocean Waters of California (State Water Resources Control Board [SWRCB], Established 1972, Revised 2019—Ocean Plan). Specifically, the proposed discharge would occur through an ocean outfall now owned and operated by the Humboldt Bay Harbor, Recreation and Conservation District (HBHRCD), an outfall often referred to as the RMT II outfall.

Based on BC's preliminary evaluation, an ERWWTP discharge through the RMT II outfall would meet current requirements under the Ocean Plan, including for Table 3 constituents, if the discharge achieved at least 100:1 initial dilution. From dilution modeling by others and parametric checking by BC, the discharge should achieve required initial dilution (and likely much greater initial dilution) if HBHRCD configures and maintains the outfall's diffuser as appropriate to the proposed discharge and local conditions. Discussions with the diving firm with an extended inspection and maintenance history for the outfall system and review of other available information give a clear picture of the outfall's current condition. BC thinks that the system could operate with adequate dilution performance for the ERWWTP discharge. The City should undertake additional dilution analyses to check and refine the preliminary consideration in this technical memorandum (TM). The outfall system should have capacity to discharge the City flows while also receiving flows from other dischargers. The outfall system would need further hydraulic/pumping analyses if other large discharges would occur together with a City discharge. Furthermore, with regular inspection and maintenance, the discharge system should have reasonable longevity, but additional submarine inspection and corrosion control assessment should confirm this preliminary conclusion.

At an order-of-magnitude accuracy level (Association for the Advancement of Cost Engineering [AACE] International Class 5), the cost for upgrading and rehabilitating the existing outfall and diffuser would be about $2.7 million with a likely capital cost range from about $1.4 to $5.4 million (-50 percent to +100 percent).

Section 1: Introduction and Background

Assisting GHD, Brown and Caldwell (BC) developed this technical memorandum (TM) to analyze the possible discharge of Elk River Wastewater Treatment Plant (ERWWTP) effluent to the ocean through the RMT II outfall. Discharge to the ocean instead of Humboldt Bay is an alternative that the Water Board directed the City to consider as part of the alternatives analyses for upgrading the ERWWTP. This TM summarizes information about existing facilities and past work on the outfall system and presents results from review for potential Ocean Plan compliance and associated cost.

1.1 Existing Outfall History and Configuration

In the 1960s, Louisiana Pacific Corporation originally constructed the RMT II outfall to discharge waste streams from its pulp and paper mill about 1/2 mile offshore through a 42-inch-diameter cement-mortar-lined-and coated steel pipe terminating at a water depth of about 34 feet with a multi-port diffuser. Figure 1-1 shows the RMT II general location. A subsequent owner modified and extended the outfall and diffuser. Evergreen Pulp Mill (EPM) apparently inserted a 36-inch-outside-diameter high-density-polyethylene

(HDPE) liner into the original pipe (which blinded off the original diffuser) and extended it offshore using mortar-lined-and-coated steel pipe with a 32-inch-outside-diameter HDPE liner such that the outfall terminus is about 7,860 feet offshore. Figure 1-2 shows the general outfall alignment. The 1,550 feet furthest offshore, including the diffuser, has no HDPE liner. The offshore end has a diffuser about 852 feet long, with 72 pairs of diffuser ports. The ports are 4-inch flange rings with 2.4-inch diameter openings. Figure 1-3 presents a typical diffuser cross-section. Currently all ports but the eight closest to shore are plugged with removable stoppers. The port depths range from about 75 to about 82 feet.

