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Pillar Point Harbor Water Quality Monitoring Report
September 1, 2016

Background

Since 2002, Pillar Point Harbor (PPH) has been included on a statewide list of contaminated water bodies due to its high fecal indicator bacteria (FIB) concentrations. FIB are indicative of pathogens harmful to humans and can come from any warm blooded animal including pets, humans, and wildlife. This contamination continues to cause beach postings that warn the public that the water is contaminated and not suitable for contact.

In 2008, the Resource Conservation District (RCD) initiated the PPH Source Identification Project (RCD Pollution Study) to help characterize sources of bacterial contamination in the harbor. To follow up on this study, agreements were adopted between the San Mateo County Harbor District (HD) and the RCD to further address this issue and other water quality concerns by monitoring various water quality parameters within PPH as well as stormwater outfalls flowing into the harbor. This document includes water quality monitoring efforts conducted after the RCD Pollution Study and as of June 30th 2016. Monitoring data were collected from March 2013-November 2015 and analyzed against various water quality objectives (WQOs) designed to protect aquatic life, human health, recreation and other beneficial uses.

Inner Harbor Monitoring

Water quality sampling for HD started in March 2013 and involved collecting grab samples for FIB, *Enterococcus*, in inner PPH. Samples were collected near the live-aboard boats at 4-8 locations (Fig. 1) on a monthly basis until June 2015. Twice a year (wet season and dry season), five samples were collected at each site over a 30-day period to see calculate the geometric mean and see if *Enterococcus* values were consistent over time. Results were recorded, analyzed and measured against the San Francisco Bay Area Basin Plan *Enterococcus* WQO for water contact recreation. The WQOs used were 104 MPN/100 ml for a single sample and 35 MPN/100 ml for the geometric mean samples collected over the 30-day period.

Fig1. Inner harbor monthly sampling locations for bacteria between March 2013 and June 2015.

Stormwater Outfall Monitoring

Monitoring at stormwater outfalls in PPH took place in 2014 and 2015 for a variety of water quality parameters to better gauge overall water quality status and baseline conditions for a variety of pollutants. Four outfalls were selected to be sampled quarterly during two wet season events and two dry season events. These outfalls were Denniston Creek, Capistrano, St.Augustine/Bathhouse and Deer Creek (Fig 2). St. Augustine/Bathhouse and Deer Creek did not get sampled during either dry season event because they were not flowing. Samples were analyzed for FIB (*Enterococcus*, *E. Coli*, Total Coliforms), Total Suspended Solids (TSS), hardness, chloride, fluoride, sulfate, nitrate as N, nitrite as N, ammonia as N, orthophosphate as P, oils/grease, and metals (zinc, lead, copper, aluminum, cadmium, chromium, mercury, nickel, silver).

Fig 2. Quarterly stormwater outfall sampling locations in PPH.

Stormwater outfall monitoring also included taking samples at outfalls in PPH during First Flush 2014 and First Flush 2015. The First Flush sampling event involves sampling stormwater outfalls during the first big rain of the season when pollutants are washed off the landscape into the ocean. Samples were taken at nine outfalls within the harbor during First Flush 2014 (Fig 3) and at Capistrano, West Point and Vassar during First Flush 2015. Sampling was conducted by trained volunteers and samples were processed for a range of pollutants, including bacteria, nutrients and metals.

Lastly, the Capistrano outfall was sampled after San Mateo County flushed it of sediment, debris and biofilm. Samples for FIB were collected right before the flushing and approximately monthly thereafter for a total of 16 sampling events.

Fig 3. First Flush 2014 sampling sites within Pillar Point Harbor

Monitoring Results

Fecal Indicator Bacteria

Results from the inner harbor monitoring indicated that 27 of 238 grab samples (~11%) exceeded the WQO and one site (Dock A) exceeded the WQO when the geometric mean was calculated (Table 1). There was not a single location that accounted for the majority of these exceedances and when sites exceeded the WQO it tended to occur during the same sampling day. In fact, all exceedances of the WQOs occurred during the wet season, except for one sampling event in July of 2014.There was an exceedance of the WQO during the geometric mean wet season sampling event, but this was due to one sample (Dock A) rather than consistently high samples over the 30-day period.

Table 1. *Enterococcus* (MPN/100 mL) results for inner PPH. Grey indicates an exceedance of WQO and ND indicates no data.*Indicates that precipitation occurred during the sampling event.

Sample Date	Dock A	Dock B	Dock C	Dock C Break	Pump	Dock F	Work Dock	Dock D
3/6/13	<10	10	<10	ND	<10	ND	ND	ND
4/10/13	<10	<10	<10	ND	<10	ND	ND	ND
5/15/13	<10	<10	<10	<10	<10	ND	ND	ND
6/5/13	<10	<10	<10	<10	<10	ND	ND	ND
7/3/13	<10	<10	<10	<10	ND	ND	ND	ND
8/7/13	20	<10	<10	41	<10	ND	ND	ND
9/25/13	<10	<10	<10	<10	10	ND	ND	ND
10/16/13	10	52	52	10	ND	ND	ND	ND
11/20/13*	369	197	249	173	135	ND	ND	ND
12/18/13	<10	10	10	<10	10	ND	ND	ND
1/29/14*	<10	<10	85	<10	ND	173	20	98
2/26/14*	31	10	20	61	41	242	63	1107
3/26/14*	73	20	10	<10	52	97	171	146
4/30/14	<10	<10	<10	<10	<10	10	<10	<10
5/21/14	<10	<10	<10	<10	<10	<10	<10	<10
6/25/14*	86	<10	<10	<10	10	41	<10	20
7/23/14	20	20	161	121	121	<10	<10	10
8/27/14	<10	<10	<10	<10	<10	10	<10	<10
9/24/14	<10	<10	<10	<10	<10	<10	<10	20
10/22/14	<10	31	<10	20	10	<10	<10	20
11/19/14*	243	63	31	10	146	75	168	249
12/19/14*	160	108	122	187	175	441	345	717
1/07/15	10	<10	<10	<10	<10	<10	<10	<10
1/14/15	<10	<10	<10	<10	<10	<10	<10	<10
1/21/15	<10	<10	<10	<10	<10	<10	<10	<10
1/28/15	1284	<10	20	<10	10	20	<10	10
2/04/15	10	10	<10	10	10	<10	10	40
Wet Season Mean	261	<10	<10	<10	<10	<10	<10	10
2/25/15	<10	<10	<10	<10	<10	10	10	<10
3/25/15	<10	<10	<10	<10	<10	<10	275	<10
5/13/15	<10	10	<10	<10	<10	<10	<10	<10
5/20/15	<10	<10	<10	<10	<10	<10	<10	<10
5/27/15	<10	<10	<10	<10	20	<10	<10	<10
6/3/15	<10	<10	<10	10	<10	31	10	<10
6/10/15*	<10	<10	<10	10	<10	30	<10	<10
Dry Season Mean	<10	<10	<10	<10	<10	12	<10	<10

Results from the stormwater outfall sampling show that all three types of FIB exceeded WQOs at all sites during each of the sampling programs. The quarterly sampling program involved a total of 46 samples and 34 of these exceeded the WQOs. *E. Coli* and *Enterococcus* samples always exceeded the objective, while Total Coliforms only exceeded the objective three times. No sites had consistently higher or lower concentrations than others and there were exceedances in both the wet and dry season, although it appears that dry season values were slightly higher. For the First Flush sampling programs in 2014 and 2015, all types of bacteria exceeded WQOs during every sampling event and at every site sampled, for an exceedance rate of 100%.

