



TOWN OF DISCOVERY BAY

A COMMUNITY SERVICES DISTRICT

SDLF Gold-Level of Governance



President – Kevin Graves • Vice-President – Bill Mayer • Director – Robert Leete • Director – Bill Pease • Director – Chris Steele

**NOTICE OF THE REGULAR MEETING
OF THE WATER AND WASTEWATER COMMITTEE
OF THE TOWN OF DISCOVERY BAY**

THURSDAY, September 20, 2018

STANDING WATER AND WASTEWATER COMMITTEE REGULAR MEETING 4:00 P.M.

Community Center

1601 Discovery Bay Boulevard, Discovery Bay, California

Website address: www.todb.ca.gov

Water and Wastewater Committee Board Members

Chair Kevin Graves

Vice-Chair Bill Pease

A. ROLL CALL

1. Call business meeting to order 4:00 p.m.
2. Roll Call

B. PUBLIC COMMENTS (Individual Public Comments will be limited to a 3-minute time limit)

During Public Comments, the public may address the Committee on any issue within the Committee's jurisdiction which is not on the Agenda. The public may comment on any item on the Agenda at the time that item is before the Committee for consideration. Any person wishing to speak must come up to the designated location. There will be no dialog between the Committee and the commenter. Clarifying questions must go through the Committee.

C. DRAFT MINUTES TO BE APPROVED

1. August 16, 2018 Regular Water and Wastewater Committee DRAFT meeting minutes.

D. PRESENTATIONS

1. Water and Wastewater Update.

E. DISCUSSION ITEMS

1. Discussion regarding Wastewater Master Plan Population Projections by HERWIT.
2. Discussion regarding Wastewater Master Plan update/input with Stantec.
3. Discussion regarding the Diffuser update and discussion on next steps by HERWIT.
4. Discussion regarding Water Main Replacement for Edgeview Drive.
5. Discussion regarding the Revised Budget for the Newport PLC and SCADA Upgrade.

F. FUTURE DISCUSSION/AGENDA ITEMS

G. ADJOURNMENT

1. Adjourn to the next Standing Water and Wastewater Committee meeting at the Community Center located at 1601 Discovery Bay Boulevard.

"This agenda shall be made available upon request in alternative formats to persons with a disability, as required by the American with Disabilities Act of 1990 (42 U.S.C. § 12132) and the Ralph M. Brown Act (California Government Code § 54954.2). Persons requesting a disability related modification or accommodation in order to participate in the meeting should contact the Town of Discovery Bay, at (925) 634-1131, during regular business hours, at least forty-eight hours prior to the time of the meeting."

"Materials related to an item on the Agenda submitted to the Town of Discovery Bay after distribution of the agenda packet are available for public inspection in the District Office located at 1800 Willow Lake Road during normal business hours."



TOWN OF DISCOVERY BAY

A COMMUNITY SERVICES DISTRICT



President – Kevin Graves • Vice-President – Bill Mayer • Director – Robert Leete • Director – Bill Pease • Director – Chris Steele

**MINUTES OF THE REGULAR MEETING
OF THE WATER AND WASTEWATER COMMITTEE
OF THE TOWN OF DISCOVERY BAY
THURSDAY, August 16, 2018
STANDING WATER AND WASTEWATER COMMITTEE REGULAR MEETING 4:00 P.M.
Community Center
1601 Discovery Bay Boulevard, Discovery Bay, California
Website address: www.todb.ca.gov**

Water and Wastewater Standing Committee Board Members

*Chair Kevin Graves
Vice-Chair Bill Pease*

- A. ROLL CALL**
 - 1. Call business meeting to order 4:00 p.m. – By Chair Graves.
 - 2. Roll Call – All present with the exception of Finance Manager Breitstein and District Water Engineer Shobe.
- B. PUBLIC COMMENTS (Individual Public Comments will be limited to a 3-minute time limit)**
None
- C. DRAFT MINUTES TO BE APPROVED**
 - 1. July 19, 2018 Regular Water and Wastewater Standing Committee DRAFT meeting minutes – Approved.
- D. PRESENTATIONS**
 - 1. Water and Wastewater Update.
District Engineer Harris – Provided an update regarding the Operating and Maintenance Manual (O&M) related to the chapters complete and being reviewed (5 chapters) more by the end of the month, the NPDES Permit and the Wastewater Master Plan (meeting scheduled for Thursday, August 23, 2018 at 2:00 p.m. Plant No. 2). There was discussion regarding the contractor for the projects (Stantec), discussion time and planning for the Denitrification, flow changes, baseline/growth in Discovery Bay, and planning for engineering/construction. There is a State mandate for Denitrification, December 31, 2023). The discussion continued regarding the funding and a Bond or an alternative to the Bond (Direct Financing) for Denitrification.
Project Manager Sadler – Provided an update regarding the Newport Water Treatment Plant Control Panel (RFP in October), and pull/rehab of Well #4.
- E. DISCUSSION ITEMS**
 - 1. Discussion regarding the Water Main on Discovery Bay Boulevard.
Water and Wastewater Manager Koehne – Provided the details regarding the Water Main on Discovery Bay Boulevard related to design from an Engineering Firm and to begin the process. There was discussion regarding the pipe that runs from Firwood and Discovery Bay Boulevard.