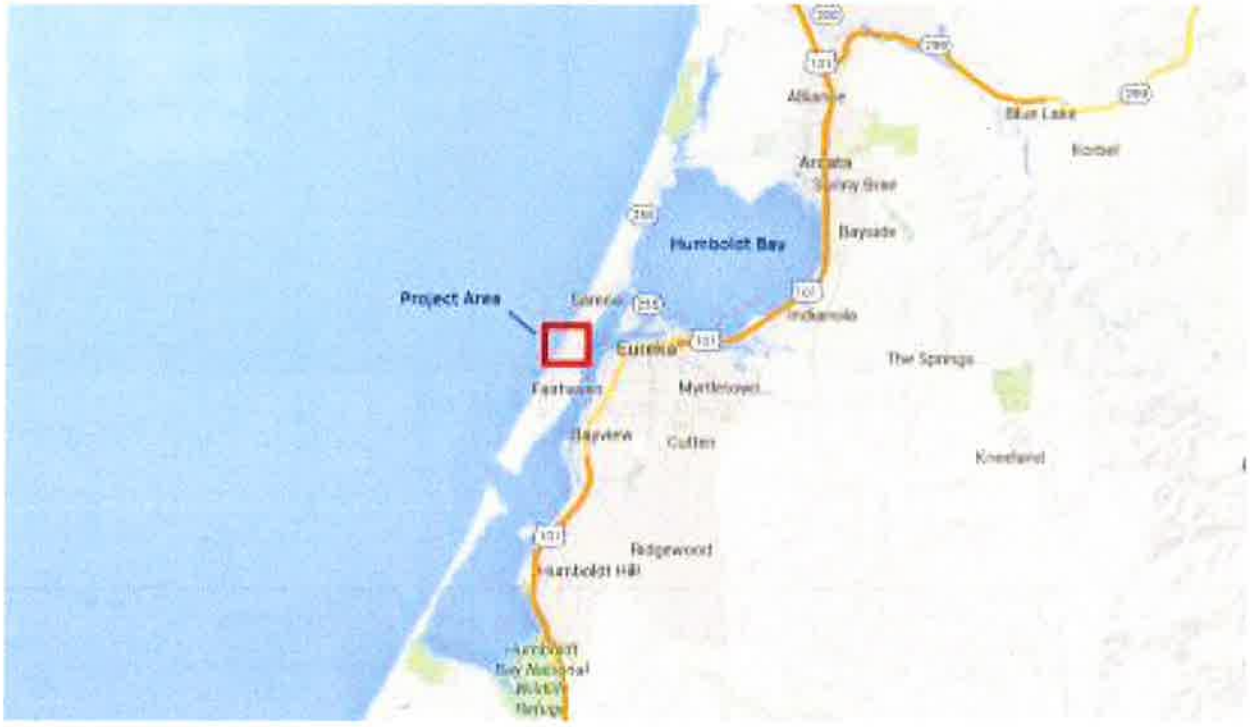

Figure 1-1. General location for RMT II outfall

Source: ch2m, 2016

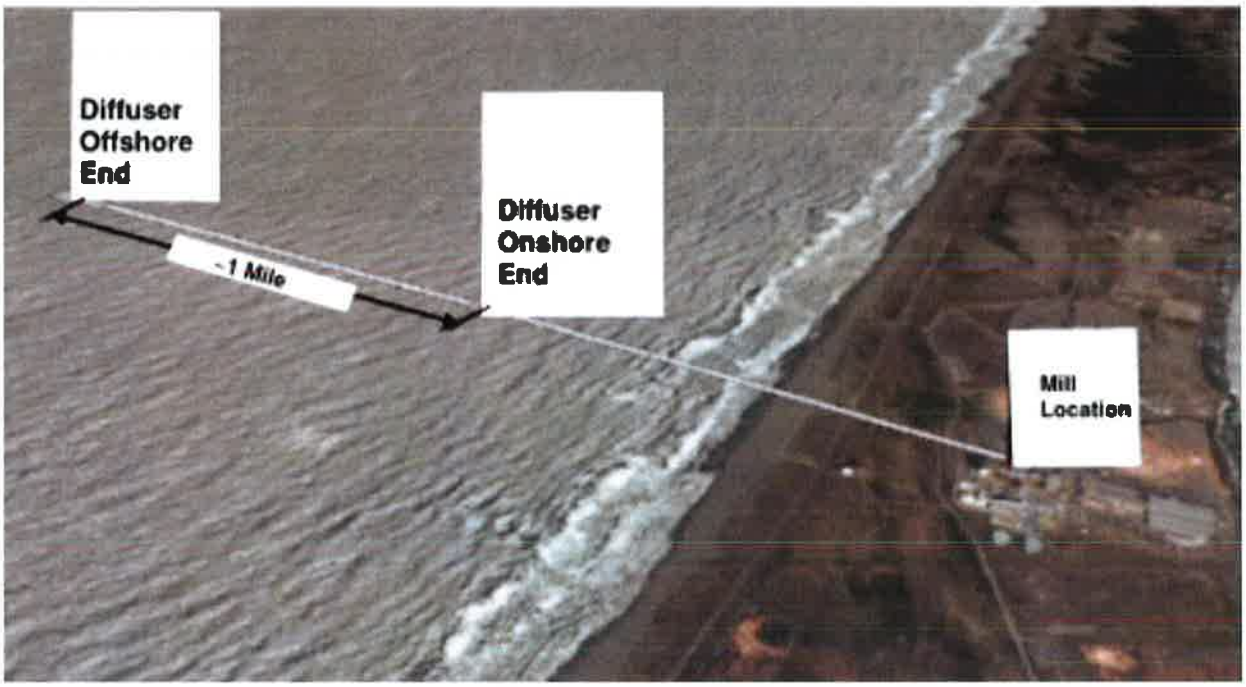

Figure 1-2. Overview of outfall alignment

Source: ch2m, 2016

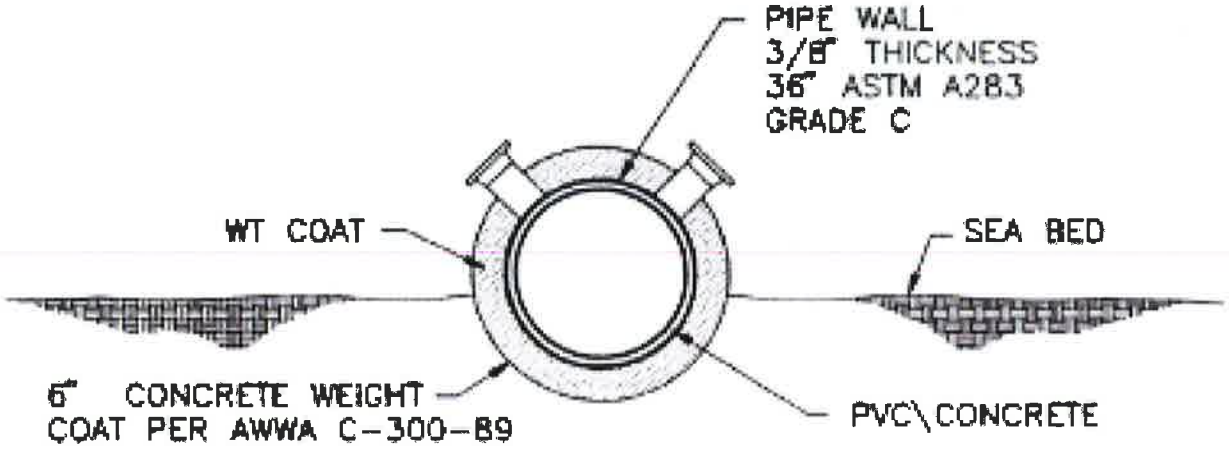

Figure 1-3. Typical diffuser cross-section

Source: ch2m, 2016

Figure 1-4 presents information on the outfall configuration from MM Diving, Inc., based on its work on the outfall and diffuser since 1998. Current flows through the outfall originate from the DG Fairhaven Power, LLC, averaging about a 200,000-gallons-per-day.

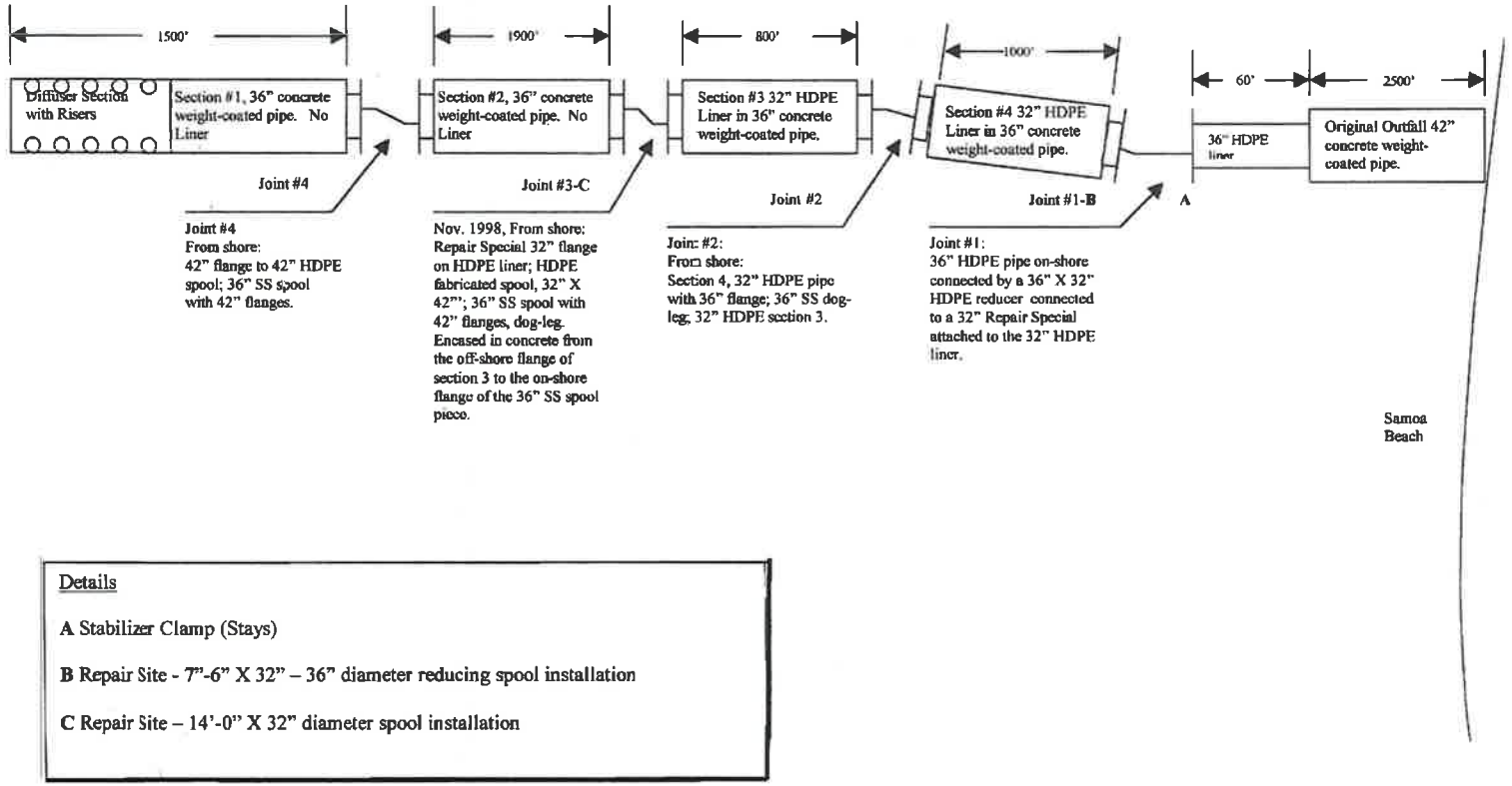

Figure 1-4. Information for existing RMT II outfall

(Source: MM Diving, personal communication)

1.2 Outfall Condition

BC found no reports that described the existing outfall and diffuser or their current condition. Hence, we contacted and interviewed MM Diving, Inc. (V. Markytan, personal communications, March 3, 2020) about its inspection and repair work on the outfall and diffuser, going back over 20 years. MM Diving, Inc. reported several key observations about the outfall and diffuser:

- The outfall pipe and the diffuser are intact.
- The diffuser only has eight open ports, those closest inshore.
- During annual inspections the divers regularly clean out sediment that typically fills the pipe interior up to each port's lower edge. Thus, effluent flows over the interior sediment but with insufficient velocity to scour and remove it.
- The sediment within the diffuser pipe is not cemented such that divers cannot loosen it with an air or water lance.
- Where divers previous have plugged ports further offshore, the diffuser is essentially sediment filled but the diver work to date does not indicate that the sediment has cemented in place. Divers apparently can remove the sediment through water and/or air jetting and vacuum or educator removal.
- The divers have attached sacrificial anodes to the exposed flanges offshore, most recently using clamp-on style anodes. The anodes degrade rapidly and likely need replacement.
- The sea bottom along the diffuser is very active, typically with sediment stacked up on the diffuser north side or even completely burying the diffuser. Year to year the bottom sediments may or may not cover the diffusers and the pipe.
- The divers frequently find crab traps and trap float lines snagged on the diffuser flanges
- Since the existing ports have standard flanges and the flanges have not deteriorated significantly, MM Diving, Inc. staff think that they could retrofit Tideflex© check valves on port flanges.
- Diving over the diffuser is challenging owing to long-shore currents, occasional rough water, and sometimes very poor visibility.

Section 2: Approach to Analyses

Consideration of a joint discharge through the RMTII outfall by the City and perhaps one or several other jurisdictions/agencies needs to consider how regulators might permit such a combined discharge. Based on available reports, Humboldt Bay Harbor, Recreation and Conservation District (HBHRCD) has considered a wide variety of potential uses for its outfall that could vary the flow rate and effluent characteristics, particularly the effluent temperature and density considerably. We are unaware of any ocean outfall joint discharge permits issued by the North Coast Water Board. Other California Water Boards have issued permits where outfalls are shared, e.g., the San Diego Water Board has permitted a joint outfall discharge for the City of Escondido and the San Elijo Joint Powers Authority and the Central Coast Water Board, a joint discharge for the City of Santa Cruz and the City of Scotts Valley. In both these cases, the water boards allow the discharges to be treated as separate activities, with allowed initial dilution based on the flow characteristics for a single discharger.

For this TM BC has assumed that the North Coast Water Board would permit potential City of Eureka ocean discharge based on dilution that the City would achieve if only the City effluent discharged through the diffuser. As described above, such an approach aligns with other permitting in California.

Section 3: Past Dilution Analyses and Preliminary Evaluation

Past work by others provides some guidance upon the potential for a City effluent discharge through the RMT II outfall to achieve enough dilution for an ocean discharge. In 2016, ch2m, while assisting SHN Engineers & Geologists, prepared *Diffuser Performance Assessment Report of the Redwood Marine Terminal II Ocean Outfall* (February 2016), as part of work for HBHRCD. The report analyzed the potential performance of the outfall for discharge of a variety of effluent streams. In our review of this work, we note that the analysts apparently did not understand fully the California Ocean Plan (Plan) requirements and permitting limitations. In Section 2.2.1 Current Speed and Direction they used a depth-averaged current speed during dilution analyses whereas the Plan allows no current velocity:

- "Model input variables use to characterize the ambient currents include the following:
  - Current speed 0.072 meter per second (m/s)
  - Current direction 90 degrees (to diffuser)"

The analyses also focused on maintaining a port velocity of 10 feet per second (fps) to achieve "high rate" outfall performance, in Section 2.3 Effluent Characteristics, second paragraph:

- "A minimum port velocity of 10 fps is generally required by permitting agencies to meet the definition of a high rate diffuser."

The Plan never defines a "high rate diffuser" nor does it identify a minimum desired port velocity.

