

Campbell Industrial Park Community Benefits - Summary of 2018 Fish Monitoring Results

The Campbell Industrial Park (CIP) community benefits study, initiated in 2007, was undertaken to determine the impacts, if any, of the CIP Generating Station (GS) to coral reef fish communities along the leeward coastline of the island of Oahu.

Each year of the study represents a certain development phase of the CIP GS:

1. First year, December 2007 - December 2008, represents the preconstruction phase of the CIP GS and is the baseline of yearly fish monitoring survey results. Coral reef monitoring stations were established during this year;
2. Second year, January - September 2009, represents the construction phase of the CIP GS;
3. Third year, January 2010 - December 2010, represents the operational phase of the CIP GS;
4. Fourth year, January 2011 - December 2011, represents the second year of the operational phase of the CIP GS;
5. Fifth year, January 2012 – December 2012, represents the third year of the operational phase of the CIP GS; and
6. Sixth year, January 2013 – December 2013, represents the fourth year of the operational phase of the CIP GS.
7. Seventh year, January 2014 – December 2014, represents the fifth year of the operational phase of the CIP GS.
8. Eighth year, January 2015 – December 2015, represents the sixth year of the operational phase of the CIP GS.
9. Ninth year, January 2016 – December 2016, represents the seventh year of the operational phase of the CIP GS.
10. Tenth year, January 2017 – December 2017, represents the eighth year of the operational phase of the CIP GS.
11. Eleventh year, January 2018 – December 2018, represents the ninth year of the operational phase of the CIP GS.

Sixteen stations (i.e., transects) were surveyed each year and each station was grouped according to its geographical location. Stations No. 1 to 15 are located on natural substrate, while Station No. 16 is the man-made discharge outfall for the Kahe Generating Station (KGS). The 16 stations are located in the following four areas:

- CIP Stations, station nos. 1 to 4, are offshore of CIP GS;
- Ko Olina Stations, station nos. 5 to 7, are located seaward of the resort;
- Kahe Stations, station nos. 8 to 12 and no. 16, are offshore of Kahe GS; and
- North/Nanakuli Stations, station nos. 13 to 15, are located north of Kahe point, with stations 14 and 15 being located off of Nanakuli.

From 2007 to 2018 a total of 44 surveys have been completed. When comparing the 2018 survey data with the previous survey years (2007–2017), data indicate there are no statistically significant differences among the 44 surveys for each of the following fish community measures:

- mean number of fish species
- mean number of individual fish surveyed
- mean standing crop of fishes (g/m²)

Therefore, the 2007–2018 survey periods demonstrate that the fish communities in this region continue to be stable. The statistical analysis for the three fish community measures on natural substratum found the three Ko Olina stations to be significantly greater over those in the other three groups (located on natural substrate) over the 2007-2018 survey period. On natural substratum, fish community development continues to be dependent upon topographical relief, which provides habitat and shelter, and benthic community development. The Ko Olina area has the best relief and benthic community of the areas monitored for this survey. Areas impacted by storms and hurricanes that have occurred in the past, such as those off of Barbers Point and Kahe, have less relief and benthic community development.

Consistent with previous findings, comparison of fish monitoring data from the KGS man-made offshore outfall structure with the data collected from each of the monitoring stations that are situated on natural substrate, the Kahe outfall has a clearly-separable significant greater mean number of fish individuals, greater number of species and standing crop. Furthermore, the analysis of the 2007–2018 data suggest that benthic community development and topographical complexity remain the principal factors that affect the degree of fish community development at the stations monitored for this study.