Meeting with District Engineer Harris for Wastewater Master Plan – add to the list for dates/times; General Manager Davies, Chair Graves, and Vice-Chair Pease.
- F. FUTURE DISCUSSION/AGENDA ITEMS**
- G. ADJOURNMENT**
 - 1. The meeting adjourned at 4:25 p.m. to the next Standing Water and Wastewater Committee meeting at the Community Center located at 1601 Discovery Bay Boulevard.

//cmc – 08-17-18
<http://www.todb.ca.gov/agendas-minutes>

Table A1-1
Revisions to Projected Growth within TDBCSD

Development	Final Draft Report Number	Revised Number	Change
Residential, Homes			
Approved, But Not Yet Built	600	722	122
Undeveloped Lots (Discovery Bay Proper)	55	55	---
Pantages	300 ^(a)	300 ^(a)	---
Newport Point	70	70	---
Villages (Hoffman)	80	80	---
Golf Course	13	13	---
5-Acre Lots	5	5	---
Evans	---	19	19
Total	1,123	1,264	141
Office and Business Park, Acres			
Bixler Business Park	45	45	---
Marsh Creek Office	45	45	---
Total	90	90	---
Commercial, Acres			
Highway 4	5	5	---
Discovery Bay / Willow Lake	5	5	---
Total	10	10	---

(a) A portion of this property is outside of the current TDBCSD service area boundary.

Table A1-2
Revised Average Annual Flows from Projected Growth

Development Type	Units	Number		Sewage Generation Rate, gpd/unit	Projected Flow, gpd	
		Final Draft	Revised		Final Draft	Revised
Residential	Homes	1,123	1,264	335	376,205	423,440
Commercial	Acres	10	10	1,600	16,000	16,000
Business Park / Office	Acres	90	90	2,000	180,000	180,000
Total					572,205 round to 570,000	619,440 round to 620,000

Section 3

Future Land Use

In this section, existing and future land uses within the service area of the Town of Discovery Bay Community Services District Wastewater Treatment Plant (TDBCSD WWTP) are considered. The purpose for considering such land uses is to determine how much new development can be added so that potential increases in wastewater flows and loads can be estimated.

3.1 Land Use Map

A map showing existing and planned land uses within the TDBCSD service area is presented in Figure 3-1.

3.2 Projected Growth within the Service Area

Projected growth through buildout within the TDBCSD service area includes both residential and non-residential developments. The specific development areas and the projected growth amounts were obtained from the District Manager and are as shown in Table 3-1.

Table 3-1
Projected Growth within TDBCSD

Development	Number
Residential, Homes	
Approved, But Not Yet Built	600
Undeveloped Lots (Discovery Bay Proper)	55
Pantages	300 ^(a)
Newport Point	70
Villages (Hoffman)	80
Golf Course	13
5-Acre Lots	5
Total	1,123
Office and Business Park, Acres	
Bixler Business Park	45
Marsh Creek Office	45
Total	90
Commercial, Acres	
Highway 4	5
Discovery Bay / Willow Lake	5
Total	10

(a) A portion of this property is outside of the current TDBCSD service area boundary.

