

ATTACHMENT

Neary Lagoon

Pumping Summary and Discharge Report Forms

Monitoring Data

Neary Lagoon Summary

Dry Season Diversion & Wet Weather Pumping Discharges Monitoring

Dry Weather Diversion from Neary Lagoon to Wastewater Treatment Facility (previously SWMP BMP #MO-17)

During the dry season, Neary Lagoon discharge is diverted to the WWTF via a 12-inch bypass line so that this water is treated prior to discharge into the Pacific Ocean. The bypass line runs only if the water level is high enough in the lagoon. The City may divert lagoon water to the WWTF during the “wet weather season” if the treatment plant has adequate capacity, including both hydraulic and organic loading, at that time. This is done upon occasion to maintain consistent lagoon levels, and to minimize pump operation and discharges to the beach, in addition to treating the water prior to discharge.

The dry weather diversion to the WWTF is important for the receiving water quality because during the spring and summer months the bacteria levels in Neary Lagoon tend to increase primarily due to the reduced freshwater flows into the lagoon and the presence of the many birds and fish found at the lagoon. Thus, this water is diverted to the treatment plant for treatment prior to discharge to the Pacific Ocean in lieu of being discharged to Cowell Beach,

During the permit year, Neary Lagoon water was diverted to the Wastewater Treatment Facility (WWTF) year round until rains forced the gravity outlet opening. Lagoon water was diverted to the WWTF on the following dates: 6/30/14 to 12/14/14 and 2/1/15 to 6/30/15. Thus, during the permit year, lagoon water was diverted approximately 318 days.

Clean Neary Lagoon Storm Drain Lines and Discharge Bacteria Laden Water to the Sanitary Sewer System (previously SWMP BMP #MO-18)

The City typically cleans these lines and discharges the water to the sewer system for several weeks each year during the Fall Season. An accounting of the pumping, including the duration and amount of water discharged to the sanitary sewer system, is included in the Neary Lagoon Summary Attachment as part of the City’s storm water annual report.

In Fall 2014, as part of the Neary storm drain line cleaning in preparation for the wet season, WW Mains staff flushed the storm drain lines to the sanitary sewer system on 9/12/14. The flushing process discharged approximately 504,000 gallons of water to the sanitary sewer. Please note that the installation of the slide gates on the Neary Lagoon storm drain culverts running under the railroad tracks in late Spring 2014, as part of the Clean Beaches Initiative Grant work, has allowed the City to better clean both 66" gravity and force main pipelines.

Also, during spring 2015, an additional cleaning of the 66" force main and 66" gravity line was conducted per the City’s Clean Beach Grant work to reduce bacteria levels at Cowell Beach. This additional cleaning consisted of dewatering with a bypass pump from 4/13/15 to 6/30/15, with diversion of the water to the sanitary sewer/treatment plant for treatment.

Wet Weather Neary Lagoon Pumping Discharges

The City Wastewater Mains Division staff manually turns on the pump station pumps as needed during the wet season to prevent flooding. The brief operation of the pumps helps to remove the accumulation of sand blocking the Neary gravity storm drain line pipe opening at the beach outlet vault and thus allows lagoon water to flow/exit from this pipeline at Cowell Beach. Pump operation is typically about 10 minutes each time.

During the permit year, the pumps were operated once during the wet season as follows:

- December 11, 2014

Monitoring: Dry Season Line Cleaning & Wet Weather Pump Operations

City Environmental Compliance (EC) and Laboratory (Lab) staff collected the “Before Line Flushing” samples on September 9, 2014 prior to the Wastewater (WW) Mains Division annual cleaning/flushing of the Neary storm drain outlet pipes to Cowell Beach. WW Mains staff then cleaned the Neary Pump Station the week of October 6-17, 2014. EC/Lab staff then collected the “After Line Flushing” samples on October 21, 2014. These sampling results are included in the Neary Lagoon Summary Attachment along with the pumping discharge information for Neary Lagoon.