The focus on 10 fps as a port velocity also included comments about higher flow rates causing port wear over time. In our opinion historically such wear was a concern when agencies discharged raw sewage, preliminary treated effluent (i.e., screened or screened and de-gritted raw sewage) and even primary effluent. However, such concerns have disappeared for secondary effluent, especially since municipal discharge experience high flows and very high port velocities only for relatively short times during peak wet-weather events with significant infiltration and inflow.

In Section 3.3 UDKHDEN Model Results the analyses focused on achieving 100:1 initial dilution:

- "High-rate diffusers are generally designed to provide at least 100:1 dilution."

The reader should note that the Plan does not require that a discharge achieve a particular dilution. Rather the Plan mandates that a California NPDES permit for an ocean discharge would require that the discharge comply with water quality requirements presented in Ocean Plan Table 3, through effluent quality and a dilution credit, applied in combination.

The 2016 analyses reported achievable initial dilution for many combinations of effluent flow rate, and effluent density with the number of open diffuser ports varied based on the flow rate varied to maintain at least 10-fps port velocity. For an effluent with salinity/density similar to that effluent we would expect the ERWWTP to produce, the 2016 analyses projected initial dilution greater than 400:1 for all effluent flow rates and almost twice that dilution rate at average flows. As developed and discussed below, such dilution would allow Table 3 compliance for a City effluent discharge through the RMTII outfall.

3.1 Estimated Initial Dilution at Zero Flow

The scope and budget for this TM did not include any new detailed effluent initial dilution modeling for a City discharge through the RMTII outfall. Since the Ocean Plan does not allow consideration of currents across a discharge for initial dilution calculation, BC prepared a preliminary zero-current estimate using a parametric approach. This analysis drew on information available in Chapter 3 Wastewater mixing and dispersion in *Marine Wastewater Outfalls and Treatment Systems* (Roberts, P.J.W., et al., IWA Publishing, 2010). We have assumed that the diffuser would receive physical improvements, especially cleaning and retrofitting with Red

Valve Tideflex© check valves (discussed further in Section 4), to ensure operability and distribution of effluent flow among the diffuser ports. Our results indicate that for an average flow of 6 million gallons per day, the discharge would achieve over 130:1 initial dilution. Even at much higher flows, initial dilution would still exceed 100:1.

3.2 Preliminary Discharge Evaluation

Given that the ERWWTP already produces high quality secondary effluent, as noted these analyses do indicate that the diffuser would achieve acceptable dilution (≥100:1) even without a cross current, if retrofitted with Tideflex© by Red Valve to maintain flow distribution among the diffuser ports while ensuring good port discharge velocity and preventing sediment intrusion. To test for Plan Table 3 compliance, BC checked effluent constituents for which the City reported measurable Table 3 concentrations from its effluent testing. Table 3-1 presented the measured values for those constituents together with Plan Table 3 limitations and projected concentrations after applying 100:1 dilution. Table 3-1 also shows a factor of safety—calculated diluted concentration compared to Plan requirement. An ERWWTP effluent discharge would satisfy the Plan with a factor of safety of at least 3.

Table 3-1. Comparison of Ocean Plan Limitations and 2019 ERWWTP Effluent if Initial Dilution at 100:1

Constituent (all concentrations in µg/L)	Limiting Concentration: 6-Month Median[a]	Limiting Concentration: Daily Maximum[a]	Limiting Concentration: Instantaneous Maximum[a]	30-Day Average[a]	Effluent Data[b]	Maximum Compliant Effluent Concentration with 100:1 Dilution	Factor of Safety (Max Table 3 Conc/Effluent Concentration)	Ocean Plan Seawater Background Concentration[a]	Comment: Objective for
Antimony, Total	NA	NA	NA	1200	19	121200	6379	0.00	Protection of Human Health
Chromium, Total	2	8	20	NA	1.0	202	202	0.00	Protection of Aquatic Marine Life
Copper, Total	3	12	30	NA	30	103	3	2.00	Protection of Aquatic Marine Life
Nickel, Total	5	20	50	NA	4.5	505	112	0.00	Protection of Aquatic Marine Life
Silver, Total	0.7	2.8	7	NA	1.3	54.7	42	0.16	Protection of Aquatic Marine Life
Zinc, Total	20	80	200	NA	25	1220	49	8.00	Protection of Aquatic Marine Life
Cyanide, Total as CN	1.0	4.0	10	NA	1.6	101	63	0.00	Protection of Aquatic Marine Life
Chloroform	NA	NA	NA	130	4.5	13130	2918	0.00	Protection of Human Health
Dichlorobromomethane	NA	NA	NA	450	0.83	45450	54759	0.00	Protection of Human Health
Halomethanes	NA	NA	NA	130	0.25	25	101	0.00	Protection of Human Health

a. *Ocean Plan Table 3 limitations.*

b. *Effluent data are from the City of Eureka Elk River Wastewater Treatment Plant and Collection Systems 2019 Annual Report.*

Section 4: Costs for Outfall Rehabilitation

For this preliminary evaluation BC developed order-of-magnitude capital costs for improvements to bring the outfall into operation with enough capacity for the City's peak wet weather flow. As a conservative approach, we have assumed that all diffuser ports should become functional, equipped with Red Valve Tideflex© check valves. Figure 4-1 presents information for a typical wide-mouth Tideflex© valve. Future hydraulic analyses might show a need for fewer operating ports. If the actual flow would require fewer ports, we would expect that the Water Board would prefer discharge through the diffuser offshore end, in deeper water where better dilution would occur and where the discharge would be further offshore.

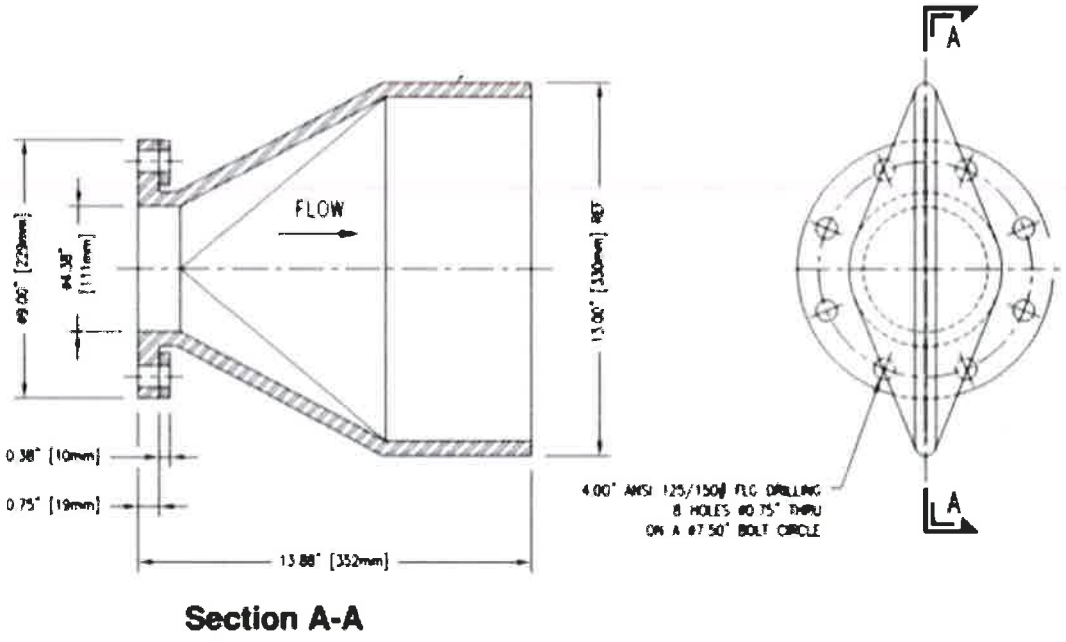

Figure 4-1. Typical 4-inch Tideflex© valve

4.1 Assumptions

BC based the cost estimates on the following assumptions and activities:

1. Association for the Advancement of Cost Engineering (AACE) International (formerly Association for the Advancement of Cost Estimating, International) Class 5 (order-of-magnitude) estimate with a contingency of 50 percent and an estimate range of -50 percent/+100 percent.
2. Cost estimate values are current to Northern California Winter 2020.
3. HBHRCD would serve as lead agency for outfall renovation, including permitting, with costs paid by the City.

4. Divers would remove the existing port cover plates and replace them with Red Valve Tideflex© valves secured with seawater-resistant stainless-steel retaining rings and hardware.
5. Tideflex© valve costs are from an email quote from C. Mitchell of Red Valve.
6. Diving costs based on an oral estimate from MM Diving. BC has assumed that the conditions of the existing flanges would allow retrofit without modification.
7. Design, permitting, and construction activities would include:
   a. Design, to specify the required work, materials, and any operational constraints.
   b. Required permitting, at a minimum, through the Water Board and the California Coastal Commission
   c. Excavation to expose the buried diffuser section.
   d. Diffuser cleaning with "dredged" material side cast.
   e. Diffuser rehabilitation with 144 flanged Tideflex© check valves installed with seawater-corrosion-resistant stainless-steel and sacrificial anodes on exposed main-pipe-barrel flanges.

4.2 Capital Cost Estimate

Table 4-1 presents the estimated capital costs, with construction costs estimated in accordance with AACE International (formerly Association for the Advancement of Cost Estimating International) Class 5 (order of magnitude) guidance.