Before flushing of the Capistrano outfall, FIB levels were high, exceeding WQOs. After the flushing, 16 of 27 samples exceeded objectives for various types of FIB. There were no distinct trends and FIB did not appear to decrease following the flushing, as the final sample had the maximum detectable level of *Enterococcus*.

Nutrients

Nitrate was only exceeded during the quarterly sampling program at Denniston Creek and not during First Flush events. Denniston Creek exceeded the WQO for nitrate twice during this sampling program, once during the wet season and once during the dry season in addition to having higher values of nitrate than the other sites overall. Nitrite was exceeded at all sampling sites during the quarterly sampling program, which was the only time this parameter has been sampled. Two thirds of the samples exceeded the objective for nitrite, but there was no trend between sites or throughout the year. The WQO for orthophosphate was exceeded at Denniston and Capistrano during the quarterly sampling program and all sites exceeded the WQO for orthophosphate during First Flush 2014 and 2015.

Metals

Results show that aluminum was exceeded at all sampling sites during the quarterly sampling program, which was the only time this parameter has been sampled. Half of the samples exceeded the objective and all of these occurred during wet season events. Capistrano had slightly lower values than other sites otherwise there were no trends. For both copper and zinc, no samples exceeded the objectives during the quarterly sampling program. But a select group of sites in PPH exceeded the objectives for both copper and zinc during the First Flush events. West Point Ave, Vassar Ave, Harbor Upland and Deer Creek all exceeded the copper and zinc objectives during First Flush 2014, and West Point and Vassar exceeded these objectives again during First Flush 2015(Harbor Upland and Deer Creek were not sampled).

Summary

There were few exceedances of FIB in the inner harbor, but there were many exceedances for the stormwater outfalls flowing into the harbor. In fact, about half of the water quality parameters tested from the stormwater outfalls exceeded the WQOs. See Table 2 for a summary of parameters sampled, corresponding sampling programs and exceedances. Table 2 shows how objectives were exceeded for FIB (Total Coliforms, *E. Coli*, *Enterococcus*), nutrients (nitrate, nitrite, orthophosphate) and metals (aluminum, copper, and zinc). Note this table does not demonstrate the number of times that parameters were exceeded during a given sampling program. See Appendix 1 for the raw inner harbor sampling data table that includes additional

information such as closest slip and proximity to boats. See Appendix 2 for a raw data table of quarterly sampling results and see the HD or RCD website for more detailed First Flush results (presentations).

Table 2. Summary table of parameters, programs and exceedances of WQOs for stormwater outfalls in PPH. Exceedances are shown in grey.

	Quarterly Sampling (Denniston, Capistrano, St. Augustine, Deer)	**First Flush 2014** (West Point, Vassar, Columbus, Denniston, Capistrano, St. Augustine, Harbor Parking Lot, Harbor Upland, Deer Creek	**First Flush 2015** (Capistrano, West Point, Vassar)
Bacteria (Total Coliforms, *E. Coli*, *Enterococcus*)	All sites	All sites	All sites
Nitrate as N	Denniston Creek	No exceedances	No exceedances
Nitrite as N	All sites	No Data	No Data
Orthophosphate as P	Denniston & Capistrano	All sites	All sites
Aluminum	All sites	No Data	No Data
Copper	No exceedances	Harbor Upland, Deer Creek, West Point and Vassar	West Point and Vassar
Zinc	No exceedances	Harbor Upland, Deer Creek, West Point and Vassar	West Point and Vassar
Lead	No exceedances	No exceedances	No exceedances
Silver	No exceedances	No Data	No Data
Nickel	No exceedances	No Data	No Data
Cadmium	No exceedances	No Data	No Data
Chromium	No exceedances	No Data	No Data
Sulfate	No exceedances	No Data	No Data
Mercury	No exceedances	No Data	No Data
Oil and Grease	No exceedances	No Data	No Data
Fluoride	No exceedances	No Data	No Data
Chloride	No exceedances	No Data	No Data
Unionized Ammonia	No exceedances	No Data	No Data
TSS	No exceedances	No exceedances	No exceedances

Discussion

Fecal Indicator Bacteria

As mentioned previously, FIB originates from warm blooded animals such as pets, humans, and wildlife. High levels of FIB indicate the potential presence of pathogens and therefore have impacts on human health as well as recreation.

Results from sampling in the inner harbor indicated that FIB (*Enterococcus*) do not appear to be a consistent problem in inner PPH. The majority of samples only had small amounts of *Enterococcus* which can exist naturally in the environment and are common in untreated water. When samples exceeded the WQO it typically occurred on the same sampling day at multiple sites which indicates that there was likely an outside source that affected the whole harbor rather than a site specific source, like a live-aboard boat. This often occurred during a precipitation event when stormwater from the upland watershed was flowing into the harbor, indicating that this could be a source of bacteria in inner PPH.

An exception to this was exceedances at multiple sites during a dry season event (July 2014). This may be explained by the fact that it was the largest squid offload in the history of harbor and there was also presence of algae blooms and anchovies. Also, during the February 2014 event, *Enterococcus* at Dock D was much higher than other samples taken the same day, so this could indicate a specific source around that dock on the sampling day. Similarly, the fact that only one site (Work Dock) exceeded the WQO during the March 2015 sampling event, could indicate a similar phenomenon. Geometric mean calculations indicate that *Enterococcus* does not appear to be a consistent problem at any of the sites within inner PPH, although there may have been a site specific source at Dock A during one of the wet season sampling events.

Results from the stormwater outfall sampling indicated that FIB is a consistent problem in stormwater flowing into PPH, with concentrations much higher than the WQOs, and often reaching the maximum detectable limit. First Flush results indicated that FIB is a pollutant of concern during wet weather events at all outfalls flowing into PPH, since every outfall that has ever been sampled during First Flush (2008-2015) has exceeded the objective. Results of the quarterly sampling program demonstrate that these high FIB levels persist throughout the year and also occur during the dry season, at least for the sites sampled (Denniston Creek, St. Augustine outfall, Deer Creek and Capistrano). This could indicate a more local source of FIB that isn't being transported from the upper watershed during precipitation events.

Additional monitoring at Capistrano outfall suggested that flushing of the outfall did not decrease concentrations of FIB. FIB can re-suspend from sediments and biofilm, so it was plausible that buildup of this material could have been a major source of FIB to the system but our results did not indicate this.

Nutrients

Nutrients such as orthophosphate, nitrate and nitrite are vital for the growth of plants so when they exist in excess in aquatic environments, growth is stimulated and oxygen is depleted from the system. This process of eutrophication can result in algae blooms and impacts to recreation and overall ecosystem health.

All sites exceeded the objective for orthophosphate during First Flush events but only once at Denniston Creek and once at Capistrano outfall during the quarterly sampling program. This indicates that orthophosphate is mainly being washed from the landscape through the stormwater system during precipitation events. Denniston Creek also exceeded the objective for nitrate and had higher nitrate values overall than other sites. This may indicate a source such as fertilizer at

Denniston Creek as both nitrate and orthophosphate exceeded WQOs. Nitrite exceeded objectives at all sites, which is concerning since nitrite has not been assessed in the past and can be indicative of waste water pollution. Other sources of orthophosphate, nitrate, and nitrite include pesticides, detergents, and manure.

Metals
Metals such as copper, zinc, lead and aluminum are toxic to aquatic organisms and can impact growth, osmoregulation, reproduction and survival.

Aluminum exceeded objectives at all sites but this only occurred during wet season events. Aluminum in the stormwater system can come from wash water from cookware, drinking water treatment plants, and from other materials containing metal. Potential sources of copper and zinc include corroding pipes, antifouling paint, boat maintenance debris, gutters, downspouts, roofs, electrical, tires, and brake pads. Copper and zinc objectives were exceeded during First Flush events at West Point, Vassar Ave, and Harbor Upland but little is known about other times of year as these sites were not sampled during the quarterly sampling program. At Deer Creek, copper and zinc objectives were exceeded during First Flush events but not during quarterly sampling, indicating that these pollutants were only washed from the landscape during the first big rain of the season at Deer Creek.