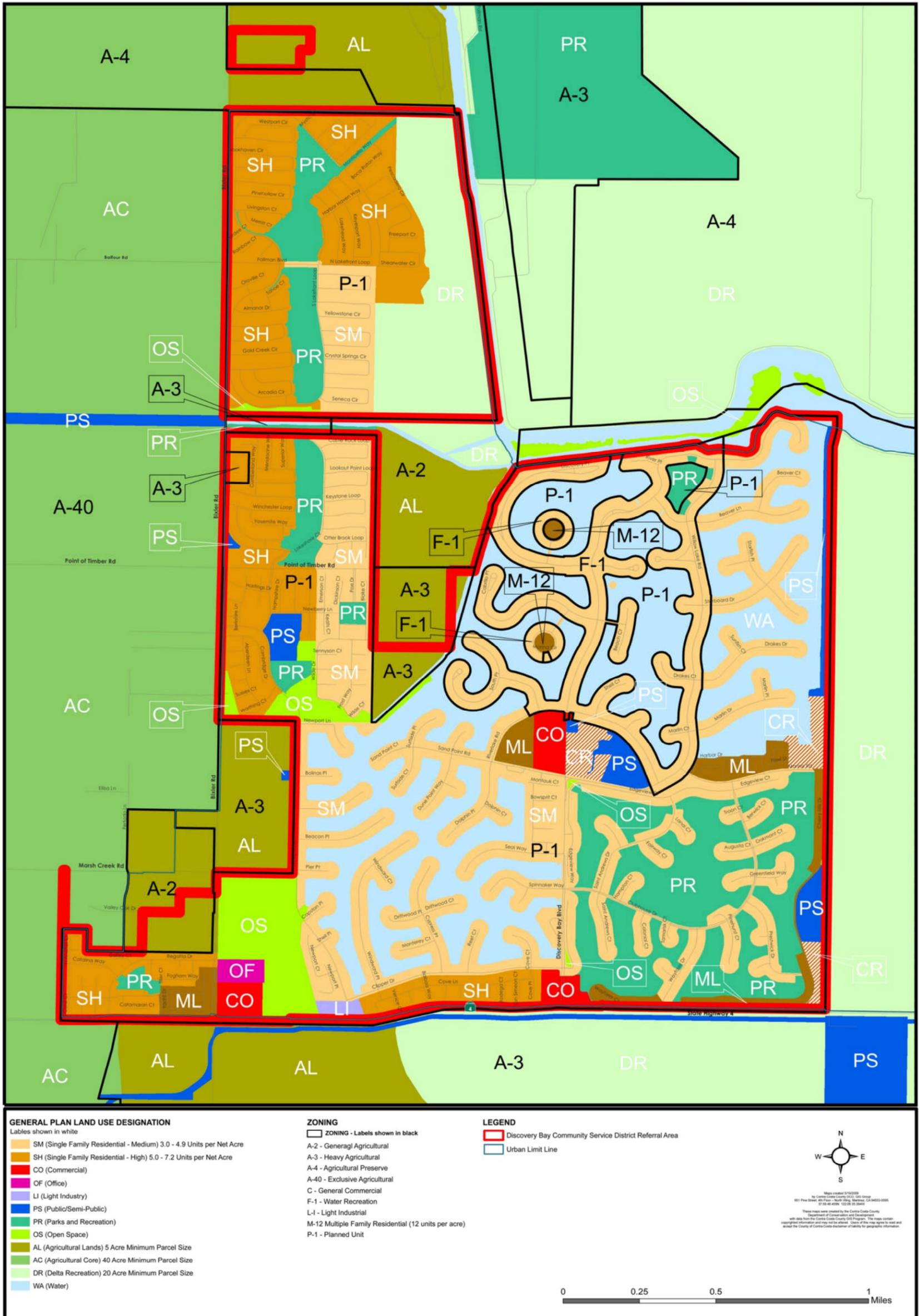


Figure 3-1
 Discovery Bay Area Community Service District Area Land Use Map

To:	Gregory Harris HERWIT Engineering	From:	Eric Zeigler, Rich Stowell Stantec Consulting Services Inc.
File:	184031042	Date:	September 5, 2018

Reference: Permitting Team Review of Diffuser Report

We provide the following input per the August 31, 2018 email (Subject: Discovery Bay Outfall Diffuser) from Gregory Harris to Steve Beck requesting:

- Review of diffuser report;
- Provide any input on a course of action for the Town; and,
- Some assessment as to how hard or easy some of these alternatives will be.

This review roughly follows the format of the document being reviewed: Sanitary Outfall Assessment for the Town of Discovery Bay, Worley Parsons, 08 June 2018.

Introduction

The Town has experienced diminishing effluent discharge capacity through its multi-port, cross-river diffuser located on the bottom of Old River. The observed problem is thought to be a consequence of reduced pumping capacity (i.e., pump impellor wear) and/or obstructions in sections in the overall outfall pipe: pipe corrosion, root penetration, debris blockage, accumulation crushing, etc.

Background

Diffuser design: 18" diameter pipe reduced to 6". 36 ports on 3-foot centers with a 2" Series 35 Longneck Tideflex Valve on each port. As of a 2013 underwater survey, 2 ports were "missing" and no flow (except for one port) was observed in the final 6" diffuser segment (16.5' long). A December 7, 2017, inspection (over water and in-pipe via camera) reported:

- No damage to outfall above water
- No erosion of bank where diffuser is located
- No significant obstruction of 18" HDPE segment (70') except for "algae" growth "along the walls" of the pipe. We think they are saying the inner surface of the pipe had algae growth. Algae generally require sunlight; thus, we think they observed filamentous bacterial growths/"slimes".
- 10" HDPE segment (30.5') had similar growths.
- At station 0 + 190 ft, the 10" segment was blocked, and the camera could go no further.
- A pump test was completed to determine actual pressure needed to accomplish a given effluent discharge rate. The average test result was 3.11 Mgal/d at 20 psi gauge. The anticipated result was 15 psi. The condition of the diffuser was causing additional back pressure on the pumps.

The overall conclusion of the Worley Parsons (WP) assessment appears to be:

Reference: Permitting Team Review of Diffuser Report

“These results indicated that the current system has increased head losses and therefore the lift station has to operate at a higher pumping head to convey the flow through the system. The higher-pressure head required is a result of additional losses encountered by flow being channeled through a lower number of diffusers which increases the jet velocity and the loss at each Tideflex valve. As expected, these head losses may be attributed to the obstruction observed in the outfall diffuser”.

Four Outfall Upgrade/Repair Options

We had some trouble understanding what each option entails. It is not clear whether reference to a “header” is the pipe leading to the actual diffuser, or is the diffuser, itself. The options discussion, scour discussion, and cost estimates section should be very clear as to what is and is not in the project. Use of terms like “may” or “alternative” left us guessing as to what’s included in the cost estimate. That, however, is not particularly relevant to our review from an NPDES permitting perspective. Apparently, all options include a metal cage with small holes on the river bed over the entire length of the diffuser to protect the port valves from damage by physical debris and anchors, though not disclosed in the options section.

Option1: Remove the existing HDPE diffuser (123’) and replace with a new, similar, 36-port HDPE diffuser. This option is basically major maintenance; the Regional Water Board permit should not need updating. Work in the river will require environmental permits. These permits may be complicated if State/Federal agencies continue to believe endangered species may be impacted by construction. This issue is common to all options and should be addressed by environmental permitting staff. Worley Parsons (WP) recommends installation of an articulated concrete block mat (ACBM) over the “header” to “prevent scour in the region of the diffuser”. This is common to all four options and needs environmental analysis. The impact of the metal cage over the diffuser also needs environmental analysis under all options.

Option 2: Remove the existing HDPE diffuser (123’) and replace with an 18” (no reductions) diffuser with only 3 to 5 discharge ports. The spacing of these ports is not disclosed. This option will require a new dispersion model with field verification. With 3 to 5 ports rather than 36, it is expected that the acute and chronic mixing zones will need to be longer than 5 feet to achieve the same 13.2:1 and 23:1 dilution credits, respectively (see Table F-6, page F-18, of current Regional Water Board Order). The Town currently receives benefit from dilution credits for copper, and chronic whole effluent toxicity. A more dispersed effluent discharge also assists with achieving compliance with receiving water limitations, particularly on temperature. The Town does not receive dilution credits benefits for ammonia and nutrients (e.g., nitrate plus nitrite) because the Regional Water Board believes there is no assimilative capacity for these parameters in Old River based on data available circa 2014. A question has been raised as to whether the Town’s receiving water monitoring has been conducted “in-river” or “from-bank”, with samples from the latter generally being of poorer quality, and not necessarily representative of the former. Town representatives have indicated the river samples are from bank. This sampling method does not necessarily protect Town interest. The significance of the reduced effluent dispersion rate resulting from 3-5 big ports versus 36 small ports is best evaluated by 1) Flow Science using their diffuser model calibrated by dye study results to reflect site-specific conditions, and 2) Stantec based on the Town’s most recent effluent and receiving water quality data to determine where dilution credits are needed and if river assimilative capacity exists based on most recent, new information. Based on these evaluations, Regional Water Board management needs to be approached to determine if increasing the length of the mixing zones is possible based on management’s evaluation of anti-degradation policy, anti-backsliding policy, and new information that the current diffuser design is prone to be in need of premature replacement, with associated costs and disturbance of the environment.