Table 4-1. Cost Estimate (AACEI Class 5) for Reactivating the RMT II Diffuser for Elk River WWTP Effluent Discharge

Item	Cost (thousand dollars)[a]	Comments
Tideflex valves (150) and zinc anodes	300	Per email quote from C. Mitchell, Red Valve, March 13, 2020, FOB Eureka with 5 percent extra valves (6 valves) for future repairs
Diffuser excavation, cleaning, repairs, and check valve and main-barrel anode installation	1,200	Include equipment rentals and diver equipment and work boat mobilization and demobilization, with 10 days of standby time. Quote oral per V. Markytan, MM Diving
Subtotal	1,500	
Contingency (50 percent)	750	Contingency allows for currently unknow work such as any modifications to the outfall system upstream of the
Construction cost	2,250	
Engineering, legal and administration costs (20 percent)	450	Includes design, permitting bidding assistance and engineering assistance during construction
Capital cost	2,700	

a. *Costs current for Northern California, Spring 2020.*

b. *AACE International Class 5 Estimate cost range: $1.4M to $5.4M.*

References

ch2m. "Diffuser Performance Assessment Report for the Redwood Marine Terminal II Ocean Outfall." Prepared for County of Humboldt and Humboldt Bay Harbor, Recreation and Conservation District. February 2016.

Roberts, P.J.W., H.J. Salas, F. M. Reiff, M. Libhaber, A. Labbe, and J.C. Thomson, Marine Wastewater Outfalls and Treatment Systems. IWA Publishing, London, 2010.

SHN Engineers & Geologists, ch2m, and Hemphill water engineering. "Infrastructure Needs and Reuse on the Samoa Peninsula Redwood Marine Terminal II." Prepared for County of Humboldt and Humboldt Bay Harbor, Recreation and Conservation District. February 2016.

Appendix D

Opinion of Probable Construction Costs

- Connection to RMTII
- RMTII Outfall Repairs

Project: **Eureka WW Disposal Alternative Option**
Task: **Opinion of Probable Project Cost - Planning Level Estimate**
Date: **7/6/2021**

Name	Description	Unit	Quantity	Unit Cost	Total Cost	Eureka Only
Eureka Line	30-inch line	ft	4,800	$ 500	$ 2,400,000	$ 2,400,000
Manholes Precast	60"	Ea	10	$ 25,000	$ 250,000	$ 250,000
Eureka Pump Station	15 MGD	LS	1	$ 6,750,000	$ 6,750,000	$ 6,750,000
Connection to Eureka WWTP		LS	1	$ 250,000	$ 250,000	$ 250,000
Samoa Line	4-inch line	ft	4,000	$ 100	$ 400,000	$ -
Manholes Precast	48"	Ea	5	$ 15,000	$ 75,000	$ -
Samoa Pump Station	0.216 MGD	LS	1	$ 325,000	$ 325,000	$ -
Fairhaven Line	30-inch line	ft	10,000	$ 500	$ 5,000,000	$ -
Manholes Precast	60"	Ea	10	$ 25,000	$ 250,000	$ -
Fairhaven Pump Station	0.144 MGD	LS	1	$ 300,000	$ 300,000	$ -
Horizontal Directional Drill	30-inch line	ft	3,200	$ 960	$ 3,072,000	$ 3,072,000
				Subtotal	**$ 19,072,000**	**$ 12,722,000**
				Mobilization (10%)	$ 1,907,200	$ 1,272,200
				Construction Contingency (50%)	$ 9,536,000	$ 6,361,000
				Engineering (20%)	$ 3,814,400	$ 2,544,400
				Construction Management (15%)	$ 2,860,800	$ 1,908,300
				Total Cost	**$ 37,190,400**	**$ 24,807,900**

Cost Estimate (AACEI Class 5) for Reactivating the RMT II Diffuser for Elk River WWTP Effluent Discharge Item Cost (thousand dollars)

Name	Unit	Quantity	Unit Cost	Total Cost
Tideflex valves (150) and zinc anodes 1	Ea	150	$ 2,300	$ 345,000
Diffuser excavation, cleaning, repairs, and check valve and main-barrel anode installation	Ea	1	$ 1,380,000	$ 1,380,000
SubTotal				$ 1,725,000
Contingency (50%)				$ 862,500
Total Construction Cost				**$ 2,587,500**
Engineering, Legal, and Adminstration Costs (20%)				$ 517,500
Environmental Approvals and Permitting (15%)				$ 388,125
Total Capital Cost				**$ 3,105,000**

1) Per email quote from C. Mitchell, Red Valve, March 13, 2020, FOB Eureka with 5 percent extra valves (6 valves) for future repairs, taken from Brown and Caldwell, 2020 estimate for the RMT II outfall and adjusted for number of diffuser ports.

2) Includes equipment rentals and diver equipment and work boat mobilization and demobilization, with 10 days of standby time. Quote oral per V. Markytan, MM Diving. taken from Brown and Caldwell, 2020 estimate for the RMT II outfall and adjusted for number of diffuser ports.

Source: Brown and Caldwell, Technical Review of Ocean Discharge Alternative for Elk River Wastewater Treatment Plant Effluent, September 21, 2020 updated to accoutn for changes in material costs.

Appendix E

RMTII Outfall Permitting Analysis

Technical Memorandum

Draft for Review

This document is in draft form. A final version of this document may differ from this draft. As such, the contents of this draft document shall not be relied upon. GHD disclaims any responsibility or liability arising from decisions made based on this draft document.

June 16, 2020

To:	Brian Gerving and Jesse Willor, City of Eureka	Ref. No.:	11151283
From:	Andrea Hilton, Environmental Planner	Tel:	707 443 8326
cc:			

Subject: Regulatory Compliance Requirements Associated with an Ocean Outfall Alternative

Regulatory approvals likely required for implementation of an Ocean Outfall Alternative are summarized in Table 1. Given the environmental risk of a potential frac-out associated with horizontal direction drilling beneath across Humboldt Bay, long-term pumping to the Samoa Peninsula and associated greenhouse gas emission, and the likelihood of public concern in relation thereto, the recommended CEQA document would be an Environmental Impact Report. Supporting biological and cultural resource investigations would also be necessary to support impact assessment under CEQA. The State Lands Commission would require a lease. The annual lease fee would not be determined until the application was submitted and reviewed by the State Lands Commission. Given development would occur in the Coastal Zone and span various jurisdictions (local, state, and appeal), a consolidated Coastal Development Permit submitted to the Coastal Commission is recommended.

To support NPDES permit review, an updated dilution analysis would be conducted. Results of the dilution modeling would be incorporated in to a Marine Biological Resources Evaluation, which would be submitted to NMFS and CDFW for review.

Depending upon specific locations of work areas included in final designs, additional approvals may also be required. If HDD work areas or other project elements are ultimately located adjacent to Humboldt Bay or in waters or wetlands, compliance with the Clean Water Act Sections 401 and 404 would also be required. Humboldt County may also require a Use Permit for any HDD work areas on the Samoa Peninsula, depending upon the specific location of planned construction.

For the purposes of regulatory planning, the following activities have been excluded:

- It is assumed permanent impacts to wetlands, ESHA, and other Sensitive Natural Communities can be avoided; thus a Habitat Mitigation and Monitoring Plan is not included in this projection.

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- It is assumed that the waters of Humboldt Bay can be avoided; thus approval from the California Department of Fish and Wildlife via a 1602 permit under the Fish and Game Code or a review for compliance with the California Endangered Species Act is not included in this projection.
- Sub-surface cultural resource investigations are not included.
- Given there is no federal permit, consultation under Section 7 of the Endangered Species Act is not included (Biological Assessment/Biological Opinion with NMFS). Coordination with NMFS and CDFW is included, as both agencies would, at minimum, be invited by the Coastal Commission to comment on the Coastal Development Permit during interagency review and consultation.
- Legal costs are not included.

Table 1. Summary of Approvals Likely to be Required

Approval – Likely Required	Preparation Cost	Agency Fees	Total Cost
CEQA – Environmental Impact Report	$255,000	$3,500	$258,500
Special Studies			
Biological Investigations	$40,000	$0	$40,000
Cultural Resource Investigation	$10,000	$0	$10,000
Frac-Out Contingency Plan	$10,000	$0	$0
State Lands Lease	$5,000	TBD annually	$5,000 + annual fee TBD
Coastal Development Permit – Consolidated Submission to CCC	$20,000	$0	$20,000
NPDES Waste Discharge Permit	$17,500	Assumed to be unchanged from present	$17,500
Marine Resources Biological Evaluation	$15,000	$0	$15,000
Dilution Modeling	$50,000	$0	$50,000
Coordination with CDFW and NMFS (CDP interagency consultation)	$10,000	$0	$10,000
Total	**$432,500**	**$3,500 + TBD**	**$436,000 + TBD**

Table 2. Summary of Approvals Possibly Required

Approval – Possibly Required	Preparation Cost	Agency Fees	Total Cost
Regional Board CWA 401 Permit (If waters or wetlands present at HDD or other work areas)	$6,000	$20,000/acre (TBD)	$6,000 + TBD fee based on actual impacts
USACE CWA 404 Permit (If waters or wetlands present at HDD or other work areas)	$4,000	$0	$4,000
Humboldt County Use Permit	$4,000	$7,000	$11,000
Endangered Species Act Section 7 Consultation and Biological Assessment (Required if CWA 404 Permit is triggered)	$30,000	$0	$30,000
Total	**$44,000**	**$7,000 + TBD**	**$51,000 + TBD**

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Humboldt Community Services District

Dedicated to providing high quality, cost effective water and sewer service for our customers

Engineering Memorandum

TO: Board of Directors

FROM: Benjamin Adams, Assistant Engineer

DATE: July 22, 2021

SUBJECT: Engineering Department Status Report for July 27, 2021 Board Meeting

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Summary:

I am learning a lot about the District. Our Engineering Technician and Superintendent have been vital in providing legacy knowledge of previous projects and infrastructure. I am excited to come to work every day.

Capital Improvement Projects:

A schedule is being drafted to order and prioritize capital projects for this fiscal year. This Gantt Chart style project schedule is resource loaded to accurately depict the anticipated schedule of our projects. Our resources being personnel and equipment. This type of document is most useful when it is kept as a living document; that is, actively updated with information regarding task completion and resource availability. This chart and its provided information will aide in scheduling future projects of a similar nature. I will be sharing this CIP schedule with you soon.