Conclusion

Water quality monitoring in inner PPH and at the stormwater outfalls provided information about a wide variety of pollutants and which ones are of greatest concern and where. Results from these programs and from previous studies indicate that FIB is a major and consistent problem in stormwater flowing into PPH and needs to be further characterized and assessed. Orthophosphate, nitrate, nitrite, aluminum, copper and zinc also exceeded WQOs and should also be considered for future monitoring to gauge if there is a consistent problem. It is recommended that remediation strategies and stormwater best management practices for FIB be developed concurrently and implemented when feasible.

About the RCD

The San Mateo County RCD is a special district with over 70 years of history helping people protect, conserve, and restore natural resources. The RCD works in voluntary partnership with land owners to provide non-regulatory technical assistance. The RCD uses diverse means to further resource conservation, acting as a focal point for local conservation efforts on public and private lands through partnerships and collaboration with land owners and managers, technical advisors, area jurisdictions, government agencies, and others. Formed in 1939 in partnership with the USDA Natural Resources Conservation Service, San Mateo County formed the first conservation district in the State of California.

Appendix 1

Water Sampling Results for Bacteria (*Enterococcus* sp)
Inner Pillar Point Harbor March 2013-June 2015

Exceedences of San Francisco Bay Area Basin Plan Water Quality Objective of 104 MPN/100 ml for water contact recreation shown in red.
ND indicates that no data is available.

Sample Date	Sample Time	Site ID	Closest Slip (s)	Proximity to boats (ft)	*Enterococcus* sp. (MPN/ 100 mL)
3/6/13	13:25	PPH-Dock A	43A	20	<10
3/6/13	13:27	PPH-Dock B	44A	15	10
3/6/13	13:35	PPH-Dock C	32B	15	<10
3/6/13	13:40	PPH-Pump	Fuel Dock	20	<10
4/10/13	13:26	PPH-Dock A	30A	29	<10
4/10/13	13:32	PPH-Dock B	24B	25	<10
4/10/13	13:40	PPH-Dock C	23C	24	<10
4/10/13	13:43	PPH-Dock C Break	22C	23	<10
5/15/13	11:25	PPH-Dock A	43A	20	<10
5/15/13	11:28	PPH-Dock B	44A	15	<10
5/15/13	11:28	PPH-Dock C	32B	15	<10
5/15/13	11:31	PPH-Dock C Break	30C	20	<10
5/15/13	11:34	PPH - Pump	Fuel Dock	20	<10
6/5/13	11:28	PPH-Dock A	43A	20	<10
6/5/13	11:57	PPH-Dock B	44A	15	<10
6/5/13	12:00	PPH-Dock C	32B	15	<10
6/5/13	12:07	PPH-Pump	Fuel Dock	20	<10
6/5/13	12:10	PPH-Dock C Break	30C	20	<10
7/3/13	11:40	PPH-Dock A	ND	10	<10
7/3/13	11:53	PPH-Dock B	ND	10	<10
7/3/13	11:55	PPH-Dock C	ND	10	<10
7/3/13	11:59	PPH-Dock C Break	ND	10	<10
8/7/13	14:50	PPH-Dock A	35A	10	20
8/7/13	14:53	PPH-Dock B	29B	10	<10
8/7/13	14:55	PPH-Dock C	27B	10	<10
8/7/13	15:00	PPH-Dock C-Break	20C	10	41
8/7/13	15:05	PPH-Pump	Fuel Dock	20	<10
9/5/13	14:59	PPH-Dock A	ND	20	<10

9/5/13	15:03	PPH-Dock B	ND	15	<10
9/5/13	15:06	PPH-Dock C	ND	15	<10
9/5/13	15:09	PPH-Dock C Break	ND	ND	<10
9/5/13	15:11	PPH-Pump	Fuel Dock	20	10
10/16/13	11:20	PPH-Dock A	43A	10	10
10/16/13	11:25	PPH-Dock B	40A	10	52
10/16/13	11:30	PPH-Dock C	38B	10	52
10/16/13	11:35	PPH-Pump	Fuel Dock	10	10
11/20/13	11:15	PPH-Dock A	29A	15	369
11/20/13	11:18	PPH-Dock B	37B	20	197
11/20/13	11:21	PPH-Dock C	23C	20	249
11/20/13	11:25	PPH-Dock C Break	26C	30	135
11/20/13	11:28	PPH-Pump	Fuel Dock	20	173
12/18/13	11:00	PPH-Dock A	29A	12	<10
12/18/13	11:10	PPH-Dock B	33B	15	10
12/18/13	11:20	PPH-Dock C	23C	12	10
12/18/13	11:25	PPH-Pump	Fuel Dock	22	10
12/18/13	11:30	PPH-Dock C Break	26C	10	<10
1/29/14	12:05	PPH-Dock A	41A	20	<10
1/29/14	12:07	PPH-Dock B	38A	20	<10
1/29/14	12:10	PPH-Dock C	28B	25	85
1/29/14	12:13	PPH-Dock C Break	27C	20	<10
1/29/14	12:16	PPH-Pump	Fuel Dock	25	ND
1/29/14	12:20	PPH-Dock F	03F	20	173
1/29/14	12:25	PPH-Work	Work Dock	20	20
1/29/14	12:30	PPH-Dock D	13D	25	98
2/26/14	14:26	Dock A	43A	20	31
2/26/14	14:28	PPH-Dock B	44A	20	10
2/26/14	14:32	PPH-Dock C	32B	20	20
2/26/14	14:35	PPH-Dock C Break	30C	20	61
2/26/14	14:38	PPH-Pump	Fuel Dock	20	41
2/26/14	14:41	PPH-Work	03F	30	63
2/26/14	14:48	PPH-Dock F	Work Dock	20	242
2/26/14	14:58	PPH-Dock D	13D	20	1107
3/26/14	11:10	PPH-Dock A	A45	20	73
3/26/14	11:15	PPH-Dock B	B39	15	20
3/26/14	11:18	PPH-Dock C	C29	20	10
3/26/14	11:22	PPH-Dock C Break	C26	20	<10
3/26/14	11:28	PPH-Pump	Fuel Dock	20	52
3/26/14	11:32	PPH-Dock F	F19	15	97