City EC and Lab staff collected receiving water samples both “before” and “after” the first pumping discharge of the wet season on December 11, 2014. These samples were collected on December 9 and December 12, 2014 respectively. Staff sampled upon receiving initial warning of pending large storm due to unknown timing of pumping, as noted in previous annual reports and discussed with RWQCB staff, and for safety reasons. The sampling results are also included in the Neary Lagoon Summary Attachment.

Revised Neary Lagoon Wet Weather Procedures per City Approved Guidance Document

In past years, the City of Santa Cruz had requested revisions to the Storm Water Management Program (SWMP) (Chapter 1: Municipal Operations Program) Neary Lagoon Management sections: Dry Weather Season Lagoon Sampling and Wet Weather Season Receiving Water Monitoring. This is because unpredictable winter storms and flooding potential make it difficult to estimate if and when the flood control pumps will need to be turned on and when sampling needs to occur. In addition, staff tries to turn on the flood control pumps during late night or early morning hours if possible in order to minimize impacts on beachgoers.

Thus, in coordination with RWQCB staff, the Neary Lagoon Wet Weather procedures were revised to add beach signage posting requirements regarding operation of the flood control pumps, and the requirement to sample “before/after” the first pump operations of the wet season was eliminated. The revised Neary Lagoon Management Procedures were then incorporated into Attachment 1 of the City’s Storm Water Program Guidance Document, which was approved by the RWQCB on February 27, 2015. Thus, in permit year 2015-2016, the revised procedures will be followed. (This permit year, the City SWMP procedures were followed because the first

operation of the flood control pumps occurred prior to the February 2015 approval of the Guidance Document and revised procedures.) For reference, the newly revised procedures, excerpted from Attachment 1 of the City Guidance Document, are included below:

Dry Weather Season: Lagoon Water Sampling

Coinciding with the pumping/flushing process described in the above BMP (#MO-18), the City conducts sampling inside the lagoon to assess water quality, particularly bacteria levels. Sampling is conducted as detailed below:

Sampling is conducted at the following times:

- 1) Before pumping to the sanitary sewer commences
- 2) After pumping to the sanitary sewer is terminated

Grab samples are taken at the following locations:

- 1) At the pump station (at the trash rack)
- 2) At the outlet from the lagoon into the gravity storm drain line (under the trestle, at the manhole with a slotted grate)
- 3) At the outlet from the lagoon into the force main storm drain pipe (at the manhole under the trestle at the force main)
- 4) At the head wall at Cowell Beach (inside the box)

The samples are analyzed for the following parameters:

- 1) Fecal coliform bacteria
- 2) Enterococci bacteria
- 3) TOC (Total Organic Carbon)
- 4) Ammonia
- 5) pH

The City will maintain information about lagoon water monitoring, including sampling results, on file. Lagoon water sample results will be provided in the SWMP annual reports.

Wet Weather Season

During the wet weather season, the City Wastewater Mains Division strives to maintain an open gravity system from Neary Lagoon to Cowell Beach via the 66" gravity storm pipeline. In addition, under certain conditions during the wet season when the lagoon elevation becomes too high, the City manually operates the flood control pumps in order to prevent flooding of the adjacent areas. Thus, the City abides by the following conditions for flood control pump operations:

1. Two hours prior to operation of the flood control pumps, the City will notify in writing, by fax or email, the following agencies of the date of discharge: the Central Coast Regional Water Quality Control Board (RWQCB), the Monterey Bay National Marine Sanctuary, the Coastal Commission, and the County of Santa Cruz Environmental Health Department. If two hours' notice is not possible, due to unforeseeable circumstances such as the weather, the City may provide less notice. The City, as its discretion, will also notify other interested parties if possible.

2. Prior to pump operation, the City will notify the public in the area of the impending discharge. In addition, the City has a permanent warning sign posted at the outfall structure stating that “Water from Storm Drain unsafe for swimming or water contact.” Also, the County of Santa Cruz, Department of Environmental Health, provides signage as necessary concerning health risks at Cowell Beach.
3. Prior to pump operation, whenever possible, the City will prepare the beach in front of the outfall structure to form a channel leading to the beach.