Option3: Abandon the existing diffuser in place (and remove the existing ports and valves) and replace it with a new diffuser similar to Option 2, except that it is installed flush to/in river bed level rather than buried a few

Reference: Permitting Team Review of Diffuser Report

feet in a trench in the river bed (per Options 1 and 2). This option involves installation of an articulated concrete block matt (ACBM) on the river bed to serve as a stabilizer over the diffuser. Presumably, the metal cage over the ports will be secured to the ACBM in this option. As to whether river bed scour will undercut the edges of the ACBM is unknown to this reviewer. The articulated design of the ACBM may result in edge scour not being a serious problem. Option 3 requires Flow Science and Stantec input per Option 2. Environmental permitting needs to address the impact of the ACBM and metal cage. As we understand the WP proposal, the metal cage will rise above the floor of the river, potentially creating a navigational hazard under low, low tide and river flow conditions. This concern is common to all options and is not an NPDES permitting matter.

Option 4: Remove the existing 10" and 6" diffuser segments (about 47' long) and replace them with 18" HDPE with the ports sized and spaced per the original design and Option 1. This is like Option 1, but with reduced disturbance of the river because only a portion (47') of the diffuser (123") is being replaced.

Common Upgrades to All Options

The WP report states "all options may include a flush system for periodic cleaning of the diffuser". Report recommendations include:

- Installing flushing valves at the upstream end and/or downstream end of the diffuser.
- Flushing (i.e., hydraulically scouring) the diffuser periodically with either effluent or river water (possibly also using compressed air). During flushing, the valve installed at each port would be closed to force the flushing water to flow through the diffuser and out the downstream end of the diffuser.
- Flushing water and associated debris would be discharged either to Old River (if permitted) or to shore "where it can be managed".
- Installing a metal cage with small openings along the entire length of the diffuser over the Tideflex valves to protect them from damage.

We agree with the flushing concept, but question whether release of raw (untreated) flushing water to the river will be permitted (as noted by the TV inspection, the flushing water debris will contain more than clean river sediment, e.g., organics will be scoured from the pipe walls and from the pipe invert). We agree with concern over physical damage to the diffuser by anchors and river bed load debris. However, we are concerned that a metal cage with small openings may tend to silt up to where the Tideflex valves may not operate properly. This issue is beyond our expertise. It is recommended that the valve manufacturer and/or fluvial hydrogeologist be contacted regarding the metal cage concept in this setting where bed load movement is expected to occur.

Comments Regarding Worley Parsons (WP) Regulatory Approvals Assessment

Option 1: We do not take material exception to the WP assessment. The ACBM is an alternative within Option 1 in report Section 6.1. We agree with WP's recommendation that slushing water be handled onshore (rather than attempt to permit direct discharge to the river). WP does not discuss the regulatory CEQA/NEPA implications of a cross-river, metal cage over the diffuser under any of the options. The implications of this cage will need to be evaluated for all options.

Option 2: We do not take material exception to the WP assessments, again, acknowledging that the proposed metal cage over the diffuser is not discussed.

Reference: Permitting Team Review of Diffuser Report

Scour Evaluation

WP appears to conclude that river scour poses a threat to the diffuser. Therefore, WP recommends that the diffuser under Options 1, 2, and 4 be placed in an excavated trench below the depth of scour, approximately 2.5 feet below the existing river bed. Additionally, an ACBM should be installed “above the header at the level of the existing bed to prevent scour in the region of the diffuser”. As to whether scour has occurred over the years of operation in the region of the diffuser is unknown to us.

Cost Estimate

The magnitudes and relative differences between the estimated costs are accepted as presented, no evaluation of said estimates was made.

Option	Construction Cost	Engineering & Inspection Cost	Implied Capital Cost
1	298,500	164,000	~460,000
2	296,900	164,000	~460,000
4	183,100	164,000	~350,000

As we understand WP’s text, the estimate of engineering and inspection cost is the same (\$164,000) regardless of option, though Options 1 and 4 are largely replacement in kind, possibly with improvements to facilitate flushing. For Options 1 and 4, additional mixing analyses should be none (for 1) to relatively limited (for 4). We would expect higher engineering and inspection costs with Options 2 and 3, relative to Options 1 and 4, but we do not know the details of WP’s options or thinking.

Evaluation of WP Conclusions and Recommendations

We do not take material exception to the WP conclusions. We believe WP’s recommendation of Option 3 may be premature until 1) Flow Science has provided an assessment of diminished “near-field” dispersion/dilution of the effluent in Old River, 2) Stantec has evaluated most recent effluent and receiving water data to determine what dilution credits the Town may need, and 3) Regional Water Board management has been approached about lengthening the permitted mixing zone from the current length of 5 feet. Otherwise, we do not take material exception to the WP recommendations.

Memo Conclusion

1. The foregoing represents the Stantec NPDES team “review” of the WP report without the benefit of diagrams of exactly what some of WP’s options entail and without the benefit of as-built drawings of the existing diffuser or studies related to that diffuser and its various permits, leases, environmental documents, etc.
2. We recommend that the Town contact Flow Science and Stantec regarding the effluent dispersion model and need for dilution credits. With those evaluations in hand, it is recommended that the Town contact the Regional Water Board regarding dilution, dilution credits, and mixing zone issues. Further, it is recommended that the Town get preliminary opinions from a qualified CEQA/NEPA consultant with extensive experience in Delta waterways as to the relative environmental complexity/risk/cost associated with each of the four options. We see no “fatal Flaws” in any of the options from an NPDES permitting perspective at this point (the dilution credits from the 3-5 port design is the most critical NPDES permit issue). We recommend that receiving water samples be collected from mid-

Reference: Permitting Team Review of Diffuser Report

river, at mid-depth, so as to be more representative of actual Old River water quality. We also recommend that a fluvial hydrogeologist be part of the Town's diffuser design team. Based on results from these activities, the Town should be in a better position to select a WP option for further evaluation.

3. Our assessment of how hard or easy the options are is based on the limited information made available for this review. WP states Option 3 requires less disturbance of the outfall area and may require an easier installation. From the report text, it is not clear why this is the case. Option 3, as we understand it, involves excavating a shallow trench in the river bed such that the diffuser plus the ACBM are at river bed level. We do not know design specifics about Options 2 or 3, but the WP report implies both diffusers are cross river (~120'). If this is the case, then Option 4, replacing just the 10" and 6" segments (47') appears to result in less river disturbance and appears to provide a larger zone of passage for aquatic life around the excavation disturbance area during construction. Option 3 requires a re-model of near-field effluent dispersion around the proposed 3-5 ports. Option 4 should entail quantification of the change in pressure at each port under the new (vs. old) design. The pressure difference may be immaterial relative to the range in pressure under which the diffuser operates, and relative to the pressure gradient across the Tideflex valves under the normal range of effluent flows and river depths. Without more information regarding the four options, we are inclined to think Option 4 is easiest, and has lowest cost. Option 3 involves installing a new diffuser design (needs new effluent dispersion model) at shallow depth in sediments expected to scour, except for the stabilizing effect of the ACBM. We have some concern that a diffuser overlain by a heavy "blanket" (the ACBM) in sediments that may not be stable under high river flow conditions may result in the diffuser and its "blanket" moving with sediment movement and sinking deeper into the sediment over time. Those are not NPDES permitting concerns, directly; we raise them based on experience with structures installed in the dynamic sediment zone of a river bed.

Stantec Consulting Services Inc.

Rich Stowell, PE, PhD

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Town of Discovery Bay CSD
 Project Budget
 Newport PLC and SCADA Upgrade - CIP Project #108
 Revised: 09/14/2018

No. Item	Contractor	Prior Estimates/ Contracts	Updated Estimates	Expended To-Date (Actual)	Remaining	Notes	
1	Design, Bidding and Project Management	LSCE/EPS	\$92,000.00	\$100,000.00	\$59,425.37	\$40,574.63	Estimate increase for the project re-bid, and projected costs to complete the work.
2	Construction and Programming	(not awarded)	\$150,000.00	\$225,000.00	\$0.00	\$225,000.00	PLC/programmer estimate increased based on prior bids recieved and other recent projects indicated increasing prices.
3	10% contingency for consttruction	N/A		\$22,500.00	\$0.00	\$22,500.00	10% contingency is for unknowns that may arrise during construction.
Total Estimate Costs		\$242,000.00	\$347,500.00	\$59,425.37	\$288,074.63		
Budget Analysis							
CIP Budget (Actual)		\$250,000.00	\$250,000.00	\$59,425.37	\$190,574.63	Actual available budget remaining	
Budget Surplus/Overage (Estimated)		\$8,000.00	(\$97,500.00)		(\$97,500.00)	Estimated overage based on the current estimate costs for construction	