3/26/14	11:38	PPH-Work Dock	Work Dock	20	171
3/26/14	11:41	PPH-Dock D	D23	20	146
4/30/14	11:40	PPH-Dock A	A43	10	<10
4/30/14	11:45	PPH-Dock B	A38	10	<10
4/30/14	11:47	PPH-Dock C	B30	10	<10
4/30/14	11:50	PPH-Dock C Break	C26	10	<10
4/30/14	11:53	PPH-Pump	Fuel Dock	10	<10
4/30/14	11:56	PPH-Dock F	F11	10	10
4/30/14	12:02	PPH-Work Dock	Work Dock	7	<10
4/30/14	12:05	PPH-Dock D	D29	10	<10
5/21/14	16:23	PPH-Dock A	A31	15	<10
5/21/14	16:26	PPH-Dock B	B29	15	<10
5/21/14	16:29	PPH-Dock C	B30	15	<10
5/21/14	16:31	PPH-Dock C Break	C28	15	<10
5/21/14	16:34	PPH-Pump	Fuel Dock	15	<10
5/21/14	16:38	PPH-Dock F	F7	15	<10
5/21/14	16:43	PPH-Work Dock	Work Dock	15	<10
5/21/14	16:45	PPH-Dock D	D21	15	<10
6/25/14	13:08	PPH-Dock A	A33	15	86
6/25/14	13:11	PPH-Dock B	B29	15	<10
6/25/14	13:14	PPH-Dock C	C29	15	<10
6/25/14	13:17	PPH-Dock C Break	C28	15	<10
6/25/14	13:21	PPH-Pump	Fuel Dock	20	10
6/25/14	13:26	PPH-Dock F	F11	15	41
6/25/14	13:32	PPH-Work Dock	Work Dock	15	<10
6/25/14	13:36	PPH-Dock D	D17	15	20
7/23/14	14:49	PPH-Dock A	A39	10	20
7/23/14	14:52	PPH-Dock B	B31	15	20
7/23/14	14:55	PPH-Dock C	C29	18	161
7/23/14	14:57	PPH-Dock C Break	C26	15	121
7/23/14	15:02	PPH-Pump	Fuel Dock	30	121
7/23/14	15:05	PPH-Dock F	F09	10	<10
7/23/14	15:15	PPH-Work Dock	Work Dock	25	<10
7/23/14	15:18	PPH-Dock D	F19	30	10
8/27/14	14:33	PPH-Dock A	A31	15	<10
8/27/14	14:35	PPH-Dock B	B31	15	<10
8/27/14	14:38	PPH-Dock C	C23	15	<10
8/27/14	14:41	PPH-Dock C Break	C24	15	<10
8/27/14	14:44	PPH-Pump	Fuel Dock	20	<10
8/27/14	14:48	PPH-Dock F	F-9	15	10

8/27/14	14:54	PPH-Work Dock	Work Dock	15	<10
8/27/14	14:56	PPH-Dock D	D17	15	<10
9/24/14	13:45	PPH-Dock A	A41	10	<10
9/24/14	13:47	PPH-Dock B	B37	15	<10
9/24/14	13:49	PPH-Dock C	C29	12	<10
9/24/14	13:51	PPH-Dock C Break	C28	10	<10
9/24/14	14:05	PPH-Pump	Fuel Dock	15	<10
9/24/14	13:57	PPH-Dock F	F11	12	<10
9/24/14	14:10	PPH-Work Dock	Work Dock	12	<10
9/24/14	13:40	PPH-Dock D	D19	15	20
10/22/14	13:15	PPH-Dock A	A31	15	<10
10/22/14	13:20	PPH-Dock B	B21	15	31
10/22/14	13:24	PPH-Dock C	C21	15	<10
10/22/14	13:28	PPH-Dock C Break	C22	15	20
10/22/14	13:31	PPH-Pump	Fuel Dock	15	10
10/22/14	13:38	PPH-Dock F	F17	15	<10
10/22/14	13:46	PPH-Work Dock	Work Dock	15	<10
10/22/14	13:50	PPH-Dock D	D21	15	20
11/19/14	11:35	PPH-Dock A	A27	15	243
11/19/14	11:40	PPH-Dock B	B21	20	63
11/19/14	11:45	PPH-Dock C	C19	20	31
11/19/14	11:48	PPH-Dock C Break	C18	20	10
11/19/14	11:50	PPH-Pump	Fuel Dock	10	146
11/19/14	11:55	PPH-Dock F	F11	10	75
11/19/14	12:00	PPH-Work Dock	Work Dock	12	168
11/19/14	12:03	PPH-Dock D	D27	9	249
12/19/14	13:13	PPH-Dock A	A29	10	160
12/19/14	13:17	PPH-Dock B	B27	10	108
12/19/14	13:20	PPH-Dock C	C23	10	122
12/19/14	13:24	PPH-Dock C Break	C18	10	187
12/19/14	13:26	PPH-Pump	Fuel Dock	10	175
12/19/14	13:30	PPH-Dock F	F29	8	441
12/19/14	13:37	PPH-Work Dock	Work Dock	10	345
12/19/14	13:41	PPH-Dock D	D27	8	717
Wet Season Geometric Mean Sampling: Five sampling events in 30 days averaged and compared to SF Basin Plan Objective (35 MPN/100 mL)					
01/07/15	14:46	PPH-Dock A	A33	15	10
01/07/15	14:49	PPH-Dock B	B31	15	<10
01/07/15	14:52	PPH-Dock C	B28	12	<10
01/07/15	14:55	PPH-Dock C Break	C20	12	<10
01/07/15	14:57	PPH-Pump	Fuel Dock	20	<10

01/07/15	15:00	PPH-Dock F	F9	15	<10
01/07/15	15:07	PPH-Work Dock	Work Dock	12	<10
01/07/15	15:10	PPH-Dock D	D17	ND	<10
01/14/15	13:20	PPH-Dock A	A27	12	<10
01/14/15	13:23	PPH-Dock B	B21	20	<10
01/14/15	13:27	PPH-Dock C	B24	20	<10
01/14/15	13:30	PPH-Dock C Break	C26	20	<10
01/14/15	13:34	PPH-Pump	Fuel Dock	20	<10
01/14/15	13:40	PPH-Dock F	F9	15	<10
01/14/15	13:48	PPH-Work Dock	Work Dock	15	<10
01/14/15	13:51	PPH-Dock D	D19	15	<10
01/21/15	15:51	PPH-Dock A	A33	10	<10
01/21/15	15:55	PPH-Dock B	B29	10	<10
01/21/15	15:57	PPH-Dock C	C29	10	<10
01/21/15	16:00	PPH-Dock C Break	C22	10	<10
01/21/15	16:02	PPH-Pump	Fuel Dock	7	10
01/21/15	16:06	PPH-Dock F	F17	8	<10
01/21/15	16:15	PPH-Work Dock	Work Dock	7	<10
01/21/15	16:18	PPH-Dock D	D19	10	<10
01/28/15	15:05	PPH-Dock A	A33	10	1284
01/28/15	15:08	PPH-Dock B	B29	11	<10
01/28/15	15:10	PPH-Dock C	C29	20	20
01/28/15	15:13	PPH-Dock C Break	C22	20	<10
01/28/15	15:16	PPH-Pump	Fuel Dock	20	10
01/28/15	15:20	PPH-Dock F	F17	15	20
01/28/15	15:25	PPH-Work Dock	Work Dock	10	<10
01/28/15	15:30	PPH-Dock D	D19	10	10
02/04/15	15:17	PPH-Dock A	A27	10	10
02/04/15	15:20	PPH-Dock B	B21	10	10
02/04/15	15:25	PPH-Dock C	B24	10	<10
02/04/15	15:27	PPH-Dock C Break	C16	10	10
02/04/15	15:32	PPH-Pump	Fuel Dock	10	10
02/04/15	15:33	PPH-Dock F	F11	7	<10
02/04/15	15:40	PPH-Work Dock	Work Dock	10	10
02/04/15	15:43	PPH-Dock D	D19	8	41
1/7/15-2/4/15	13:20-15:51	PPH-Dock A	A27, A33	15	261
1/7/15-2/4/15	13:23-15:55	PPH-Dock B	B21, B29, B31	14	<10
1/7/15-2/4/15	13:27-15:57	PPH-Dock C	B24, B28, C29	14	<10
1/7/15-2/4/15	13:30-16:00	PPH-Dock C Break	C16, C20, C22, C26	14	<10
1/7/15-2/4/15	13:34-16:02	PPH-Pump	Fuel Dock	12	<10

1/7/15-2/4/15	13:40-16:06	PPH-Dock F	F9, F11, F17	13	<10
1/7/15-2/4/15	13:48-16:15	PPH-Work Dock	Work Dock	12	<10
1/7/15-2/4/15	13:51-16:18	PPH-Dock D	D17, D19	13	10
2/25/15	ND	PPH-Dock A	ND	ND	<10
2/25/15	ND	PPH-Dock B	ND	ND	<10
2/25/15	ND	PPH-Dock C	ND	ND	<10
2/25/15	ND	PPH-Dock C Break	ND	ND	<10
2/25/15	ND	PPH-Pump	ND	ND	<10
2/25/15	ND	PPH-Dock F	ND	ND	10
2/25/15	ND	PPH-Work Dock	ND	ND	10
2/25/15	ND	PPH-Dock D	ND	ND	<10
3/25/15	13:50	PPH-Dock A	A29	15	<10
3/25/15	13:53	PPH-Dock B	B21	14	<10
3/25/15	13:56	PPH-Dock C	B24	20	<10
3/25/15	13:59	PPH-Dock C Break	C16	25	<10
3/25/15	14:02	PPH-Pump	Fuel Dock	20	<10
3/25/15	14:07	PPH-Dock F	F11	12	<10
3/25/15	14:12	PPH-Work Dock	Work Dock	15	275
3/25/15	14:17	PPH-Dock D	D19	15	<10
Dry Season Geometric Mean Sampling: Five sampling events in 30 days averaged and compared to SF Basin Plan Objective (35 MPN/100 mL)					
5/13/2015	15:40	PPH-Dock A	A37	15	<10
5/13/2015	15:44	PPH-Dock B	B29	20	10
5/13/2015	15:47	PPH-Dock C	C21	20	<10
5/13/2015	15:52	PPH-Dock C Break	C24	30	<10
5/13/2015	15:56	PPH-Pump	Fuel Dock	20	<10
5/13/2015	16:02	PPH- Dock F	F9	15	<10
5/13/2015	16:10	PPH-Work Dock	Work Dock	10	<10
5/13/2015	16:16	PPH-Dock D	D17	20	<10
5/20/2015	16:12	PPH-Dock A	D31	14	<10
5/20/2015	16:15	PPH-Dock B	B31	20	<10
5/20/2015	16:20	PPH-Dock C	C21	22	<10
5/20/2015	16:25	PPH-Dock C Break	C26	20	<10
5/20/2015	16:33	PPH-Pump	Fuel Dock	15	<10
5/20/2015	16:42	PPH- Dock F	F11	15	<10
5/20/2015	16:50	PPH-Work Dock	Work Dock	25	<10
5/20/2015	16:55	PPH-Dock D	D23	12	<10
5/27/2015	16:10	PPH-Dock A	A27	15	<10
5/27/2015	16:12	PPH-Dock B	B29	15	<10
5/27/2015	16:14	PPH-Dock C	B24	16	<10

5/27/2015	16:16	PPH-Dock C Break	C26	20	<10
5/27/2015	16:20	PPH-Pump	Fuel Dock	30	20
5/27/2015	16:23	PPH- Dock F	F19	15	<10
5/27/2015	16:30	PPH-Work Dock	Work Dock	20	<10
5/27/2015	16:32	PPH-Dock D	D21	15	<10
6/3/2015	15:41	PPH-Dock A	A31	15	<10
6/3/2015	15:44	PPH-Dock B	B25	15	<10
6/3/2015	15:48	PPH-Dock C	B26	20	<10
6/3/2015	15:52	PPH-Dock C Break	C22	20	10
6/3/2015	15:56	PPH-Pump	Fuel Dock	10	<10
6/3/2015	16:00	PPH- Dock F	F9	15	31
6/3/2015	16:04	PPH-Work Dock	Work Dock	13	10
6/3/2015	16:08	PPH-Dock D	D15	15	<10
6/10/2015	13:24	PPH-Dock A	A21	10	<10
6/10/2015	13:27	PPH-Dock B	B23	12	<10
6/10/2015	13:30	PPH-Dock C	B20	10	<10
6/10/2015	13:33	PPH-Dock C Break	C18	15	10
6/10/2015	13:35	PPH-Pump	Fuel Dock	20	<10
6/10/2015	13:41	PPH- Dock F	F11	12	30
6/10/2015	13:46	PPH-Work Dock	Work Dock	25	<10
6/10/2015	13:49	PPH-Dock D	D17	12	<10
5/13/15-6/10/15	13:24-16:12	PPH-Dock A	A21, A27, A31, A37, D31	14	<10
5/13/15-6/10/15	13:27-16:15	PPH-Dock B	B23, B25, B29, B31	16	<10
5/13/15-6/10/15	13:30-16:20	PPH-Dock C	B20, B26, B24, C21	20	<10
5/13/15-6/10/15	13:33-16:25	PPH-Dock C Break	C18, C22, C24, C26	13.75	<10
5/13/15-6/10/15	13:35-16:33	PPH-Pump	Fuel Dock	13.7	<10
5/13/15-6/10/15	13:41-16:42	PPH-Dock F	F9, F11, F19	10	12
5/13/15-6/10/15	13:46-16:50	PPH-Work Dock	Work Dock	13	<10
5/13/15-6/10/15	13:49-16:55	PPH-Dock D	D15, D17, D21, D23	13	<10

Appendix 2

Water Sampling Results for Select Stormwater Outfalls
Pillar Point Harbor September 2014- August 2015

Exceedences of water quality objectives are shown in red. See Appendix 2 for sources.
ND indicates Not Detected and NA indicates that no data was collected

Site Name	Sample Date	Time	WQ Parameter	Result	Unit
Capistrano Outfall	9/22/2014	17:00	Aluminum, Dissolved	ND	µg/L
Capistrano Outfall	9/22/2014	17:00	Cadmium, Dissolved	ND	µg/L
Capistrano Outfall	9/22/2014	17:00	Chloride	103	mg/L
Capistrano Outfall	9/22/2014	17:00	Chromium, Dissolved	6	µg/L
Capistrano Outfall	9/22/2014	17:00	Copper, Dissolved	ND	µg/L
Capistrano Outfall	9/22/2014	17:00	Fluoride	0.6	mg/L
Capistrano Outfall	9/22/2014	17:00	Hardness (as CaCO3)	341	mg/L
Capistrano Outfall	9/22/2014	17:00	Lead, Dissolved	ND	µg/L
Capistrano Outfall	9/22/2014	17:00	Mercury, Dissolved	ND	µg/L
Capistrano Outfall	9/22/2014	17:00	Nickel, Dissolved	ND	µg/L
Capistrano Outfall	9/22/2014	17:00	Nitrate as NO3-N	0.1	mg/L
Capistrano Outfall	9/22/2014	17:00	Nitrite as NO2-N	0.4	mg/L
Capistrano Outfall	9/23/2014	17:00	Unionized Ammonia	0.013	mg/L
Capistrano Outfall	9/22/2014	17:00	Oil & Grease (HEM)	ND	mg/L
Capistrano Outfall	9/22/2014	17:00	o-Phosphate-P	ND	mg/L
Capistrano Outfall	9/22/2014	17:00	Silver, Dissolved	ND	µg/L
Capistrano Outfall	9/22/2014	17:00	Sulfate	76	mg/L
Capistrano Outfall	9/22/2014	17:00	Total Susp. Solids	4	mg/L
Capistrano Outfall	9/22/2014	17:00	Zinc, Dissolved	29	µg/L
Capistrano Outfall	9/22/2014	17:00	E. Coli	2613	MPN/100 ml
Capistrano Outfall	9/22/2014	17:00	Enterococcus	NA	MPN/100 ml
Capistrano Outfall	9/22/2014	17:00	Total Coliform	24196	MPN/100 ml
Denniston Outfall	9/22/2014	16:15	Aluminum, Total	20	µg/L
Denniston Outfall	9/22/2014	16:15	Cadmium, Dissolved	ND	µg/L
Denniston Outfall	9/22/2014	16:15	Chloride	40	mg/L
Denniston Outfall	9/22/2014	16:15	Chromium, Dissolved	ND	µg/L
Denniston Outfall	9/22/2014	16:15	Copper, Dissolved	ND	µg/L
Denniston Outfall	9/22/2014	16:15	Fluoride	0.3	mg/L
Denniston Outfall	9/22/2014	16:15	Hardness (as CaCO3)	99	mg/L
Denniston Outfall	9/22/2014	16:15	Lead, Dissolved	ND	µg/L
Denniston Outfall	9/22/2014	16:15	Mercury, Dissolved	ND	µg/L
Denniston Outfall	9/22/2014	16:15	Nickel, Dissolved	ND	µg/L
Denniston Outfall	9/22/2014	16:15	Nitrate as NO3-N	0.3	mg/L
Denniston Outfall	9/22/2014	16:15	Nitrite as NO2-N	0.2	mg/L
Denniston Outfall	9/23/2014	16:16	Unionized Ammonia	0.005	mg/L
Denniston Outfall	9/22/2014	16:15	Oil & Grease (HEM)	ND	mg/L
Denniston Outfall	9/22/2014	16:15	o-Phosphate-P	ND	mg/L
Denniston Outfall	9/22/2014	16:15	Silver, Dissolved	ND	µg/L

Denniston Outfall	9/22/2014	16:15	Sulfate	10	mg/L
Denniston Outfall	9/22/2014	16:15	Total Susp. Solids	5	mg/L
Denniston Outfall	9/22/2014	16:15	Zinc, Dissolved	33	µg/L
Denniston Outfall	9/22/2014	16:15	E. Coli	24196	MPN/100 ml
Denniston Outfall	9/22/2014	16:15	Enterococcus	NA	MPN/100 ml
Denniston Outfall	9/22/2014	16:15	Total Coliform	3255	MPN/100 ml
Denniston Outfall	12/19/2014	14:50	Nitrate as NO3-N	1.2	mg/L
Denniston Outfall	12/19/2014	14:50	o-Phosphate-P	ND	mg/L
Denniston Outfall	12/19/2014	14:50	Total Susp. Solids	113	mg/L
Denniston Outfall	12/19/2014	14:50	Fluoride	0.2	mg/L
Denniston Outfall	12/19/2014	14:50	Chloride	35	mg/L
Denniston Outfall	12/19/2014	14:50	Sulfate	16	mg/L
Denniston Outfall	12/19/2014	14:50	Nitrite as NO2-N	0.5	mg/L
Denniston Outfall	12/20/2014	14:50	Unionized Ammonia	0.0009	mg/L
Denniston Outfall	12/19/2014	14:50	Hardness (as CaCO3)	94	mg/L
Denniston Outfall	12/19/2014	14:50	Oil & Grease (HEM)	ND	mg/L
Denniston Outfall	12/19/2014	14:50	Aluminum, Dissolved	327	µg/L
Denniston Outfall	12/19/2014	14:50	Cadmium, Dissolved	ND	µg/L
Denniston Outfall	12/19/2014	14:50	Chromium, Dissolved	ND	µg/L
Denniston Outfall	12/19/2014	14:50	Copper, Dissolved	ND	µg/L
Denniston Outfall	12/19/2014	14:50	Lead, Dissolved	ND	µg/L
Denniston Outfall	12/19/2014	14:50	Mercury, Dissolved	ND	µg/L
Denniston Outfall	12/19/2014	14:50	Nickel, Dissolved	ND	µg/L
Denniston Outfall	12/19/2014	14:50	Silver, Dissolved	ND	µg/L
Denniston Outfall	12/19/2014	14:50	Zinc, Dissolved	19	µg/L
Denniston Outfall	12/19/2014	14:50	Enterococcus	428	MPN/100 mL
Denniston Outfall	12/19/2014	14:50	E. Coli	697	MPN/100 mL
Denniston Outfall	12/19/2014	14:50	Total Coliform	645	MPN/100 mL
Capistrano Outfall	12/19/2014	15:20	Nitrate as NO3-N	0.8	mg/L
Capistrano Outfall	12/19/2014	15:20	o-Phosphate-P	ND	mg/L
Capistrano Outfall	12/19/2014	15:20	Total Susp. Solids	26	mg/L
Capistrano Outfall	12/19/2014	15:20	Fluoride	0.1	mg/L
Capistrano Outfall	12/19/2014	15:20	Chloride	14	mg/L
Capistrano Outfall	12/19/2014	15:20	Sulfate	8	mg/L
Capistrano Outfall	12/19/2014	15:20	Nitrite as NO2-N	0.5	mg/L
Capistrano Outfall	12/20/2014	15:20	Unionized Ammonia	0.001	mg/L
Capistrano Outfall	12/19/2014	15:20	Hardness (as CaCO3)	51	mg/L
Capistrano Outfall	12/19/2014	15:20	Oil & Grease (HEM)	ND	mg/L
Capistrano Outfall	12/19/2014	15:20	Aluminum, Dissolved	44	µg/L
Capistrano Outfall	12/19/2014	15:20	Cadmium, Dissolved	ND	µg/L
Capistrano Outfall	12/19/2014	15:20	Chromium, Dissolved	ND	µg/L
Capistrano Outfall	12/19/2014	15:20	Copper, Dissolved	5	µg/L
Capistrano Outfall	12/19/2014	15:20	Lead, Dissolved	ND	µg/L
Capistrano Outfall	12/19/2014	15:20	Mercury, Dissolved	ND	µg/L
Capistrano Outfall	12/19/2014	15:20	Nickel, Dissolved	ND	µg/L
Capistrano Outfall	12/19/2014	15:20	Silver, Dissolved	ND	µg/L