Beach Posting

Coinciding with the first discharge of the wet weather season that requires operation of the flood control pumps, the City will post Cowell Beach as follows:

1. The City will place a notice near the concrete stairs leading to Cowell Beach:
 - a. The notice will be placed on the wood post in the sand directly in front of the concrete stairs to Cowell Beach. If posting on the wooden post is not possible or safe due to beach, tidal or storm/weather conditions, staff will place a notice on the adjacent metal railing.
 - b. The notice will be posted prior to pump operation, either earlier that day or when staff arrives at the beach to notify the public of the impending discharge. The notice will remain posted for a minimum of 48 hours after the release due to pump operation.
 - c. The notice will have the following wording:

Please stay out of flow to ocean.
This water may have elevated bacteria levels.
This may elevate bacteria levels in the ocean.

2. The City will place signage near or adjacent to the storm water discharge “channel” or flow from the Neary Lagoon beach outlet vault to Cowell Beach and Monterey Bay.
 - a. One or more signs will be placed in the sand near or adjacent to the Neary Lagoon storm water discharge “channel” or flow. The exact sign location will be determined by beach, tidal, weather, and installation conditions on a case by case basis. For example, high tides or big waves will necessitate that the signage be placed closer to the beach outlet vault rather than the bay.
 - b. Because operation of the flood control pumps tends to be in the late afternoon, evening, or early morning hours if possible in order to minimize impacts to beach users, signage will be placed on the beach near the discharge channel the morning following pump operations. Signage will be placed on the beach as soon as possible by staff, which is typically by 9am, providing that beach, tidal, weather, and installation conditions do not hamper sign installation.

If operation of the flood control pumps occurs between 9am and 3pm, signage will be placed on the beach by staff that day as soon as possible and safe after the release occurs.

Typically, the initial release due to pump operations results in a considerable and strong flow of water across the beach, which makes it infeasible for staff to install signage near the discharge flow until it subsides.

The signage will remain posted for a minimum of 48 hours after the release due to pump operation. Because it is possible that tidal water or big waves will knock down signage, staff will repost missing signage as soon as possible.

c. The signage will have a graphic illustrating people or kids playing or recreating at the beach with a “stamp out” line through it. The purpose is to notify the public that playing in the discharge flow is not advised.

3. It is possible that during the first few years of implementing the Beach Posting conditions coinciding with the first discharge of the wet weather season requiring flood control pump operation, City staff may learn that the details in #1 and #2 above may be need to be revised for feasibility reasons or to improve communication to beach users. If so, the City will contact RWQCB staff for prior approval of any proposed revisions to the beach posting conditions.

Neary Lagoon Wastewater Mains Report FY 2014-2015

Dry Weather Season

Wastewater Mains flushing of the 66" force main and 66" gravity lines:

- Line Flushing was conducted on 9/12/14
- Pump Station was cleaned during the week of October 6-17, 2014
- Flushing process discharged 504,000 gallons of water to the sanitary sewer
- Environmental Compliance/Lab staff collected "before" samples on 9/9/14 and "after" samples on 10/21/14. Please note that of the four sampling points, the sampling point at the pump station isn't really applicable any more since installation of the slide gates under the railroad tracks last year, which was a component of the City's Clean Beaches Grant work to reduce bacteria levels at Cowell Beach. Closure of the Neary slide gates at the beginning of the dry season prevents the flow of water from Neary Lagoon to the manmade channel which flows to the pump station. Thus, there is very little water at the pump station trash rack for sample collection and thus this sampling point is no longer representative of flow from Neary Lagoon.

Wet Weather Season

Summary of Neary Lagoon pumping from July 1, 2013-June 30, 2014:

- Neary slide gates were opened on 11/20/14 although Neary flows were still being diverted to the WWTF at this time.
- Total of **1 pumping event** (pumps only had to be turned on once during winter to open the gravity line)
- Date of pumping events: December 11, 2014
- Total pump run time for event = 6 minutes
- Environmental Compliance/Lab staff collected "before" sample for first pumping/force main discharge of the wet season on 12/9/14. Staff sampled upon receiving initial warning of pending large storm due to unknown timing of pumping and for safety reasons. Staff collected "after" samples on 12/12/14.
- Note: there were two other discharges at Cowell Beach from the gravity line, when it breached without pump operations, on 11/25/14 and 2/4/15:
 - 1) On 11/25/14: The gravity line flowed without pumping when sand was removed from the pipe line opening; and
 - 2) On 2/4/15: WW Mains staff was preparing to turn on the pumps and had sent out notification of planned pump operations, however, the gravity line flowed on to the beach without pumping when head pressures caused a natural breach. Thus, the pumps were unneeded and not turned on.