Updating The Districts Standard Plans and Specifications

The District's standard plans and specifications were created before 1998 and last updated in 2016. They are cast from the Uniform Plumbing Code (UPC) as a more digestible and informative guide to customers and contractors working on water and sewer infrastructure within the District's jurisdiction. The UPC provides consumers with safe and sanitary plumbing systems while allowing latitude for innovation and new technologies. The UPC is developed as a means of promoting the public's health, safety and welfare. The UPC is updated every 3 years and is adopted for use as the California Plumbing Code one year later. We recently purchased the most current Uniform Plumbing code which will be used to update our standard details and specifications. This effort is in collaboration with MCSD.

New Connections and Field Work

The Engineering, Construction, and Customer Service crews have facilitated 3 new water connections and 5 sewer connections since April. One of the new sewer connections was an expedited job due to a failed septic system.

The Engineering crew has also responded to 16 County Building and Planning permit referrals since April, and roughly 75 to 100 Underground Service Alert tickets (USA's) per week.

Water Model

The District has recently received its water model from MacKay Esposito and updated our computer software so we can manipulate and run our current water model. Operation, understanding, and ground truthing of our model will produce a precise tool that can simulate various scenarios and changes to our distribution system.

Relationship Building with Humboldt County and other Utilities

I have had the opportunity to work with and create positive working relationships with many individuals at the County, PG&E, and other utilities in response to permit referrals and active projects throughout our community.

Design Work

I look forward to District projects on the horizon that provide the opportunity to utilize an in-house design solution, and provide a lasting product for our District.

Humboldt Community Services District

Post Office Box 158 Cutten, CA 95534 (707) 443-4558 Fax (707) 443-1490

To: H.C.S.D. Board of Directors

Date: July 21, 2021

From: Tim Latham, District Superintendent TL

Subject: June 2021 Construction Operations Report

General business for the month of June included water service line replacements due to a leaks on Mesa Avenue and Purdue Drive, a water service line leak repair on Pigeon Point Road, a water main line break on Lucia Avenue, concrete sidewalk repairs at the pressure reducing valve (PRV) vault on Harrison Avenue, a fire hydrant repair on Walnut Drive, relocating two water meters from behind fences on Worthington Street, the installation of a new sewer lateral line on Union Street, a new water service and sewer lateral line on Humboldt Hill Road, completing a sewer lateral line repair on Ohio Street and hot asphalt trench paving on Lissa Drive.

Other business included assisting the Customer Service Department with service orders as necessary, weed eating at various sites, applying crushed rock to the temporary easement road for the Ridgewood Tank Rehabilitation Project and completing construction on the Pine Hill Bridge Water Main Line Replacement Project.

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Humboldt Community Services District

Post Office Box 158 Cutten, CA 95503 (707) 443-4558 Fax (707) 443-1490

To: H.C.S.D. Board of Directors

Date: July 21, 2021

From: Tim Latham, District Superintendent TL

Subject: June 2021 Operations/Maintenance Report

The Operations/Maintenance Department was busy in June with a variety of projects. In addition to the standard operation and maintenance of District facilities, crews continued to do station maintenance, vehicle and equipment maintenance and assisted with customer service. All of the stationary and portable generators were tested in order to insure proper operation in the time of need.

Sewer related maintenance included preventive maintenance on all Flygt sewer pumps, cleaning 2100 feet of sewer main line as well as filming 2694 feet of sewer main line and 107 feet of sewer lateral line all in various areas throughout the District and cleaning sewer wet wells at the Bailey Street, Pine Hill Road, "F" Street, Sequoia Street and Hoover Street sewer lift stations.

Other business included continued work on the Ridgewood Tank Off-line Project and taking TTHM and HAA5 water samples as required by the State Water Resources Control Board, Division of Drinking Water (SWRCB, DDW).

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HUMBOLDT COMMUNITY SERVICES DISTRICT
BUDGETARY STATEMENT OF REVENUES AND EXPENSES
FOR ENTIRE DISTRICT

June 2021

	Budgeted 2020-21	Current Month-to-Date	Actual Year-to-Date	Budgeted Year-to-Date	Y.T.D. Variance Actual to Budget	% Variance	Note
OPERATING REVENUE							
Metered Water Sales	5,078,311	439,372	5,307,097	5,078,311	228,786	4.5	
Water Charges - Pass Through	236,395	20,540	224,195	236,395	(12,200)	(5.2)	1
Sewer Service Charges	4,952,219	410,746	4,828,550	4,952,219	(123,669)	(2.5)	
Sewer Service Charges - Pass Through	1,018,622	71,547	782,162	1,018,622	(236,460)	(23.2)	1
Water & Sewer Construction Fees	32,000	40	56,924	32,000	24,924	77.9	
Account Fees	150,000	13,396	140,436	150,000	(9,565)	(6.4)	
Inspection Fees	5,000	189	189	5,000	(4,811)	(96.2)	
Reimbursable Maintenance Fees	1,000	-	25	1,000	(975)	(97.5)	
Miscellaneous	10,000	86	1,582	10,000	(8,418)	(84.2)	
TOTAL OPERATING REVENUE	11,483,547	955,917	11,341,159	11,483,547	(142,388)	(1.2)	
NON-OPERATING REVENUE							
Capital Connection Fees	158,000	200	239,778	158,000	81,778	51.8	2
Interest/General	30,000	(14,510)	(14,510)	30,000	(44,510)	(148.4)	2
Discounts Earned	2,000	349	1,943	2,000	(57)	(2.9)	
Sales:Fixed Assets/Scrap Metal	75,400	-	66,490	75,400	(8,910)	(11.8)	2
Bad Debt Recovery	2,200	721	6,591	2,200	4,391	199.6	
Property Taxes & Assessments	490,000	-	14,580	490,000	(475,420)	(97.0)	2
Insurance Rebate	-	-	34,184	-	34,184	-	
TOTAL NON-OPERATING REVENUE	757,600	(13,240)	349,054	757,600	(408,546)	(53.9)	2
TOTAL DISTRICT REVENUE	12,241,147	942,677	11,690,214	12,241,147	(550,933)	(4.5)	
OPERATING EXPENSES							
Wages Direct	1,500,000	176,545	1,453,616	1,500,000	46,384	3.1	
Benefits: PERS	450,000	35,298	415,105	450,000	34,895	7.8	
Group Ins	1,130,000	92,700	1,017,129	1,130,000	112,871	10.0	
Workers Comp Ins	36,000	-	19,899	36,000	16,101	44.7	
FICA/Medicare	120,000	13,547	111,681	120,000	8,319	6.9	
Misc Benefits	1,200	20	190	1,200	1,010	84.2	
Total Wages and Benefits	3,237,200	318,109	3,017,620	3,237,200	219,580		
Less: wages & ben charged to Capital Proj.	(161,800)	(44,792)	(239,971)	(161,800)	78,171	(48.3)	
Total Operating Wages and benefits	3,075,400	273,317	2,777,649	3,075,400	297,751		
Water Purchase HBMWD	1,086,800	90,648	1,077,266	1,086,800	9,534	0.9	3
Water Purchase Eureka	673,920	69,033	743,574	673,920	(69,654)	(10.3)	3
Sewage Treatment Operations & Maint.	1,529,995	119,525	1,434,300	1,529,995	95,695	6.3	
Water/Sewer Analysis	10,000	1,092	7,566	10,000	2,434	24.3	
Supplies/ Construction	170,000	17,444	117,248	170,000	52,752	31.0	
Supplies/ Office-Administration	16,000	330	15,132	16,000	868	5.4	
Supplies/ Engineering	2,500	-	746	2,500	1,754	70.1	
Supplies/ Maintenance	100,000	3,012	80,908	100,000	19,092	19.1	
Invoicing	52,476	4,383	53,584	52,476	(1,108)	(2.1)	
Web Payment Portal	6,000	-	-	6,000	6,000	100.0	
Temporary Labor	27,200	-	-	27,200	27,200	100.0	
Repairs & Maintenance/Trucks	60,000	4,189	40,238	60,000	19,762	32.9	
Equipment Rental	8,000	-	17,084	8,000	(9,084)	(113.5)	4
Building & Grounds Maintenance	24,000	1,030	22,403	24,000	1,597	6.7	
Electrical Power	290,000	25,077	279,600	290,000	10,400	3.6	
Street Lights	70,000	2,043	59,842	70,000	10,158	14.5	
Telephone	14,250	916	13,243	14,250	1,007	7.1	
Postage	3,000	322	2,833	3,000	167	5.6	
Freight	1,600	-	215	1,600	1,385	86.5	
Chemicals	12,000	1,241	9,888	12,000	2,112	17.6	
Liability Insurance	65,000	-	54,488	65,000	10,512	16.2	

HUMBOLDT COMMUNITY SERVICES DISTRICT
BUDGETARY STATEMENT OF REVENUES AND EXPENSES
FOR ENTIRE DISTRICT

June 2021

	Budgeted 2020-21	Current Month-to-Date	Actual Year-to-Date	Budgeted Year-to-Date	Y.T.D. Variance Actual to Budget	% Variance	Note
Legal	30,000	960	6,699	30,000	23,302	77.7	
Accounting	16,000	133	10,612	16,000	5,388	33.7	
Engineering	15,000	-	523	15,000	14,478	96.5	8
Other Professional Services	18,000	1,283	17,426	18,000	575	3.2	
Bank Service Charges	42,000	3,950	47,220	42,000	(5,220)	(12.4)	5
Transportation	66,000	4,653	50,488	66,000	15,512	23.5	
Office Equip. Maintenance	22,500	392	9,661	22,500	12,839	57.1	
Computer Software Maintenance	36,000	291	32,401	36,000	3,599	10.0	
Memberships & Subscriptions	21,200	(2,998)	14,370	21,200	6,830	32.2	
Bad Debts & Minimum Balance Writeoff	12,000	(3)	9,619	12,000	2,381	19.8	
Conference & Continuing Ed	17,000	-	1,157	17,000	15,843	93.2	
Certifications	5,400	96	1,263	5,400	4,137	76.6	
State/County & LAFCO Fees and Charges	40,000	2,780	30,085	40,000	9,915	24.8	
Hydraulic Water Model Maintenance	5,000	-	5,869	5,000	(869)	(17.4)	
Elections Expense	3,500	14,869	14,869	3,500	(11,369)	(324.8)	6
Human Resources	24,300	90	11,231	24,300	13,069	53.8	
Miscellaneous	12,000	(3,673)	170	12,000	11,830	98.6	
Director's Fees	16,000	1,000	11,850	16,000	4,150	25.9	
TOTAL OPERATING EXPENSES	7,700,041	637,423	7,083,319	7,700,041	616,722	8.0	
LONG TERM DEBT PAYMENTS							
Safe Drinking Water Bond	177,429	-	177,558	177,429	(129)	(0.1)	
2012 CIP & Refi.	359,220	-	359,220	359,220	0	0.0	
Davis-Grunsky Loan	6,051	344	6,051	6,051	(0)	(0.0)	
VacCon Truck Loan	80,341	-	80,341	80,341	0	0.0	
2014 Wastewater Revenue Bonds	485,575	-	485,572	485,575	3	0.0	
TOTAL LONG TERM DEBT PAYMENTS	1,108,616	344	1,108,742	1,108,616	(126)	(0.0)	
CAPITALIZED EXPENDITURES							
Vehicles, Rolling Stock & Equipment	456,000	-	533,772	456,000	(77,772)	(17.1)	7
Building, Yard & Paving Improvements	72,500	-	26,193	72,500	46,307	63.9	
Capital Improvements Water	1,525,000	109,008	1,388,334	1,525,000	136,666	9.0	
Capital Improvements Sewer	220,000	9,914	93,487	220,000	126,513	57.5	
Engineering & Studies	133,750	-	5,433	133,750	128,317	95.9	8
TOTAL CAPITAL EXPENDITURES	2,407,250	118,923	2,047,220	2,407,250	360,030	15.0	
OTHER							
City of Eureka Projects:							
Treatment Plant	1,030,095	590,719	596,221	1,030,095	433,874	42.1	10
Martin Slough	-	-	1,653	-	(1,653)	-	
TOTAL City of Eureka Projects	1,030,095	590,719	597,874	1,030,095	432,221	42.0	
Interfund Transfers In	-	-	-				
Interfund Transfers Out	-	-	-				
BUDGET SURPLUS (DEFICIT)	(4,855)	(404,732)	853,059	(4,855)	857,914	17,670.7	11

HUMBOLDT COMMUNITY SERVICES DISTRICT
SUMMARY BUDGETARY STATEMENT OF REVENUE AND EXPENSES
FOR ENTIRE DISTRICT

June 2021

	Budgeted 2020-21	Current Month-to-Date	Actual Year-to-Date	Budgeted Year-to Date	Y.T.D. Variance Actual to Budget	% Variance
OPERATING REVENUE & EXPENSES						
TOTAL OPERATING REVENUE	11,483,547	955,917	11,341,159	11,483,547	(142,388)	(1.2)
TOTAL OPERATING EXPENSES	(7,700,041)	(637,423)	(7,083,319)	(7,700,041)	616,722	8.0
NET SURPLUS/(DEFICIT) FROM OPERATIONS	3,783,506	318,494	4,257,840	3,783,506	474,334	12.5
NON-OPERATING REVENUE & EXPENSES						
TOTAL NON-OPERATING REVENUE	757,600	(13,240)	349,054	757,600	(408,546)	(53.9)
TOTAL LONG TERM DEBT SERVICE	(1,108,616)	(344)	(1,108,742)	(1,108,616)	(126)	(0.0)
SURPLUS/(DEFICIT) BEFORE CAPITAL EXPENDITURES	3,432,490	304,910	3,498,152	3,432,490	65,915	1.9
HCSD CAPITAL IMPROVEMENT EXPENDITURES	(2,407,250)	(118,923)	(2,047,220)	(2,407,250)	360,030	15.0
CITY of EUREKA PROJECT REIMBURSEMENT	(1,030,095)	(590,719)	(597,874)	(1,030,095)	432,221	42.0
NEW DEBT ISSUE						
NET INTERFUND TRANSFERS IN/OUT		-	-			
BUDGET SURPLUS (DEFICIT)	(4,855)	(404,732)	853,059	(4,855)	857,914	17,670.7

HUMBOLDT COMMUNITY SERVICES DISTRICT
BUDGETARY STATEMENT OF REVENUES AND EXPENSES
Water Fund

June 2021

	Budgeted 2020-21	Current Month-to-Date	Actual Year-to-Date	Budgeted Year-to-Date	Y.T.D. Variance Actual to Budget	% Variance
OPERATING REVENUE						
Metered Water Sales	5,078,311	439,372	5,307,097	5,078,311	228,786	4.5
Water Pass Through	236,395	20,540	224,195	236,395	(12,200)	(5.2)
Water Construction Fees	20,000	23	35,707	20,000	15,707	78.5
Account Fees	85,500	7,636	80,048	85,500	(5,452)	(6.4)
Inspection Fees	2,150	189	189	2,150	(1,961)	(91.2)
Reimbursable Maintenance Fees	800	-	25	800	(775)	(96.9)
Miscellaneous	5,000	49	758	5,000	(4,242)	(84.8)
TOTAL OPERATING REVENUE	5,428,156	467,809	5,648,020	5,428,156	219,864	4.1
NON-OPERATING REVENUE						
Water Capital Connection Fees	80,000	200	133,177	80,000	53,177	66.5
Interest/General	23,547	(10,898)	(10,898)	23,547	(34,445)	(146.3)
Discounts Earned	1,280	199	1,107	1,280	(173)	(13.5)
Sales:Fixed Assets/Scrap Metal	42,918	-	37,899	42,918	(5,019)	(11.7)
Bad Debt Recovery	1,254	411	3,757	1,254	2,503	199.6
FW/MR Assessment	140,000	-	-	140,000	(140,000)	(100.0)
TOTAL NON-OPERATING REVENUE	288,999	(10,088)	165,041	288,999	(123,958)	(42.9)
TOTAL DISTRICT REVENUE	5,717,155	457,721	5,813,061	5,717,155	95,906	1.7
OPERATING EXPENSES						
Wages Direct	705,000	100,648	720,109	705,000	(15,109)	(2.1)
Wages & Benefits: Allocated	571,490	43,091	481,346	571,490	90,144	15.8
Benefits: PERS	162,000	10,618	106,302	162,000	55,698	34.4
Group Ins	350,300	35,771	331,141	350,300	19,159	5.5
Workers Comp Ins	19,440	-	9,248	19,440	10,192	52.4
FICA/Medicare	56,400	7,681	54,899	56,400	1,501	2.7
Misc Benefits	-	-	-	-	-	-
Total Wages and Benefits	1,864,630	197,810	1,703,046	1,864,630	161,584	8.7
Less: wages & ben charged to Capital Proj.	(119,732)	(44,580)	(171,155)	(119,732)	51,423	(42.9)
Total Operating Wages and benefits	1,744,898	153,229	1,531,891	1,744,898	213,007	12.2
Water Purchase HBMWD	1,086,800	90,648	1,077,266	1,086,800	9,534	0.9
Water Purchase Eureka	673,920	69,033	743,574	673,920	(69,654)	(10.3)
Water Analysis	5,000	1,092	7,566	5,000	(2,566)	(51.3)
Supplies/ Construction	125,800	10,895	78,280	125,800	47,520	37.8
Supplies/Office-Administration	4,800	146	4,680	4,800	120	2.5
Supplies/ Engineering	1,425	-	143	1,425	1,282	89.9
Supplies/ Maintenance	50,000	989	54,088	50,000	(4,088)	(8.2)
Temporary Labor	11,288	-	-	11,288	11,288	100.0
Repairs & Maintenance/Trucks	33,600	3,012	23,230	33,600	10,370	30.9
Equipment Rental	5,920	-	171	5,920	5,749	97.1
Building & Grounds Maintenance	1,440	-	159	1,440	1,282	89.0
Electrical Power	159,500	15,560	164,805	159,500	(5,305)	(3.3)
Telephone	4,560	-	2,573	4,560	1,987	43.6
Postage	1,290	184	408	1,290	882	68.4
Freight	912	-	60	912	852	93.4
Chemicals	12,000	1,241	9,888	12,000	2,112	17.6
Liability Insurance	-	-	-	-	-	-
Engineering	5,850	-	268	5,850	5,583	95.4
Other Professional Services	3,600	1,283	9,291	3,600	(5,691)	(158.1)
Transportation	37,620	2,652	28,778	37,620	8,842	23.5
Office Equip. Maintenance	3,375	70	1,990	3,375	1,385	41.1
Computer Software Maintenance	17,280	158	15,642	17,280	1,638	9.5
Memberships & Subscriptions	1,272	-	977	1,272	295	23.2
Bad Debts & Minimum Balance Writeoff	-	(2)	9,492	-	(9,492)	-
Conference & Continuing Ed	5,950	-	654	5,950	5,296	89.0
Certifications	1,620	55	1,087	1,620	533	32.9
State/County & LAFCO Fees and Charges	13,600	1,409	22,613	13,600	(9,013)	(66.3)
Hydraulic Water Model Maintenance	5,000	-	5,869	5,000	(869)	(17.4)

HUMBOLDT COMMUNITY SERVICES DISTRICT
BUDGETARY STATEMENT OF REVENUES AND EXPENSES
Water Fund

June 2021

	Budgeted 2020-21	Current Month-to-Date	Actual Year-to-Date	Budgeted Year-to-Date	Y.T.D. Variance Actual to Budget	% Variance
Human Resources	9,477	-	419	9,477	9,058	95.6
Miscellaneous	2,640	-	-	2,640	2,640	100.0
General & Admin Expense Allocation	225,130	13,296	170,076	225,130	55,054	24.5
TOTAL OPERATING EXPENSES	4,255,567	364,950	3,965,935	4,255,567	289,632	6.8
LONG TERM DEBT PAYMENTS						
Safe Drinking Water Bond	177,429	-	177,558	177,429	(129)	(0.1)
2012 CIP & Refi.	115,560	-	115,560	115,560	0	0.0
Davis-Grunsky Loan	6,051	344	6,051	6,051	(0)	(0.0)
VacCon Truck Loan	60,256	-	60,256	60,256	0	0.0
Debt Service: Allocated	-	-	-	-	-	-
					-	-
TOTAL LONG TERM DEBT PAYMENTS	359,296	344	359,425	359,296	(129)	(0.0)
CAPITALIZED EXPENDITURES						
Vehicles/Rolling Stock/Capital Equipment	111,720	-	1,471	111,720	110,249	98.7
Building & Yard Improvements	41,325	-	-	41,325	41,325	100.0
Capital Improvements Water	1,525,000	109,008	1,388,334	1,525,000	136,666	9.0
Engineering & Studies	54,150	-	(2,083)	54,150	56,233	103.8
TOTAL CAPITAL EXPENDITURES	1,732,195	109,008	1,387,722	1,732,195	344,473	19.9
INTERFUND TRANSFERS IN	-	-	-	-	-	
BUDGET SURPLUS (DEFICIT)	(629,903)	(16,582)	99,979	(629,903)	729,882	115.9

HUMBOLDT COMMUNITY SERVICES DISTRICT
BUDGETARY STATEMENT OF REVENUES AND EXPENSES
Sewer Fund

June 2021

	Budgeted 2020-21	Current Month-to-Date	Actual Year-to-Date	Budgeted Year-to-Date	Y.T.D. Variance Actual to Budget	% Variance
OPERATING REVENUE						
Sewer Service Charges	4,952,219	410,746	4,828,550	4,952,219	(123,669)	(2.5)
Sewer Service Charges - Pass Through	1,018,622	71,547	782,162	1,018,622	(236,460)	(23.2)
Sewer Construction Fees	12,000	17	21,216	12,000	9,216	76.8
Account Fees	64,500	5,760	60,387	64,500	(4,113)	(6.4)
Inspection Fees	2,850	-	-	2,850	(2,850)	(100.0)
Reimbursable Maintenance Fees	200	-	-	200	(200)	(100.0)
Miscellaneous	5,000	37	824	5,000	(4,176)	(83.5)
TOTAL OPERATING REVENUE	6,055,391	488,108	5,693,139	6,055,391	(362,252)	(6.0)
NON-OPERATING REVENUE						
Sewer Capital Connection Fees	78,000	-	106,602	78,000	28,602	36.7
Interest/General	6,453	(2,293)	(2,293)	6,453	(8,746)	(135.5)
Discounts Earned	720	150	835	720	115	16.0
Sales:Fixed Assets/Scrap Metal	32,482	-	28,591	32,482	(3,892)	(12.0)
Bad Debt Recovery	946	310	2,834	946	1,888	199.6
TOTAL NON-OPERATING REVENUE	118,601	(1,833)	136,569	118,601	17,968	15.1
TOTAL DISTRICT REVENUE	6,173,992	486,276	5,829,708	6,173,992	(344,284)	(5.6)
OPERATING EXPENSES						
Wages Direct	435,000	51,904	468,296	435,000	(33,296)	(7.7)
Wages & Benefits: Allocated	571,490	43,092	481,346	571,490	90,144	15.8
Benefits: PERS	103,500	4,154	65,689	103,500	37,811	36.5
Group Ins	214,700	17,190	228,641	214,700	(13,941)	(6.5)
Workers Comp Ins	11,880	-	8,476	11,880	3,404	28.7
FICA/Medicare	36,000	3,961	35,680	36,000	320	0.9
Misc Benefits	-	-	-	-	-	-
					-	-
Total Wages and Benefits	1,372,570	120,300	1,288,129	1,372,570	84,441	6.2
Less: wages & ben charged to Capital Proj.	(42,068)	(212)	(42,371)	(42,068)	303	(0.7)
Total Operating Wages and benefits	1,330,502	120,088	1,245,758	1,330,502	84,744	6.4
Sewage Treatment: Operating & Maint.	1,529,995	119,525	1,434,300	1,529,995	95,695	6.3
Sewer Analysis	5,000	-	-	5,000	5,000	100.0
Supplies/ Construction	44,200	6,549	38,968	44,200	5,232	11.8
Supplies/ Office-Administration	4,800	110	3,531	4,800	1,269	26.4
Supplies/ Engineering	1,075	-	303	1,075	772	71.8
Supplies/ Maintenance	50,000	2,022	26,779	50,000	23,221	46.4
Temporary Labor	5,912	-	-	5,912	5,912	100.0
Repairs & Maintenance/Trucks	26,400	1,177	17,008	26,400	9,392	35.6
Equipment Rental	2,080	-	16,913	2,080	(14,833)	(713.1)
Building & Grounds Maintenance	1,200	-	120	1,200	1,080	90.0
Electrical Power	69,600	4,367	56,264	69,600	13,336	19.2
Telephone	2,280	-	1,941	2,280	339	14.9
Postage	960	138	298	960	662	69.0
Freight	688	-	155	688	533	77.5
Legal	-	-	-	-	-	-
Engineering	1,500	-	-	1,500	1,500	100.0
Other Professional Services	3,600	-	2,885	3,600	715	19.9
Transportation	28,380	2,001	21,710	28,380	6,670	23.5
Office Equip. Maintenance	2,475	53	1,501	2,475	974	39.4
Computer Software Maintenance	12,960	-	10,607	12,960	2,353	18.2

HUMBOLDT COMMUNITY SERVICES DISTRICT
BUDGETARY STATEMENT OF REVENUES AND EXPENSES
Sewer Fund

June 2021

	Budgeted 2020-21	Current Month-to-Date	Actual Year-to-Date	Budgeted Year-to-Date	Y.T.D. Variance Actual to Budget	% Variance
Memberships & Subscriptions	848	-	1,004	848	(156)	(18.4)
Bad Debts & Minimum Balance Writeoff	-	-	129	-	(129)	-
Conference & Continuing Ed	7,480	-	190	7,480	7,290	97.5
Certifications	1,242	41	176	1,242	1,066	85.8
State/County & LAFCO Fees and Charges	7,200	1,063	6,613	7,200	587	8.2
Human Resources	7,047	-	316	7,047	6,731	95.5
Miscellaneous	1,920	(1)	(2)	1,920	1,922	100.1
General & Admin Expense Allocation	225,130	13,296	170,076	225,130	55,054	24.5
TOTAL OPERATING EXPENSES	3,374,474	270,430	3,057,541	3,374,474	316,933	9.4
LONG TERM DEBT PAYMENTS						
2014 Wastewater Revenue Bonds	485,575	-	485,572	485,575	3	0.0
2012 CIP & Refi.	243,660	-	243,660	243,660	0	0.0
VacCon Truck Loan	20,085	-	20,085	20,085	(0)	(0.0)
Debt Service: Allocated	-			-	-	-
					-	-
TOTAL LONG TERM DEBT PAYMENTS	749,320	-	749,317	749,320	3	0.0
CAPITALIZED EXPENDITURES						
Vehicles/Rolling Stock/Capital Equipment	344,280	-	532,301	344,280	(188,021)	(54.6)
Building, Yard& Paving Improvements	31,175	-	-	31,175	31,175	100.0
Capital Improvements Sewer	220,000	9,914	93,487	220,000	126,513	57.5
Engineering & Studies	79,600	-	6,989	79,600	72,611	91.2
TOTAL CAPITAL EXPENDITURES	675,055	9,914	632,778	675,055	42,277	6.3
OTHER						
City of Eureka Projects:						
Treatment Plant	1,030,095	590,719	596,221	1,030,095	433,874	42.1
Martin Slough	-	-	1,653	-	(1,653)	-
TOTAL OTHER	1,030,095	590,719	597,874	1,030,095	432,221	42.0
BUDGET SURPLUS (DEFICIT)	345,048	(384,788)	792,198	345,048	447,150	(129.6)

HUMBOLDT COMMUNITY SERVICES DISTRICT
BUDGETARY STATEMENT OF REVENUES AND EXPENSES
General Fund

June 2021

	Budgeted 2020-21	Current Month-to-Date	Actual Year-to-Date	Budgeted Year-to-Date	Y.T.D. Variance Actual to Budget	% Variance
OPERATING REVENUE						
Interest (will be allocated to w/s @ y/e)	-	(1,319)	(1,319)	-	(1,319)	-
Miscellaneous	-	-	-	-	-	-
TOTAL OPERATING REVENUE	-	(1,319)	(1,319)	-	(1,319)	-
NON-OPERATING REVENUE						
Property Taxes	350,000	-	14,580	350,000	(335,420)	(95.8)
Insurance Rebate	-	-	34,184	-	34,184	-
Other Non-Operating Revenue	-	-	-	-	-	-
TOTAL NON-OPERATING REVENUE	350,000	-	48,764	350,000	(301,236)	(86.1)
TOTAL DISTRICT REVENUE	350,000	(1,319)	47,444	350,000	(302,556)	(86.4)
OPERATING EXPENSES						
Wages Direct	360,000	23,992	265,211	360,000	94,789	26.3
Benefits: PERS	184,500	20,527	243,113	184,500	(58,613)	(31.8)
Group Ins	565,000	39,739	457,347	565,000	107,653	19.1
Workers Comp Ins	4,680	-	2,175	4,680	2,505	53.5
FICA/Medicare	27,600	1,905	21,102	27,600	6,498	23.5
Misc Benefits	1,200	20	190	1,200	1,010	84.2
Total Wages and Benefits	1,142,980	86,183	989,138	1,142,980	153,842	13.5
Less: wages & ben charged to Capital Proj.	-	-	(26,445)	-	26,445	-
Less: Allocated to Water and Sewer Funds	(1,142,980)	(86,183)	(962,693)	(1,142,980)	(180,287)	15.8
Total Unallocated Wages and Benefits	-	-	-	-	-	-
Supplies/ Construction	-	-	-	-	-	-
Supplies/ Administration	6,400	73	6,920	6,400	(520)	(8.1)
Supplies/ Engineering	-	-	300	-	(300)	-
Supplies/ Maintenance	-	-	42	-	(42)	-
Invoicing	52,476	4,383	53,584	52,476	(1,108)	(2.1)
Web Payment Portal	6,000			6,000	6,000	
Temporary Labor	10,000	-	-	10,000	10,000	100.0
Repairs & Maintenance/Trucks	-	-	-	-	-	-
Equipment Rental	-	-	-	-	-	-
Building & Grounds Maintenance	21,360	1,030	22,124	21,360	(764)	(3.6)
Electrical Power	60,900	5,150	58,531	60,900	2,369	3.9
Street Lights	70,000	2,043	59,842	70,000	10,158	14.5
Telephone	7,410	916	8,728	7,410	(1,318)	(17.8)
Postage	750	-	2,128	750	(1,378)	(183.7)
Freight	-	-	-	-	-	-
Liability Insurance	65,000	-	54,488	65,000	10,512	16.2
Legal Services	30,000	960	6,699	30,000	23,302	77.7
Accounting	16,000	133	10,612	16,000	5,388	33.7
Engineering	7,650	-	255	7,650	7,395	96.7
Other Professional Services	10,800	-	5,250	10,800	5,550	51.4
Bank Service Charges	42,000	3,950	47,220	42,000	(5,220)	(12.4)
Transportation	-	-	-	-	-	-
Office Equip. Maintenance	16,650	269	6,171	16,650	10,479	62.9
Computer Software Maintenance	5,760	133	6,152	5,760	(392)	(6.8)
Memberships & Subscriptions	19,080	(2,998)	12,389	19,080	6,691	35.1
Bad Debts & Minimum Balance Writeoff	12,000	-	-	12,000	12,000	100.0
Conference & Continuing Ed	3,570	-	314	3,570	3,256	91.2
Certifications	2,538	-	-	2,538	2,538	100.0

HUMBOLDT COMMUNITY SERVICES DISTRICT
BUDGETARY STATEMENT OF REVENUES AND EXPENSES
General Fund

June 2021

	Budgeted 2020-21	Current Month-to-Date	Actual Year-to-Date	Budgeted Year-to-Date	Y.T.D. Variance Actual to Budget	% Variance
State/County & LAFCO Fees and Charges	19,200	309	860	19,200	18,340	95.5
Elections Expense	3,500	14,869	14,869	3,500	(11,369)	(324.8)
Human Resources	7,776	90	10,496	7,776	(2,720)	(35.0)
Miscellaneous	7,440	(3,673)	170	7,440	7,270	97.7
Director's Fees	16,000	1,000	11,850	16,000	4,150	25.9
General & Admin Expense Allocation	(450,260)	(26,592)	(340,152)	(450,260)	(110,108)	24.5
TOTAL OPERATING EXPENSES	70,000	2,043	59,842	70,000	10,158	14.5
LONG TERM DEBT PAYMENTS						
2014 PGE Energy Efficiency Loan	-	-	-	-	-	-
2012 CIP & Refi	-	-	-	-	-	-
Less: Allocated to Water & Sewer Funds	-	-	-	-	-	-
TOTAL LONG TERM DEBT PAYMENTS	-	-	-	-	-	-
CAPITALIZED EXPENDITURES						
				-		
Vehicles/Rolling Stock/Capital Equipment	-	-	-	-	-	-
Building, Yard & Paving Improvements	-	-	26,193	-	(26,193)	-
Engineering & Studies	-	-	527	-	(527)	-
Less: Allocated to Water & Sewer Funds	-	-	-	-	-	-
TOTAL CAPITAL EXPENDITURES	-	-	26,720	-	(26,720)	
INTERFUND TRANSFER OUT		-	-	-		
BUDGET SURPLUS (DEFICIT)	280,000	(3,362)	(39,118)	280,000	(319,118)	(114.0)

Humboldt Community Services District
Notes
June 2021

Note 1 - Pass-Through Water & Sewer Charges

Pass-Through charges were not in effect in July. Prior year pass-through rates expired in June and the new rates went into effect in August. Additionally, sewer pass-through rates were set lower than what would be needed to achieve the desired pass-through income as budgeted. Usage, as set according to customer Winter Average, has also been lower than originally estimated, resulting in further reduction in income compared to budget.
See FM memo in Nov 24 Board Packet for further info.

Note 2 - Total Non Operating Revenue

The district has not yet received final reporting information of Property tax and General Interest revenues for the Fiscal year, but they will be entered into the 2021 FY once received.
Fixed Asset and scrap sales occur sporadically.
Capital Connection fee income is higher than budget primarily due to a large amount of connection fees collected for two large development projects.

Note 3 - Water Purchases - City of Eureka and HBMWD

While the 1MG tank at Walnut Drive was off line, water for areas normally served by this tank and sourced from HBMWD was instead sourced from City of Eureka Water. The City charges based on actual usage, while HBMWD charges based on annual amortized usage. As a result of this difference in billing methodology, charges from City of Eureka increased, while charges from HBMWD remained unchanged. It is expected that the District will see reduced billing from HBMWD reflecting the reduced usage when HBMWD next calculates amortized usage.

Note 4 - Equipment Rental

The primary Equipment rental expense for FY 2021 was the rental of the temporary VacCon Truck unit used while awaiting delivery of the District's new VacCon truck.

Note 5 - Bank Service Charges

As a greater number of District ratepayers utilize credit and debit cards to pay their utility bills, bank service charges increase proportionately. This will be alleviated with the implementation of a credit card payment system that allows for pass-through of processing fees.

Note 6 - Elections Expesne

Elections expense for 2020 exceeded original estiamtes due to multiple factors. The District had one additional seat in the election than originally anticipated, increasing the Districit's cost share proportionally. Elections expenses were also much higher than typical due to Covid-19.

Note 7 - Vehicles, Rolling Stock & Equipment

The primary expenditure for Vehicles, Rolling Stock & Equipment was the purchase of a new VacCon Truck unit to replace the previous failed unit.

Note 8 - Engineering

Engineering Expense - a/c 6810 - Operating Expense	6/30/2021	YTD
General Fund		
SHN Consulting Engineers	-	255
Water Fund		
Water Model Calibration		
SHN Consulting Engineers		1,616
MacKay-Sposito		4,520
Sewer Fund		
none	-	-
Total posted to 6810	**-**	**6,391**
Engineering & Studies - a/c 9040 - Capital Improvement Projects		
Water Fund		
McKay Ranch Water Study		
SHN Consulting Engineers	-	10,484
Sewer Fund		
So Broadway FM Test/Design		
SHN Consulting Engineers	-	1,600
Total Engineering posted to 9040	**-**	**12,084**
Non Engineering Costs Posted to 9040		
McKay Annexation	-	396
McKay Ranch Water Study	-	2,261
McKay Ranch Water Study-Billed to Kramer	-	(19,879)
Eitzen Annexation (to be reimbursed)	-	5,000
So Broadway FM Test/Design		3,043
	-	(9,179)
Grand Total posted to 9040	**-**	**2,905**
Engineering Costs charged to other CIPs:		
Pine Hill Bridge Water Line		
SHN Consulting Engineers		19,585
Ridgewood WBS		
SHN Consulting Engineers	-	1,710
Ridgewood Tank Rahab		
SHN Consulting Engineers	-	965
Sea Ave FM Reversal		
SHN Consulting Engineers	-	2,574
Walnut 1MG Tank		
North Coast Labs	-	355
Harper and Associates	-	59,564
Tower Lane SMR		
SHN Consulting Engineers	-	85
Christian Ln Water Main		
SHN Consulting Engineers	-	363
Golf Course Sewer Slough Xing		
SHN Consulting Engineers	-	3,978
Total Engineering costs charged to other CIPs	**-**	**89,179**

Note 9 - City of Eureka Wastewater CIP

The City of Eureka adjusted the way in which they bill the District for Capital Improvement Projects. Previously, the District received a bill at the end of each Fiscal Year for the District's share of Capital Improvement Project Expenses for the Fiscal Year. This year, the City has adjusted to billing the District for Capital Improvements completed in the prior Calendar Year. As a result of this change, the District was billed only for projects occurring during the second half of Calendar year 2020, since the District had already been billed for Projects in the first half of CY 2020 in the billing dated June 2020. Only FY 2021 will see lower than expected CIP expense due to this. In future years, the District will be billed for a full Calendar Year of WWTP Capital Improvement Projects by the City.

Note 10 - Final Net

While this report is for the final month of the 2020-2021 Fiscal year, there may still be some items and entries still to be made affecting the Fiscal year. Such entries will be included on the final audited financial reports for the Fiscal year.