Capistrano Outfall	12/19/2014	15:20	Zinc, Dissolved	14	µg/L
Capistrano Outfall	12/19/2014	15:20	Enterococcus	5493	MPN/100 mL
Capistrano Outfall	12/19/2014	15:20	E. Coli	4786	MPN/100 mL
Capistrano Outfall	12/19/2014	15:20	Total Coliform	161	MPN/100 mL
St. Augustine Outfall	12/19/2014	15:45	Nitrate as NO3-N	0.7	mg/L
St. Augustine Outfall	12/19/2014	15:45	o-Phosphate-P	ND	mg/L
St. Augustine Outfall	12/19/2014	15:45	Total Susp. Solids	20	mg/L
St. Augustine Outfall	12/19/2014	15:45	Fluoride	0.2	mg/L
St. Augustine Outfall	12/19/2014	15:45	Chloride	37	mg/L
St. Augustine Outfall	12/19/2014	15:45	Sulfate	18	mg/L
St. Augustine Outfall	12/19/2014	15:45	Nitrite as NO2-N	0.4	mg/L
St. Augustine Outfall	12/20/2014	15:45	Unionized Ammonia	0.005	mg/L
St. Augustine Outfall	12/19/2014	15:45	Hardness (as CaCO3)	70	mg/L
St. Augustine Outfall	12/19/2014	15:45	Oil & Grease (HEM)	ND	mg/L
St. Augustine Outfall	12/19/2014	15:45	Aluminum, Dissolved	581	µg/L
St. Augustine Outfall	12/19/2014	15:45	Cadmium, Dissolved	ND	µg/L
St. Augustine Outfall	12/19/2014	15:45	Chromium, Dissolved	ND	µg/L
St. Augustine Outfall	12/19/2014	15:45	Copper, Dissolved	4	µg/L
St. Augustine Outfall	12/19/2014	15:45	Lead, Dissolved	ND	µg/L
St. Augustine Outfall	12/19/2014	15:45	Mercury, Dissolved	ND	µg/L
St. Augustine Outfall	12/19/2014	15:45	Nickel, Dissolved	ND	µg/L
St. Augustine Outfall	12/19/2014	15:45	Silver, Dissolved	ND	µg/L
St. Augustine Outfall	12/19/2014	15:45	Zinc, Dissolved	15	µg/L
St. Augustine Outfall	12/19/2014	15:45	Enterococcus	4160	MPN/100 mL
St. Augustine Outfall	12/19/2014	15:45	E. Coli	3609	MPN/100 mL
St. Augustine Outfall	12/19/2014	15:45	Total Coliform	161	MPN/100 mL
Deer Creek Outfall	12/19/2014	16:15	Nitrate as NO3-N	1	mg/L
Deer Creek Outfall	12/19/2014	16:15	o-Phosphate-P	ND	mg/L
Deer Creek Outfall	12/19/2014	16:15	Total Susp. Solids	684	mg/L
Deer Creek Outfall	12/19/2014	16:15	Fluoride	0.2	mg/L
Deer Creek Outfall	12/19/2014	16:15	Chloride	46	mg/L
Deer Creek Outfall	12/19/2014	16:15	Sulfate	13	mg/L
Deer Creek Outfall	12/19/2014	16:15	Nitrite as NO2-N	0.5	mg/L
Deer Creek Outfall	12/20/2014	16:15	Unionized Ammonia	0.005	mg/L
Deer Creek Outfall	12/19/2014	16:15	Hardness (as CaCO3)	141	mg/L
Deer Creek Outfall	12/19/2014	16:15	Oil & Grease (HEM)	ND	mg/L
Deer Creek Outfall	12/19/2014	16:15	Aluminum, Dissolved	462	µg/L
Deer Creek Outfall	12/19/2014	16:15	Cadmium, Dissolved	ND	µg/L
Deer Creek Outfall	12/19/2014	16:15	Chromium, Dissolved	ND	µg/L
Deer Creek Outfall	12/19/2014	16:15	Copper, Dissolved	ND	µg/L
Deer Creek Outfall	12/19/2014	16:15	Lead, Dissolved	ND	µg/L
Deer Creek Outfall	12/19/2014	16:15	Mercury, Dissolved	ND	µg/L
Deer Creek Outfall	12/19/2014	16:15	Nickel, Dissolved	ND	µg/L
Deer Creek Outfall	12/19/2014	16:15	Silver, Dissolved	ND	µg/L
Deer Creek Outfall	12/19/2014	16:15	Zinc, Dissolved	ND	µg/L
Deer Creek Outfall	12/19/2014	16:15	Enterococcus	2392	MPN/100 mL
Deer Creek Outfall	12/19/2014	16:15	E. Coli	6893	MPN/100 mL

Deer Creek Outfall	12/19/2014	16:15	Total Coliform	70	MPN/100 mL
Deer Creek Outfall	2/8/2015	07:50	Total Susp. Solids	109	mg/L
Deer Creek Outfall	2/8/2015	07:50	Nitrate as NO3-N	0.2	mg/L
Deer Creek Outfall	2/8/2015	07:50	o-Phosphate-P	0.1	mg/L
Deer Creek Outfall	2/8/2015	07:50	Hardness (as CaCO3)	75	mg/L
Deer Creek Outfall	2/8/2015	07:50	Fluoride	0.1	mg/L
Deer Creek Outfall	2/8/2015	07:50	Nitrite as NO2-N	ND	mg/L
Deer Creek Outfall	2/9/2015	07:50	Unionized Ammonia	0.012	mg/L
Deer Creek Outfall	2/8/2015	07:50	Chloride	49	mg/L
Deer Creek Outfall	2/8/2015	07:50	Lead, Dissolved	ND	µg/L
Deer Creek Outfall	2/8/2015	07:50	Aluminum, Dissolved	77	µg/L
Deer Creek Outfall	2/8/2015	07:50	Silver, Dissolved	ND	µg/L
Deer Creek Outfall	2/8/2015	07:50	Cadmium, Dissolved	ND	µg/L
Deer Creek Outfall	2/8/2015	07:50	Copper, Dissolved	ND	µg/L
Deer Creek Outfall	2/8/2015	07:50	Zinc, Dissolved	ND	µg/L
Deer Creek Outfall	2/8/2015	07:50	Chromium, Dissolved	2	µg/L
Deer Creek Outfall	2/8/2015	07:50	Nickel, Dissolved	ND	µg/L
Deer Creek Outfall	2/8/2015	07:50	Oil & Grease (HEM)	ND	mg/L
Deer Creek Outfall	2/8/2015	07:50	Mercury, Dissolved	ND	µg/L
Deer Creek Outfall	2/8/2015	07:50	Enterococcus	14136	MPN/100 mL
Deer Creek Outfall	2/8/2015	07:50	E. Coli	7701	MPN/100 mL
Deer Creek Outfall	2/8/2015	07:50	Total Coliform	120	MPN/100 mL
Denniston Outfall	2/8/2015	09:00	Total Susp. Solids	96	mg/L
Denniston Outfall	2/8/2015	09:00	Nitrate as NO3-N	0.5	mg/L
Denniston Outfall	2/8/2015	09:00	o-Phosphate-P	0.2	mg/L
Denniston Outfall	2/8/2015	09:00	Hardness (as CaCO3)	46	mg/L
Denniston Outfall	2/8/2015	09:00	Fluoride	0.1	mg/L
Denniston Outfall	2/8/2015	09:00	Nitrite as NO2-N	ND	mg/L
Denniston Outfall	2/9/2015	09:00	Unionized Ammonia	0.001	mg/L
Denniston Outfall	2/8/2015	09:00	Chloride	28	mg/L
Denniston Outfall	2/8/2015	09:00	Lead, Dissolved	ND	µg/L
Denniston Outfall	2/8/2015	09:00	Aluminum, Dissolved	144	µg/L
Denniston Outfall	2/8/2015	09:00	Silver, Dissolved	ND	µg/L
Denniston Outfall	2/8/2015	09:00	Cadmium, Dissolved	ND	µg/L
Denniston Outfall	2/8/2015	09:00	Copper, Dissolved	ND	µg/L
Denniston Outfall	2/8/2015	09:00	Zinc, Dissolved	ND	µg/L
Denniston Outfall	2/8/2015	09:00	Chromium, Dissolved	ND	µg/L
Denniston Outfall	2/8/2015	09:00	Nickel, Dissolved	ND	µg/L
Denniston Outfall	2/8/2015	09:00	Oil & Grease (HEM)	ND	mg/L
Denniston Outfall	2/8/2015	09:00	Mercury, Dissolved	ND	µg/L
Denniston Outfall	2/8/2015	09:00	Enterococcus	11199	MPN/100 mL
Denniston Outfall	2/8/2015	09:00	E. Coli	9208	MPN/100 mL
Denniston Outfall	2/8/2015	09:00	Total Coliform	50	MPN/100 mL
Capistrano Outfall	2/8/2015	08:40	Total Susp. Solids	44	mg/L
Capistrano Outfall	2/8/2015	08:40	Nitrate as NO3-N	0.1	mg/L
Capistrano Outfall	2/8/2015	08:40	o-Phosphate-P	ND	mg/L