DEPARTMENT OF PUBLIC WORKS
WASTEWATER MAINS

NEARY LAGOON DISCHARGE REPORTING FORM

Date form completed: 12-11-14

Name of person completing form: Chris CAVE

Public Works Division (or other): WW Collection / Flood Control

Date of discharge: 12-11-14

1. Is the flow pump or gravity discharge, or both? Pump
2. Estimated amount of total discharge (gallons). 198,000
3. Estimated duration of total discharge.
Pump time: #1 0 hrs #2 0 hrs #3 6 ^{min} ~~hrs~~ 6 minutes
4. Time of day or night (military time). 1130 hrs
5. Treatment plant influent flow rate (gallons) 25.97
6. Weather: Actual HEAVY RAIN Forecasted HEAVY RAIN
7. Information indicating a potential flood condition in lagoon area.
VERY LARGE STORM DUMPING HEAVY RAIN. PUMPS USED TO INSURE GRAVITY LINE COMPLETELY OPEN.
8. Comments and observations on beach usage, signage, ocean conditions, etc.:
BEACH CLEAR, NO SWIMMERS. MONITORED THROUGH DURATION OF PUMPING

* To be completed as soon as possible following observation of pump operation or gravity discharge on a daily basis. Submit weekly to Assistant Director of Public Works. Annual discharge report to be submitted to Regional Water Quality Control Board by May 15th of each year by Assistant Director.



City of Santa Cruz Wastewater Laboratory

Client: City of Santa Cruz - Storm Water Management Program

Contact: Akin Babatola for Suzanne Healy

Project Title: Storm Water Management Program - Neary Lagoon

Sampling Event: 9-9-2014

Samplers: AB / DM

Analytical Method				SM 5310 B	SM4500-NH3 D	SM 9222 D	EPA 1600	ELISA Microplate Test	EPA 4500-H+	
Date/Time Collected	Sample Type	Sample Description	LIMS ID	TOC (mg/L)	NH ₃ (mg/L as N)	Fecal Coliforms (CFU/100ml)	Enterococcus (CFU/100ml)	Caffeine (µg/L)	Field pH	SAMPLING OBSERVATIONS
9-9-14 @ 11:32	Grab	Pump House	AA60283-86	5.87	0.53	980	70	<0.175	7.9	VERY low water level with no flow
9-9-14 @ 11:13	Grab	Force Main	AA60287-90	4.82	0.71	132	3	<0.175	7.0	VERY low water level - nearly empty
9-9-14 @ 11:23	Grab	Gravity Main	AA60291-94	4.20	0.78	80	26	<0.175	7.4	VERY low water level with some plant debris
9-9-14 @ 10:58	Grab	Beach Vault	AA60295-98	4.07	1.10	156	64	<0.175	7.1	Low water level with a lot of trash on the upper landing within the vault
QC										
Method Blank				<0.2	<0.1	<1	<1			
Media Controls						pass	pass			
CRM %Recovery				104%	83.0% (GB)					
Spike %Recovery				109%	83.2% (GBC)					
Spike RPD				0.37%						
Duplicate RPD				1.23%	0.4%			0.0%		

QC Flag : GB (SWAMP) Matrix spike recovery not within control limits. GBC (SWAMP) CRM analyte recovery not within control limits.