Capistrano Outfall	2/8/2015	08:40	Hardness (as CaCO3)	18	mg/L
Capistrano Outfall	2/8/2015	08:40	Fluoride	ND	mg/L
Capistrano Outfall	2/8/2015	08:40	Nitrite as NO2-N	ND	mg/L
Capistrano Outfall	2/9/2015	08:40	Unionized Ammonia	0.001	mg/L
Capistrano Outfall	2/8/2015	08:40	Chloride	12	mg/L
Capistrano Outfall	2/8/2015	08:40	Lead, Dissolved	ND	µg/L
Capistrano Outfall	2/8/2015	08:40	Aluminum, Dissolved	98	µg/L
Capistrano Outfall	2/8/2015	08:40	Silver, Dissolved	ND	µg/L
Capistrano Outfall	2/8/2015	08:40	Cadmium, Dissolved	ND	µg/L
Capistrano Outfall	2/8/2015	08:40	Copper, Dissolved	ND	µg/L
Capistrano Outfall	2/8/2015	08:40	Zinc, Dissolved	ND	µg/L
Capistrano Outfall	2/8/2015	08:40	Chromium, Dissolved	ND	µg/L
Capistrano Outfall	2/8/2015	08:40	Nickel, Dissolved	ND	µg/L
Capistrano Outfall	2/8/2015	08:40	Oil & Grease (HEM)	ND	mg/L
Capistrano Outfall	2/8/2015	08:40	Mercury, Dissolved	ND	µg/L
Capistrano Outfall	2/8/2015	08:40	Enterococcus	15531	MPN/100 mL
Capistrano Outfall	2/8/2015	08:40	E. Coli	12997	MPN/100 mL
Capistrano Outfall	2/8/2015	08:40	Total Coliform	40	MPN/100 mL
St. Augustine Outfall	2/8/2015	08:22	Total Susp. Solids	73	mg/L
St. Augustine Outfall	2/8/2015	08:22	Nitrate as NO3-N	0.1	mg/L
St. Augustine Outfall	2/8/2015	08:22	o-Phosphate-P	0.1	mg/L
St. Augustine Outfall	2/8/2015	08:22	Hardness (as CaCO3)	18	mg/L
St. Augustine Outfall	2/8/2015	08:22	Fluoride	ND	mg/L
St. Augustine Outfall	2/8/2015	08:22	Nitrite as NO2-N	ND	mg/L
St. Augustine Outfall	2/9/2015	08:22	Unionized Ammonia	0.002	mg/L
St. Augustine Outfall	2/8/2015	08:22	Chloride	15	mg/L
St. Augustine Outfall	2/8/2015	08:22	Lead, Dissolved	ND	µg/L
St. Augustine Outfall	2/8/2015	08:22	Aluminum, Dissolved	228	µg/L
St. Augustine Outfall	2/8/2015	08:22	Silver, Dissolved	ND	µg/L
St. Augustine Outfall	2/8/2015	08:22	Cadmium, Dissolved	ND	µg/L
St. Augustine Outfall	2/8/2015	08:22	Copper, Dissolved	ND	µg/L
St. Augustine Outfall	2/8/2015	08:22	Zinc, Dissolved	ND	µg/L
St. Augustine Outfall	2/8/2015	08:22	Chromium, Dissolved	ND	µg/L
St. Augustine Outfall	2/8/2015	08:22	Nickel, Dissolved	ND	µg/L
St. Augustine Outfall	2/8/2015	08:22	Oil & Grease (HEM)	ND	mg/L
St. Augustine Outfall	2/8/2015	08:22	Mercury, Dissolved	ND	µg/L
St. Augustine Outfall	2/8/2015	08:22	Enterococcus	17324	MPN/100 mL
St. Augustine Outfall	2/8/2015	08:22	E. Coli	15531	MPN/100 mL
St. Augustine Outfall	2/8/2015	08:22	Total Coliform	20	MPN/100 mL
Denniston Outfall	8/19/2015	9:30	Nitrate as NO3-N	1.6	mg/L
Denniston Outfall	8/19/2015	9:30	o-Phosphate-P	ND	mg/L
Denniston Outfall	8/19/2015	9:30	Total Susp. Solids	3	mg/L
Denniston Outfall	8/19/2015	9:30	Fluoride	0.3	mg/L
Denniston Outfall	8/19/2015	9:30	Chloride	56	mg/L
Denniston Outfall	8/19/2015	9:30	Nitrite as NO2-N	0.2	mg/L
Denniston Outfall	8/20/2015	9:30	Unionized Ammonia	NA	mg/L

Denniston Outfall	8/19/2015	9:30	Hardness (as CaCO3)	134	mg/L
Denniston Outfall	8/19/2015	9:30	Oil & Grease (HEM)	ND	mg/L
Denniston Outfall	8/19/2015	9:30	Aluminum, Dissolved	ND	µg/L
Denniston Outfall	8/19/2015	9:30	Cadmium, Dissolved	ND	µg/L
Denniston Outfall	8/19/2015	9:30	Chromium, Dissolved	2	µg/L
Denniston Outfall	8/19/2015	9:30	Copper, Dissolved	ND	µg/L
Denniston Outfall	8/19/2015	9:30	Lead, Dissolved	ND	µg/L
Denniston Outfall	8/19/2015	9:30	Mercury, Dissolved	ND	µg/L
Denniston Outfall	8/19/2015	9:30	Nickel, Dissolved	ND	µg/L
Denniston Outfall	8/19/2015	9:30	Silver, Dissolved	ND	µg/L
Denniston Outfall	8/19/2015	9:30	Zinc, Dissolved	ND	µg/L
Denniston Outfall	8/19/2015	9:30	Enterococcus	>24196	MPN/100 mL
Denniston Outfall	8/19/2015	9:30	E. Coli	>24196	MPN/100 mL
Denniston Outfall	8/19/2015	9:30	Total Coliform	>24196	MPN/100 mL
Capistrano Outfall	8/19/2015	8:45	Nitrate as NO3-N	ND	mg/L
Capistrano Outfall	8/19/2015	8:45	o-Phosphate-P	0.4	mg/L
Capistrano Outfall	8/19/2015	8:45	Total Susp. Solids	34	mg/L
Capistrano Outfall	8/19/2015	8:45	Fluoride	0.7	mg/L
Capistrano Outfall	8/19/2015	8:45	Chloride	112	mg/L
Capistrano Outfall	8/19/2015	8:45	Nitrite as NO2-N	0.4	mg/L
Capistrano Outfall	8/20/2015	8:45	Unionized Ammonia	NA	mg/L
Capistrano Outfall	8/19/2015	8:45	Hardness (as CaCO3)	316	mg/L
Capistrano Outfall	8/19/2015	8:45	Oil & Grease (HEM)	14	mg/L
Capistrano Outfall	8/19/2015	8:45	Aluminum, Dissolved	ND	µg/L
Capistrano Outfall	8/19/2015	8:45	Cadmium, Dissolved	ND	µg/L
Capistrano Outfall	8/19/2015	8:45	Chromium, Dissolved	7	µg/L
Capistrano Outfall	8/19/2015	8:45	Copper, Dissolved	ND	µg/L
Capistrano Outfall	8/19/2015	8:45	Lead, Dissolved	ND	µg/L
Capistrano Outfall	8/19/2015	8:45	Mercury, Dissolved	ND	µg/L
Capistrano Outfall	8/19/2015	8:45	Nickel, Dissolved	ND	µg/L
Capistrano Outfall	8/19/2015	8:45	Silver, Dissolved	ND	µg/L
Capistrano Outfall	8/19/2015	8:45	Zinc, Dissolved	ND	µg/L
Capistrano Outfall	8/19/2015	8:45	Enterococcus	>24196	MPN/100 mL
Capistrano Outfall	8/19/2015	8:45	E. Coli	19,863	MPN/100 mL
Capistrano Outfall	8/19/2015	8:45	Total Coliform	>24196	MPN/100 mL