Lab Manager:

QC Chemist



City of Santa Cruz Wastewater Laboratory

Client: City of Santa Cruz - Storm Water Management Program

Contact: Akin Babatola for Suzanne Healy

Project Title: Storm Water Management Program - Neary Lagoon

Sampling Event: 10-21-2014

Samplers: JM / FB

Analytical Method				SM 5310 B	SM4500-NH3 D	SM 9222 D	EPA 1600	ELISA Microplate Test	EPA 4500-H+	
Date/Time Collected	Sample Type	Sample Description	LIMS ID	TOC (mg/L)	NH ₃ (mg/L as N)	Fecal Coliforms (CFU/100ml)	Enterococcus (CFU/100ml)	Caffeine (µg/L)	Field pH	SAMPLING OBSERVATIONS
10-21-14 @ 11:30	Grab	Pump House	AA61198-AA61202	4.61	1.30	19	19	<0.175	7.3	maintenance crew present finishing screen installation. Conductivity 11mS
10-21-14 @ 11:00	Grab	Force Main	AA61193-AA61197	7.42	0.50	6	5	0.31	7.1	some beer cans present, water clarity good
10-21-14 @ 11:10	Grab	Gravity Main	AA61188-AA61192	3.55	1.10	8	3	<.175	6.9	some trash/candy wrappers, water clarity good
10-21-14 @ 11:50	Grab	Beach Vault	AA61183-AA61187	6.09	1.70	15	<2	0.29	7.6	some trash, soda cans, ect.
QC										
Method Blank				<0.2	<0.1	<1	<1			
Media Controls						pass	pass			
CRM %Recovery				106%	101%					
Spike %Recovery				102%	86%					
Spike RPD				3.30%						
Duplicate RPD				5.20%	7.0%			0.0%		

Lab Manager:

QC Chemist



City of Santa Cruz Wastewater Laboratory
ELAP CA 1176

Client: City of Santa Cruz - Storm Water Management Program

Contact: Akin Babatola for Suzanne Healy

Project Title: Storm Water Management Program - Neary Lagoon

Sampling Event: 12-9-2014 Sampler: FB								
Analytical Method				SM 5310 B		SM4500-H+	SM 9222 D	EPA 1600
Date/Time Collected	Sample Type	Sample Description	Lab ID No.	TOC (mg/L)	Field Temp °F	Field pH	Fecal Coliforms (CFU/100ml)	Enterococcus (CFU/100ml)
12-9-14 @ 11:41	Grab	Shoreline in front of NL Outfall N36.96200° W-122.02331°	AA62254	1.1	67.3	7.5	80	80
QC								
Method Blank				<0.1			<1	<1
Media Controls							pass	pass
CRM %R				98.2%				
Spike %R				89.8%				
Spike RPD				1.0%				
Duplicate RPD				1.2%				
WEATHER OBSERVATIONS: partly cloudy, SSW wind @ 2 Knots, 5 inches rain within past week with none within past 24-hr				RECEIVING WATER CHARACTERISTICS: NW swell 5-7 ft, Tide at 5.23 ft @ 11:15 pm				
SAMPLING OBSERVATIONS: High surf was coming over the sand in front of the Dream Inn and flowing back to the Neary Outfall channel. Channel area had some darker colored foam in it. No wildlife or people noted								

Sampling Event: 12-12-2014 Sampler: MC								
Analytical Method				SM 5310 B		SM4500-H+	SM 9222 D	EPA 1600
Date/Time Collected	Sample Type	Sample Description	Lab ID No.	TOC (mg/L)	Field Temp °F	Field pH	Fecal Coliforms (CFU/100ml)	Enterococcus (CFU/100ml)
12-12-14 @ 08:11	Grab	NL Outlet Channel N 36.96235° W -122.02359°	AA62326-28	8.4	55.6	7.2	11,000	20,800
12-12-14 @ 08:25	Grab	Outlet Mixing Zone with Ocean N 36.96186° W -122.02318°	AA62329-31	2.5	53.6	7.5	4,600	7,400
QC								
Method Blank				<0.1			<1	<1
Media Controls							pass	pass
CRM %R				97.1%				
Spike %R				81.5%				
Spike RPD				7.6%				
Duplicate RPD				0.3%				
WEATHER OBSERVATIONS: Light rain and clouds, S wind @ 5 kts.				RECEIVING WATER CHARACTERISTICS: Stormy seas, W swell 8-12ft. High tide 3.88 ft @ 1332.				
SAMPLING OBSERVATIONS: Water flowing through the Neary Outfall Channel was notably darker. No wildlife or people noted.								

Lab Manager:

QA/QC Chemist: