

香港泳灘水質 2023

Beach Water Quality in Hong Kong

為更佳泳灘水質而努力 • *Strive for better beach water quality*



環境保護署

香港特別行政區政府

Environmental Protection Department

The Government of the Hong Kong Special Administrative Region

Our Mission :

To safeguard the health and welfare of the community and meet conservation goals by working to achieve and maintain the bacteriological Water Quality Objective for bathing beaches



▲ Beautiful beaches under clear sky

Introduction

Hong Kong is surrounded by the sea and has many beautiful beaches along its long and winding coastline. To safeguard the health of beachgoers, we have to upkeep a clean swimming environment at these beaches.

Since 1986, the Environmental Protection Department (EPD) has implemented a comprehensive beach water quality monitoring programme established based on scientific studies. This report presents the beach water quality monitoring data and results for the 2023 bathing season, as well as summarizes the corresponding bacteriological Water Quality Objective (WQO) compliance rate and water quality rankings for all gazetted beaches in Hong Kong.

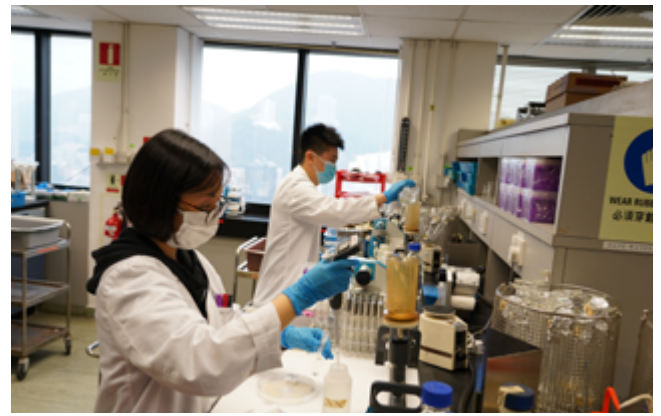


▲ Beaches are ideal places to relax and enjoy sea bathing

The EPD conducts weekly water quality monitoring at all gazetted beaches in the territory from March to October, including inspection of beach environmental conditions and collecting water samples for laboratory analysis of *Escherichia coli* (*E. coli*) level. In-situ measurements of physicochemical water quality parameters including dissolved oxygen, pH, salinity, temperature and turbidity of beach water are also taken.



▲ EPD's staff collecting water samples and conducting field measurement at beaches



▲ EPD's staff conducting testing and analysis of beach water samples at the Environmental Microbiology Laboratory

The EPD has established a dual rating system to assess the beach water quality in Hong Kong. Annual ranking and weekly grading of the beaches are determined according to the measured *E. coli* level in beach water, with each ranking or grading representing different levels of swimming-associated health risk in



▲ Water quality grading displayed at the gazetted beaches

contracting minor gastrointestinal and skin illnesses. The annual ranking represents the overall water quality of the beach in the entire bathing season of the year, whereas the weekly grading reflects more recent temporal changes in water quality. Under this dual rating system, beaches are categorised into “Good”, “Fair”, “Poor” or “Very Poor”. Beaches receiving a “Good” or “Fair” annual ranking meet the bacteriological WQO for bathing waters.

New Development - Beach Water Quality Forecast System

In line with the vision to develop Hong Kong into a smart city and to enhance our services to the public, the EPD launched the new Beach Water Quality Forecast System on 15 August 2023. The system was jointly developed by the EPD and the Hong Kong University of Science and Technology, using statistical multiple linear regression model which takes into account the most relevant and the latest environmental and hydrometeorological data, including microbiological data, rainfall, onshore wind, tide level, salinity, solar radiation and water temperature, to forecast the daily *E. coli* level in beach water.

The forecast system aims to predict the short-term beach water quality fluctuations arising from changes in hydrometeorological conditions, and produce near real-time water quality forecast to supplement the existing Beach Water Quality Monitoring Programme which relies on routine water quality monitoring data, assisting the public in early planning of water recreation activities. Through the smart technology platform, we can transform the water quality forecast model into a practical tool for disseminating the latest water quality forecast results to the public.

The forecast results are then converted into an easy-to-understand "Beach Water Quality Forecast Index", which is established making reference to the existing rating system for beach water quality, and is categorized into "1-Good", "2-Fair", "3-Poor" and "4-Very Poor".

When the forecast result of a beach is "4-Very Poor", members of the public should consider avoiding swimming at that beach and could choose from the forecast system other beaches with better predicted water quality.



▲ Daily water quality forecasts are available at Beach Water Quality Forecast mobile application

Members of the public can obtain the latest beach water quality forecast information through the "Beach Water Quality Forecast" mobile application (<https://www.epd.gov.hk/en/BWQApp>) or the dedicated beach water quality forecast page (<https://www.epd.gov.hk/en/BWQForecast>) on EPD's "Beach Water Quality" thematic website. The forecast results and information are updated daily and issued before 9 am in the morning.

Annual Beach Ranking in 2023

All 42 gazetted beaches complied with the bacteriological WQO in 2023. When compared to 2022, the number of beaches ranked as “Good” has slightly decreased from 27 beaches (or 64%) to 26 (or 62%), and the number of beaches ranked as “Fair” has increased from 15 (or 36%) to 16 (or 38%). No beaches were ranked as “Poor” or “Very Poor”.



▲ The white sand and turquoise water at Stanley Main Beach

The slight overall beach water quality fluctuation in 2023 was primarily attributed to the extreme weather in September with an unusually high monthly rainfall record (1,067 mm). During the period, Hong Kong was ferociously struck by the Super Typhoon Saola, followed by the prolonged torrential rain associated with the remnants of Typhoon Haikui. The cumulative rainfall recorded in the 2023 bathing season (2,751 mm) was 54% higher than that in 2022 (1,786 mm), and was also 20% higher than the 30-year climatological normal between 1991 and 2020. Consecutive heavy rainstorms could have washed off pollutants on land to the sea, causing rapid elevation of *E. coli* levels in seawater. Nevertheless, these beach water quality fluctuations were generally transient and still within the normal range of natural fluctuations.

In 2023, among the 42 gazetted beaches distributed across 6 different districts in Hong Kong, beaches in Southern (Hong Kong Island South), Islands, Sai Kung and Tai Po Districts continued to receive relatively better annual ranking as compared with those beaches in Tuen Mun and Tsuen Wan districts. Ten out of the 12 beaches in the Southern District were ranked as “Good”. Deep Water Bay Beach was changed from “Good” to “Fair”, while Big Wave Bay Beach continued to receive a “Fair” ranking. All of the beaches in the Islands District maintained the same ranking as recorded in the previous year, with Lower Cheung Sha Beach and Silver Mine Bay Beach being ranked as “Fair”, and the rest as “Good”. In Sai Kung District, except a change in ranking from “Good” to “Fair” at Silverstrand Beach, all other 5 beaches remained to be ranked as “Good”.



▲ Tong Fuk Beach has maintained a “Good” annual ranking since 1988.

Tai Po Lung Mei Beach in Tai Po District has maintained a “Good” annual ranking since its opening in June 2021.

Since the commissioning of the disinfection facilities of the Harbour Area Treatment Scheme in 2010, there has been a significant improvement in the water quality of beaches in Tsuen Wan District. All 8 beaches in the district have maintained a “Fair” annual ranking, on par with the situation in the previous years. Adjacent to the Tsuen Wan District, Tuen Mun District has 6 gazetted beaches and 3 of them, namely Golden Beach, New Beach and Cafeteria Old Beach, attained a “Good” annual ranking. The later in particular showed a gradual water quality improvement. The other 3 beaches in Tuen Mun District maintained a “Fair” ranking.

EPD’s beach water quality monitoring also covers 2 fairly popular non-gazetted beaches, namely the Discovery Bay Tai Pak Beach on Lantau Island and the sandy beach New Kiu Tsui in Sai Kung. Both beaches continued to achieve a “Good” ranking in 2023.



▲ Tai Po Lung Mei Beach is a great place for the public to enjoy the nature.

Weekly Beach Grading in 2023

In addition to the annual ranking, the EPD also issues weekly grading of gazetted beaches during their opening periods to keep beachgoers updated with the more recent trends of beach water quality. This up-to-date grading information can be obtained through different channels including press releases, the EPD's beach thematic website (<https://www.epd.gov.hk/epd/beach>), beach water quality hotline (2511-6666), GeoInfo Map of the GovHK website and noticeboards at the beaches. This section provides an overview of the weekly grading status of beaches during the 2023 bathing season.

In 2023, beaches in Southern District generally had decent water quality, and maintained a “Good” grading for 80% of time in the bathing season. In particular, Chung Hom Kok Beach, South Bay Beach and St. Stephen’s Beach achieved 100% “Good” grading throughout the entire bathing season. Both Deep Water Bay Beach and Stanley Main Beach were once temporarily graded as “Very Poor” in June after heavy rainstorms, and their water quality returned to normal shortly. Towards the end of bathing season, the water quality at Deep Water Bay Beach was temporarily affected again by an emergency repair works for a sewage rising main in the vicinity, leading to another “Very Poor” grading.

Most beaches in Islands District continued to possess pristine water quality. Among the 9 gazetted beaches in the district, Cheung Chau Tung Wan Beach, Hung Shing Yeh Beach and Tong Fuk Beach maintained “Good” grading throughout the entire bathing season. On the other hand, a regional



▲ St. Stephen’s Beach and the nearby water sports centre.

water quality fluctuation associated with heavy rainstorm was observed in the district in early May, when Lower Cheung Sha Beach, Upper Cheung Sha Beach, Pui O Beach and Silver Mine Bay Beach were downgraded to “Very Poor” but recovered quickly.

The beaches in Sai Kung District continued to achieve good weekly grading. Among all 6 beaches in the district, Hap Mun Bay Beach, Kiu Tsui Beach and Trio Beach had the best water quality attaining a “Good” grading for over 90% of time in the bathing season. The only “Very Poor” grading in the district, which was associated with heavy rainfall, was reported at Silverstrand Beach.

Same as previous years, Tai Po Lung Mei Beach in Tai Po District was mostly graded as “Good”. Its grading was changed to “Fair” under rare occasions due to heavy rainstorms occurred between July and September. There was no “Poor” or “Very Poor” grading throughout the bathing season.

All beaches in Tuen Mun District, except for Castle Peak Beach, had relatively stable water quality rating between "Good" and "Fair" throughout the bathing season. Occasions of “Very Poor” grading at Castle Peak Beach were recorded, which could largely be attributed to slower water quality recovery from extreme weather due to its relatively enclosed environment as compared to other beaches in the vicinity.

As in the past years, beaches in Tsuen Wan District mostly attained a “Fair” grading in the bathing season, with district-wide fluctuation of water quality observed in June, when the unsteady weather also occasionally brought “Very Poor” grading to all beaches, except Ting Kau Beach, in the district.



▲ Ting Kau Beach by the Ting Kau Bridge

Water Quality Trend

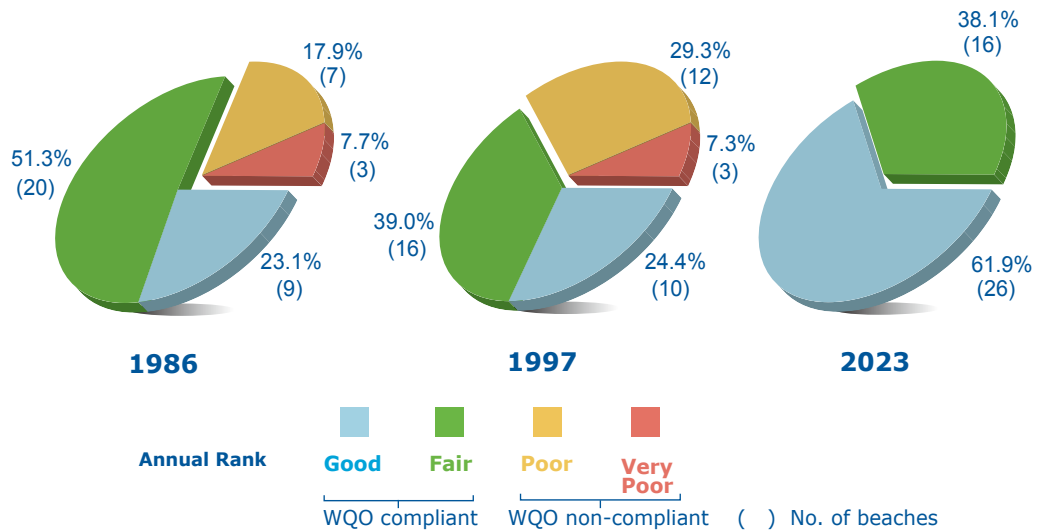
The significant long-term improvement over the past three decades, as well as the continuously good beach water quality, are the outcomes of continuous efforts of the Government and various stakeholders.

In 1980s, many beaches were either closed (e.g. Cafeteria Old Beach, Castle Peak Beach and Silver Mine Bay Beach) or on the verge of being closed (e.g. Middle Bay Beach and Repulse Bay Beach) due to poor water quality. The situation was aggravated by the population growth associated new town development during early and mid-1990s. The bacteriological WQO compliance rate of beaches further deteriorated from 74% (29 of 39 beaches) in 1986 to 63% (26 of 41 beaches) in 1997.

In the past two decades, the Government has put in continuous efforts and extensive resources to implement various pollution control and environmental improvement measures, resulting in a substantial and persistent improvement in beach water quality. These efforts and measures include the enforcement of the Water Pollution Control Ordinance and Livestock Waste Control Scheme, extension of the sewerage network to the beach hinterlands, upgrading of the existing sewage treatment facilities, and provision of new treatment facilities. Among these measures, the Harbour Area Treatment Scheme is a core sewerage infrastructure project that has brought tremendous improvement to Hong Kong's marine and beach water quality.

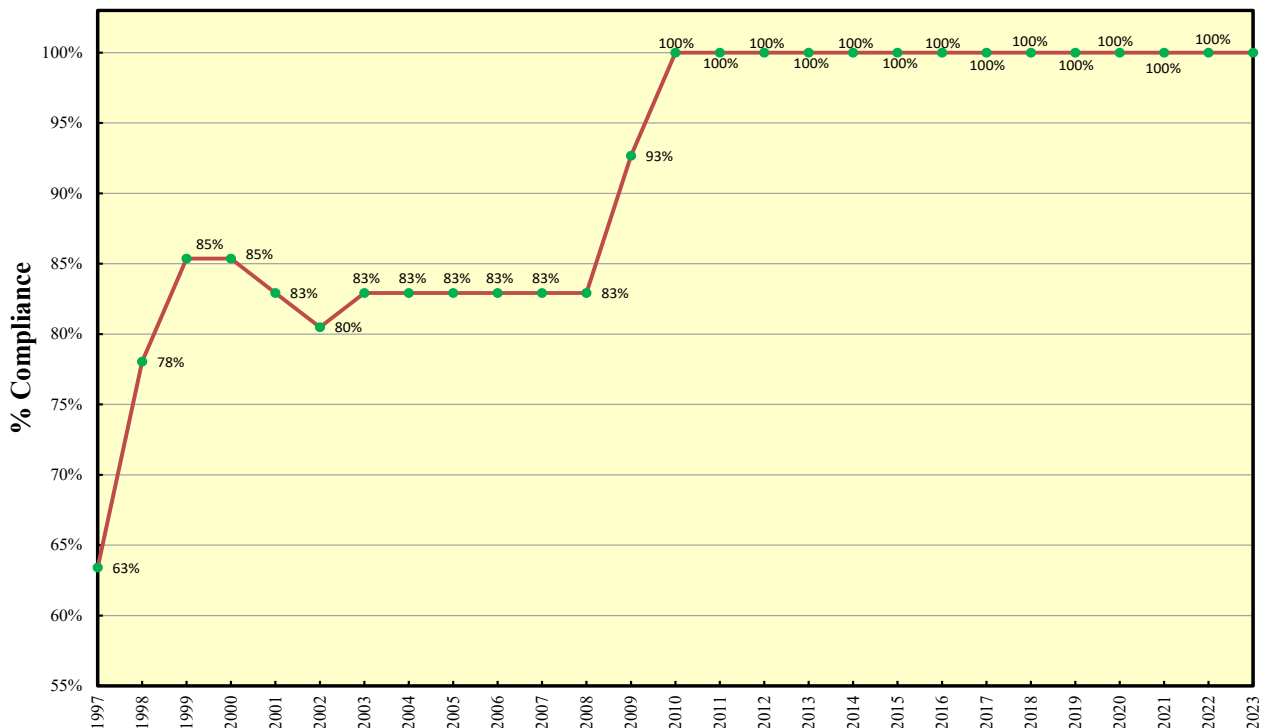
Consequently, there has been a marked improvement in the overall beach water quality, and full compliance with the bacteriological WQO for all gazetted beaches in Hong Kong has been continuously maintained for 14 consecutive years since 2010. The major water quality improvement measures implemented by the Government are summarized in the table on page 12.

Comparison of annual beach ranking of gazetted beaches in 1986, 1997 and 2023



Note: Two beaches degazetted in 1995 were excluded from all the statistics above

Bacteriological WQO compliance rate of gazetted beaches (1997 – 2023)



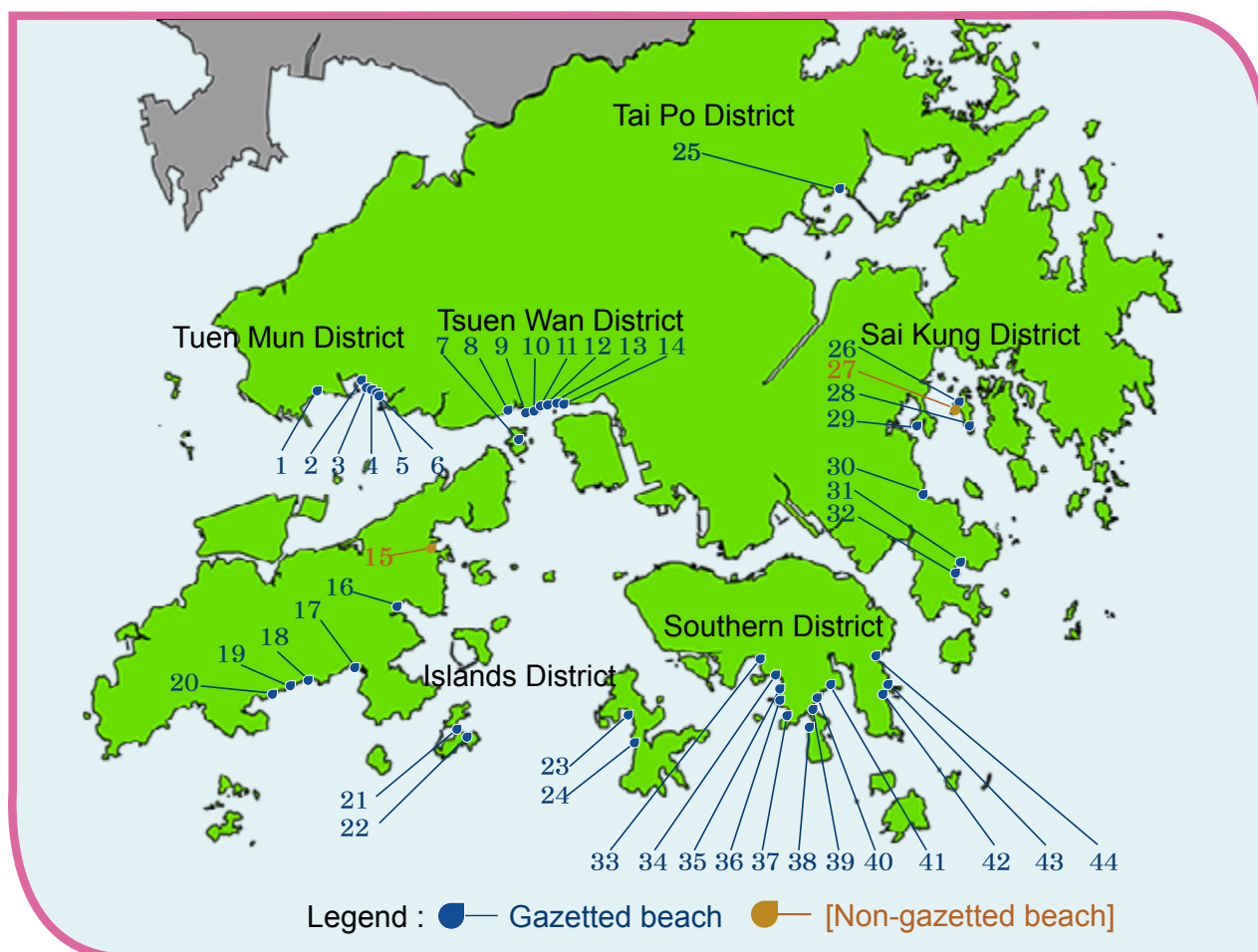
Major improvement measures since the implementation of beach water quality monitoring programme in 1986	
1986 – 1990	Beaches with Water Quality Improved
<ul style="list-style-type: none"> * Implementation of the Livestock Waste Control Scheme under the Waste Disposal (Livestock Waste) Regulation. * Declaration of the Southern Water Control Zone (WCZ) under the Water Pollution Control Ordinance (WPCO) for legislative enforcement. * Interception and diversion of polluted water from storm drains at beaches in Southern District. 	<p>Most beaches, particularly Silver Mine Bay Beach</p> <p>Beaches in Southern District</p> <p>Beaches in Southern District</p>
1991 – 1995	
<ul style="list-style-type: none"> * Implementation of chemical waste control. * Declaration of the North Western WCZ under the WPCO for legislative enforcement. * Diversion of polluted storm water drains away from Castle Peak Beach. * Provision of public sewers for So Kwun Wat and Sam Shing Estate. * Commissioning of Stanley Sewage Treatment Works (STW). 	<p>All beaches in Hong Kong</p> <p>Beaches in Tuen Mun District</p> <p>Castle Peak Beach</p> <p>Beaches in Tuen Mun District</p> <p>Stanley Main Beach</p>
1996 – 2000	
<ul style="list-style-type: none"> * Full implementation of the WPCO in all WCZs. * Commissioning of the Shek O Sewage Screening Plant and diversion of polluted storm water drains at Shek O Village . * Completion of all major works under the Southern Sewerage Master Plan. * Commissioning of the 2 km long Pillar Point sewage submarine outfall. 	<p>All beaches in Hong Kong</p> <p>Shek O Beach</p> <p>Beaches in Southern District</p> <p>Beaches in Tuen Mun District</p>
2001 – 2005	
<ul style="list-style-type: none"> * Completion of Harbour Area Treatment Scheme Stage 1. * Provision of public sewers in the Silverstrand area. * Full operation of the Sham Tseng STW. 	<p>Big Wave Bay, Shek O and Rocky Bay Beach</p> <p>Silverstrand Beach</p> <p>Beaches along the Tsuen Wan coast</p>
2006 – 2023	
<ul style="list-style-type: none"> * Commissioning of the Advance Disinfection Facilities at the Stonecutters Island STW. * Extension of the public sewerage network to the beach hinterland along Castle Peak Road. * Full scale commissioning of all facilities of the Harbour Area Treatment Scheme (HATS) Stage 2A. 	<p>All beaches in Tsuen Wan District</p> <p>Beaches along the Tsuen Wan coast</p> <p>Beaches along the Tsuen Wan coast</p>

Graphs of historical water quality trends for individual gazetted beaches are given in Appendix C of this report. The public can also visit the EPD's "Beach Water Quality" website (<https://www.epd.gov.hk/epd/beach>) to obtain more details of the beach water quality monitoring programme, relevant information and data, as well as annual water quality reports published since 2000.



▲ Relaxing on beaches

Beaches monitored by the EPD



Tuen Mun District

1. Butterfly
2. Castle Peak
3. Kadoorie
4. Cafeteria Old
5. Cafeteria New
6. Golden

Tsuen Wan District

7. Ma Wan Tung Wan
8. Anglers'
9. Gemini
10. Hoi Mei Wan
11. Casam
12. Lido
13. Ting Kau
14. Approach

Islands District

15. [Discovery Bay Tai Pak Beach]
16. Silver Mine Bay
17. Pui O
18. Lower Cheung Sha
19. Upper Cheung Sha
20. Tong Fuk
21. Cheung Chau Tung Wan
22. Kwun Yam
23. Hung Shing Yeh
24. Lo So Shing

Tai Po District

25. Tai Po Lung Mei

Sai Kung District

26. Kiu Tsui
27. [Kiu Tsui (New)]
28. Hap Mun Bay
29. Trio
30. Silverstrand
31. Clear Water Bay First
32. Clear Water Bay Second

Southern District

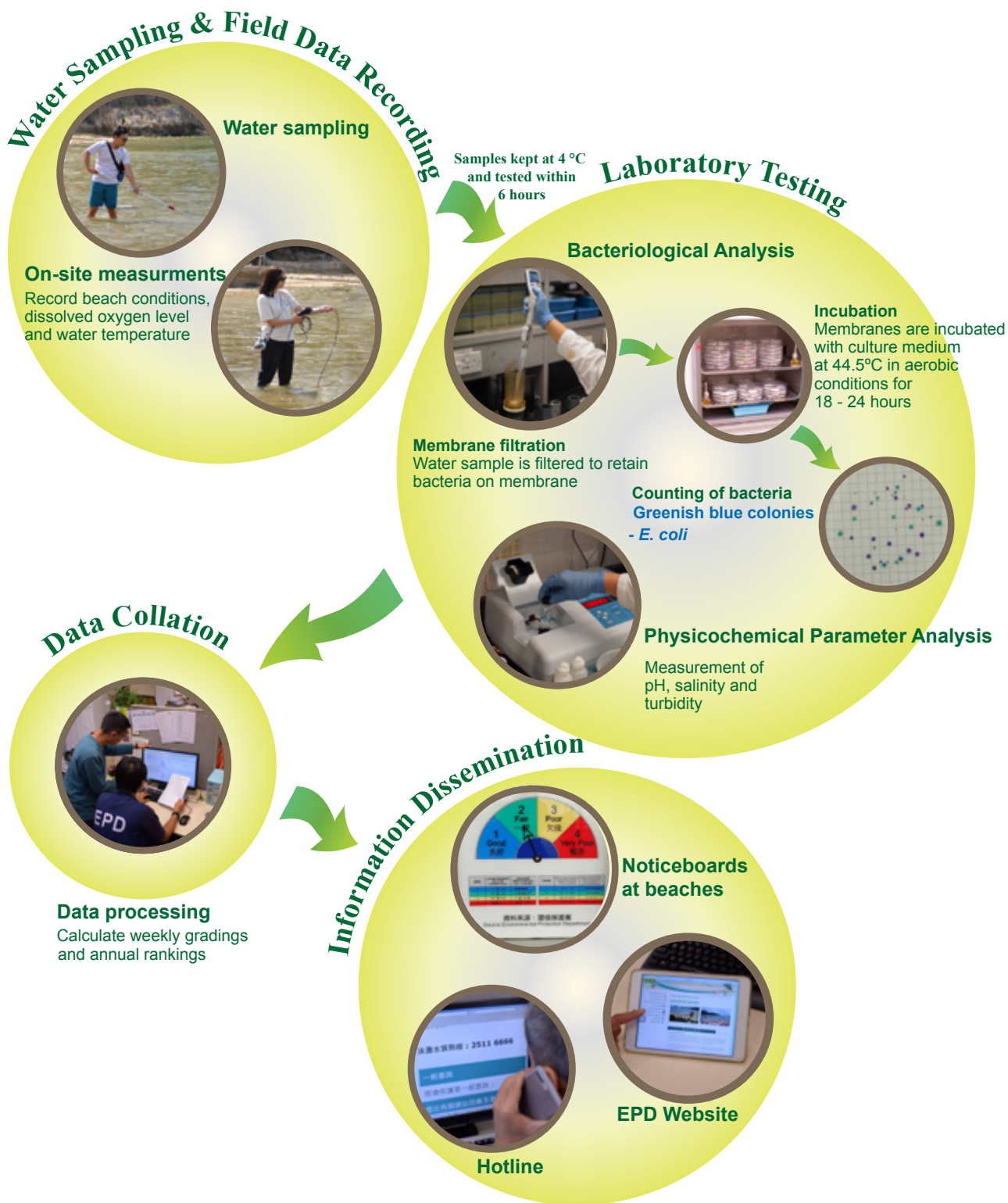
33. Deep Water Bay
34. Repulse Bay
35. Middle Bay
36. South Bay
37. Chung Hom Kok
38. St. Stephen's
39. Stanley Main
40. Hairpin
41. Turtle Cove
42. Shek O
43. Rocky Bay
44. Big Wave Bay

Beach monitoring frequency

Beach	Monitoring frequency per month	
	Bathing season*	Non-bathing season
Gazetted beaches open all year round	at least 3 times	at least 3 times
Other gazetted beaches	at least 3 times	once
Non-gazetted beaches	at least 3 times	once

* March to October

Overview of various stages of the Beach Monitoring Programme



Hong Kong's annual beach ranking system

Rank	<i>E. coli</i> counts per 100 mL*	Minor illness rate** (Cases per 1,000 swimmers)	WQO Compliance
Good	≤24	Undetectable	Compliant
Fair	25-180	≤10	
Poor	181-610	11-15	Non-compliant
Very Poor	>610	>15	

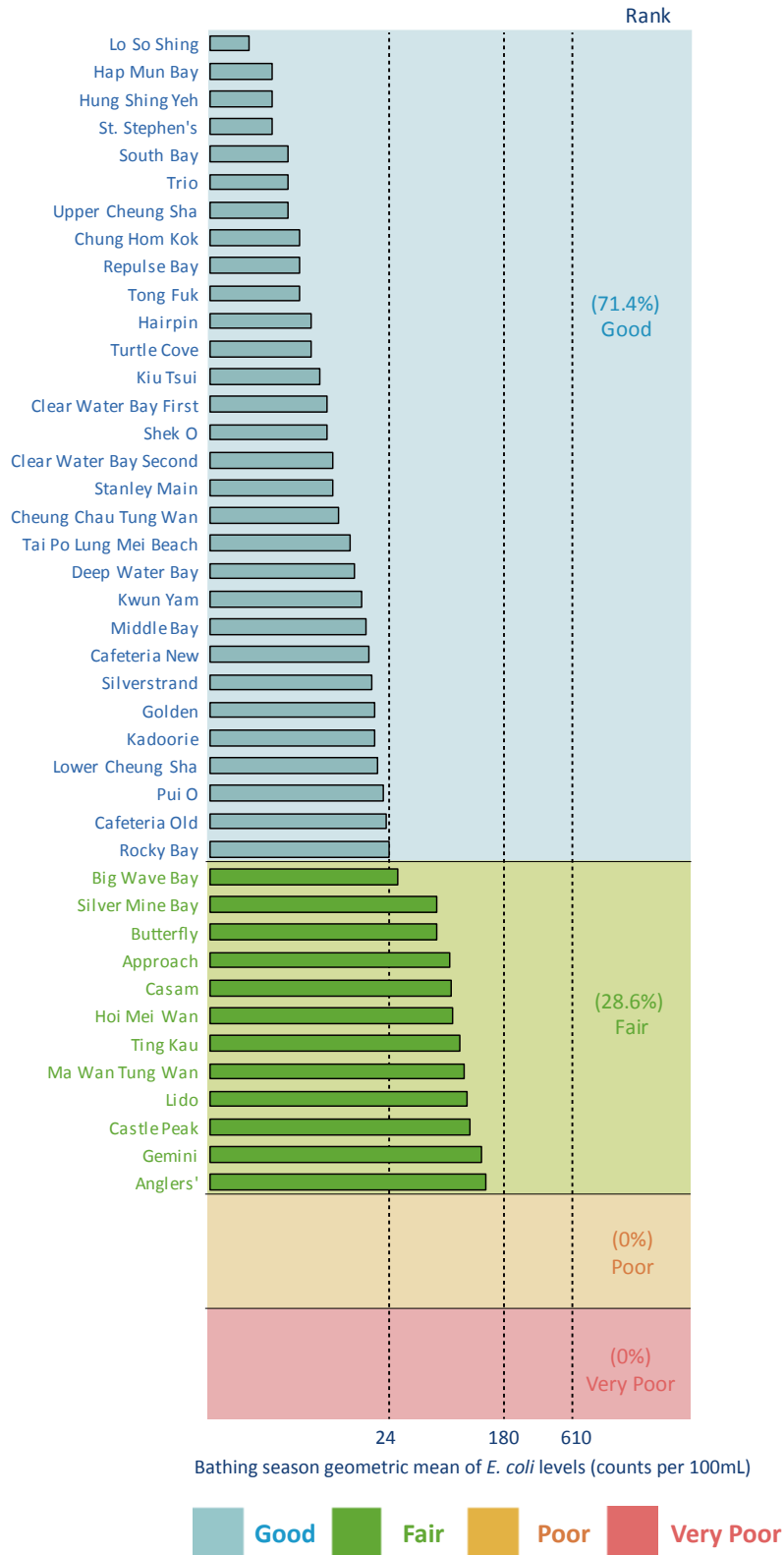
- * Geometric mean *E. coli* count calculated based on all data collected between March and October
- ** Skin and gastrointestinal illnesses

Hong Kong's weekly beach grading system

Grade	Beach water quality	<i>E. coli</i> counts per 100 mL*	Minor illness rate** (Cases per 1,000 swimmers)
1	Good	≤24	Undetectable
2	Fair	25-180	≤10
3	Poor	181-610	11-15
4	Very Poor	>610 or last reading >1,600	>15

- * Unless otherwise indicated, the *E. coli* count represents the geometric mean of the 5 most recent sampling occasions
- ** Skin and gastrointestinal illnesses

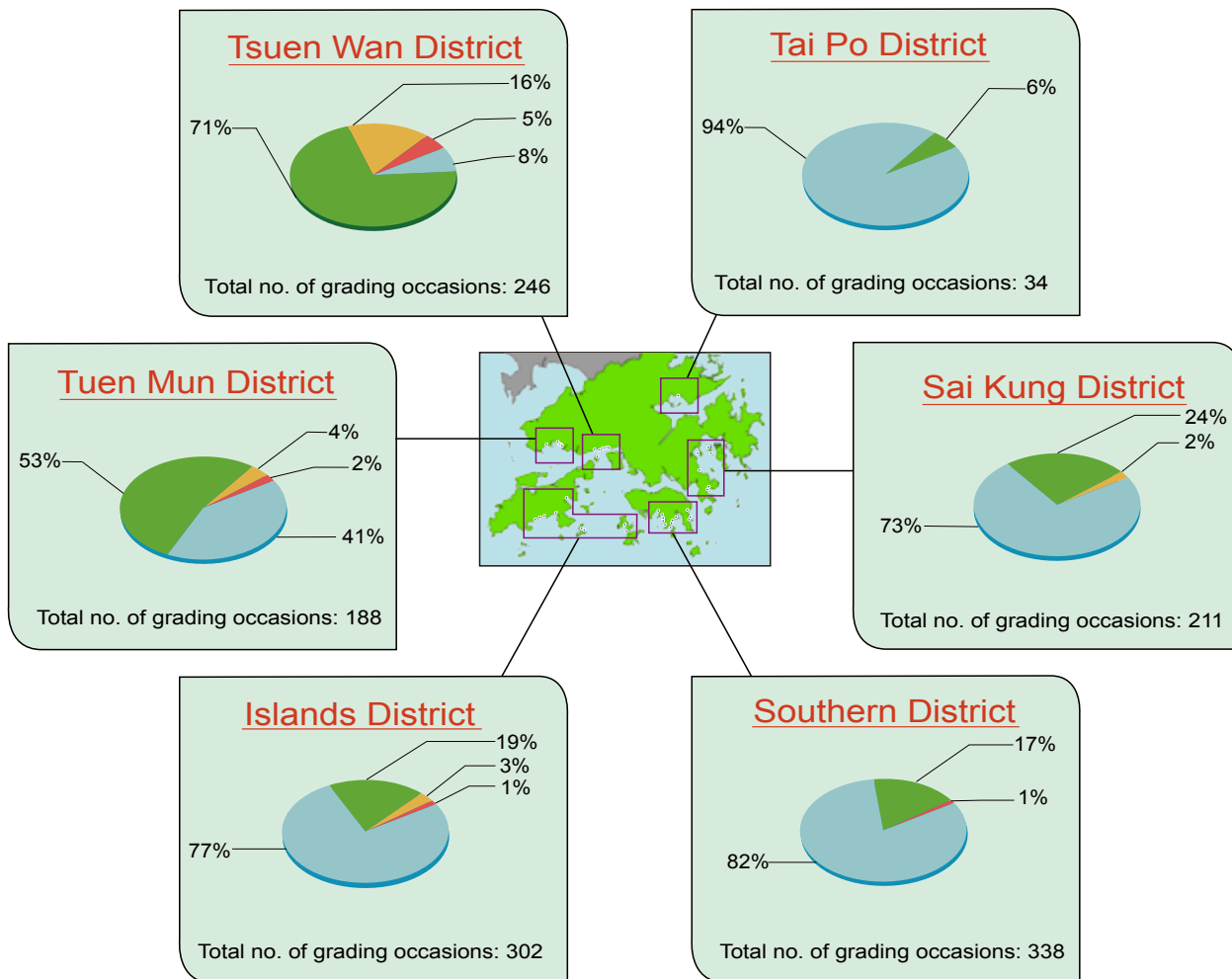
Annual ranking and bathing season geometric mean of *E. coli* levels of Hong Kong's gazetted beaches, 2023



Annual ranking of gazetted beaches at a glance, 2023



Weekly beach grading summary of open gazetted beaches by district, 2023



Note: Figures may not add up to 100% due to roundings

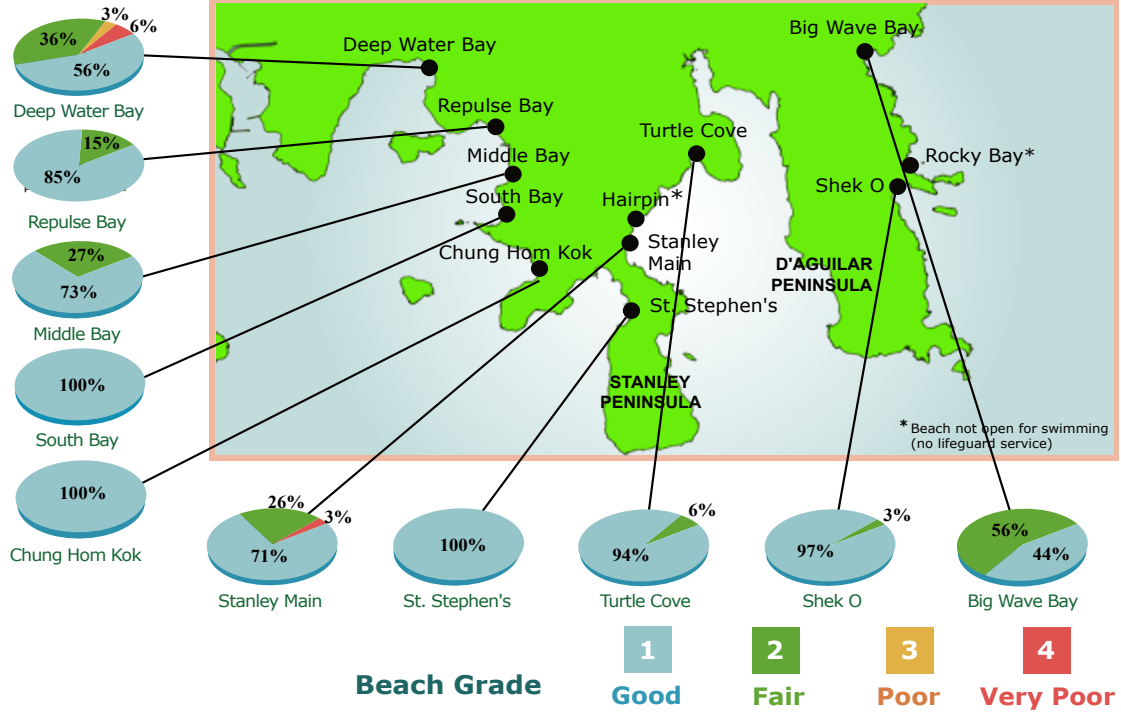


Southern District beaches

Annual ranking



Weekly grading



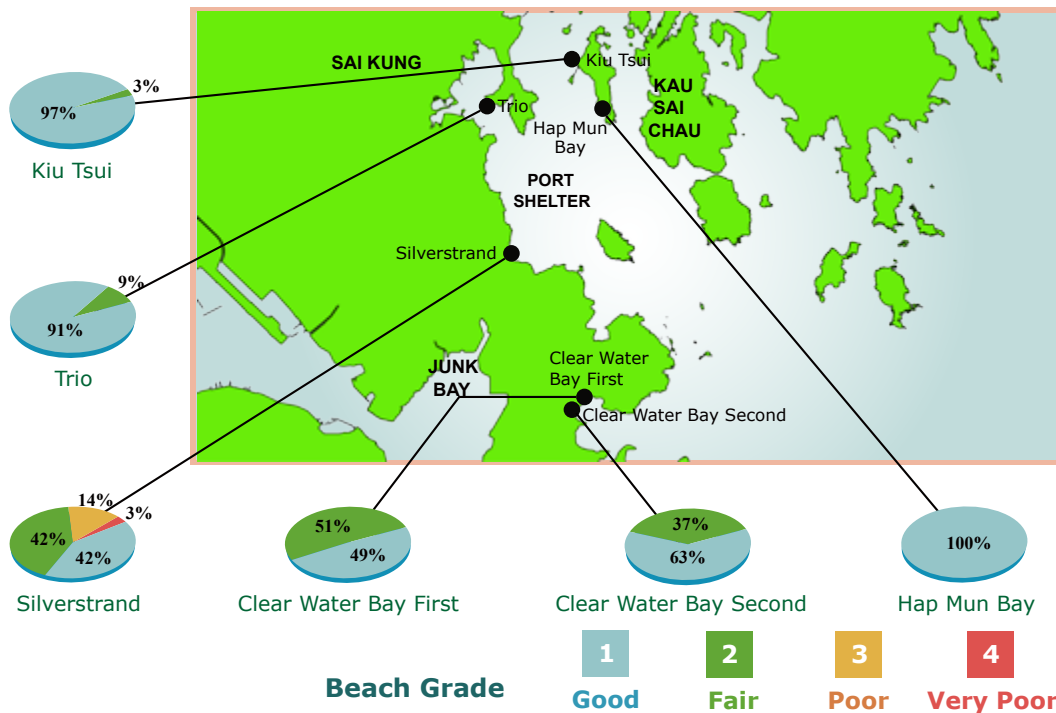
Note: Figures may not add up to 100% due to roundings; "*" Beach not open for swimming. No grading was provided

Sai Kung District beaches

Annual ranking



Weekly grading



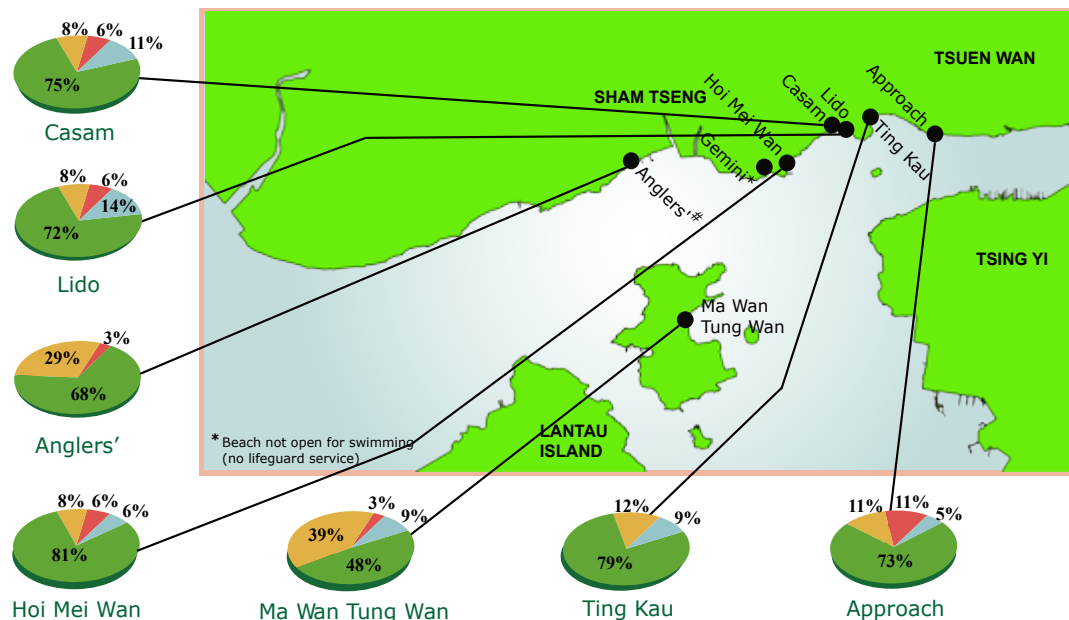
Note: Figures may not add up to 100% due to roundings

Tsuen Wan District beaches

Annual ranking



Weekly grading



Note: Figures may not add up to 100% due to roundings;

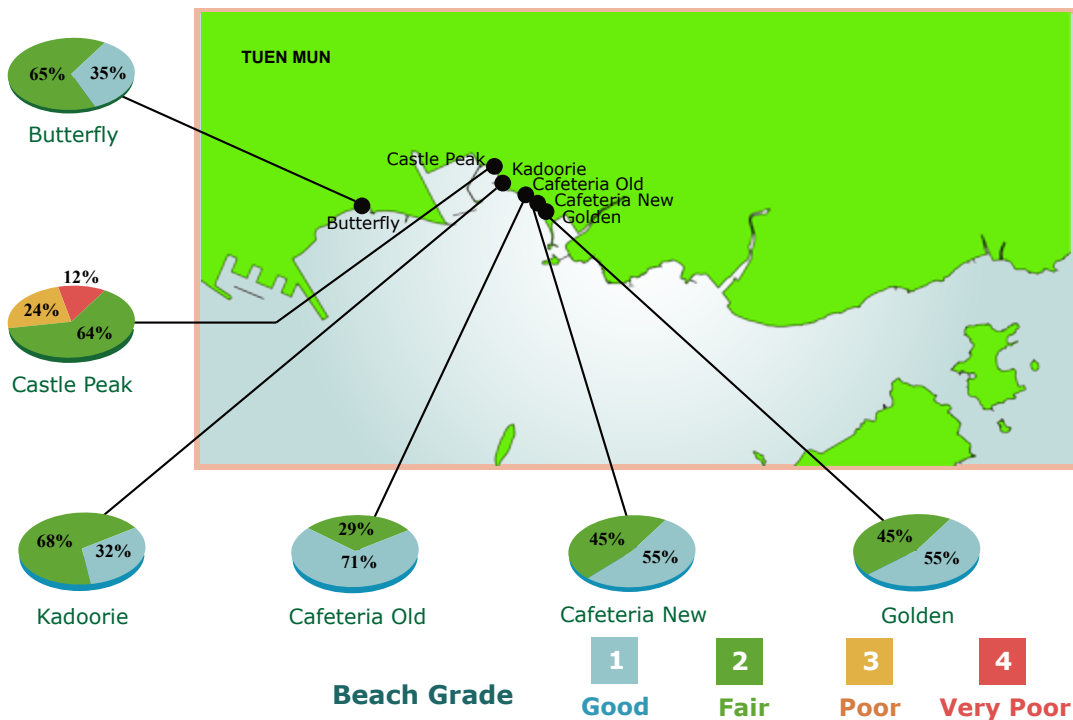
"*" Beach not open for swimming. No grading was provided. "#" Temporarily closed for renovation.

Tuen Mun District beaches

Annual ranking



Weekly grading



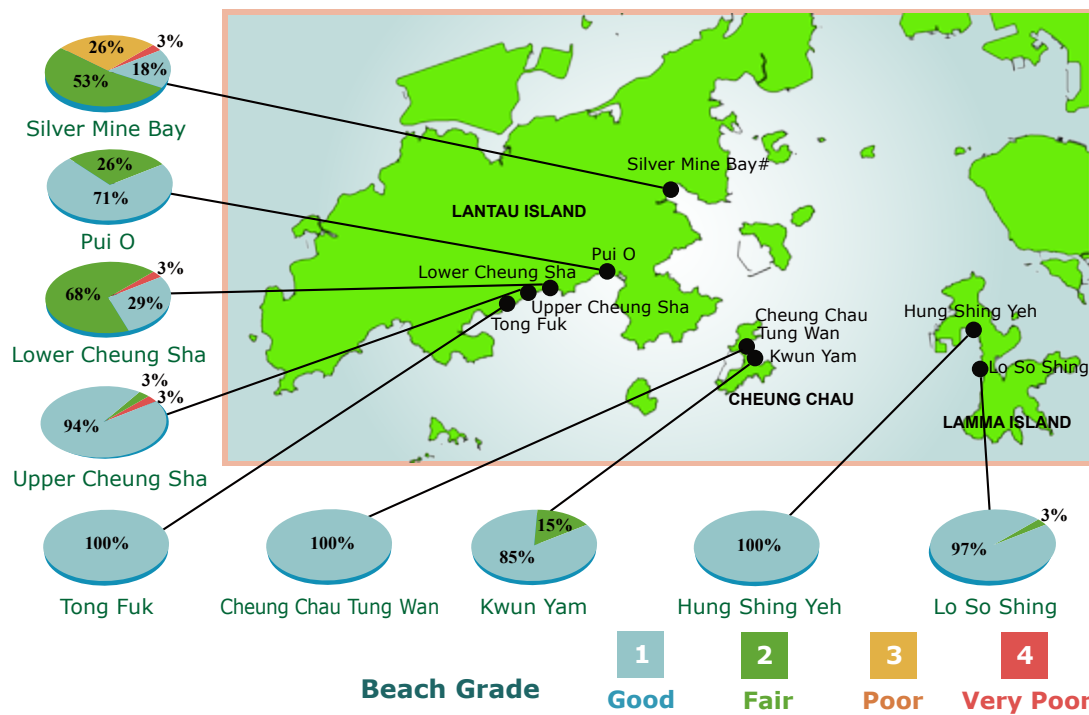
Note: Figures may not add up to 100% due to roundings

Islands District beaches

Annual ranking



Weekly grading



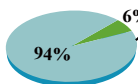
Note: Figures may not add up to 100% due to roundings

Tai Po District beaches

Annual ranking



Weekly grading

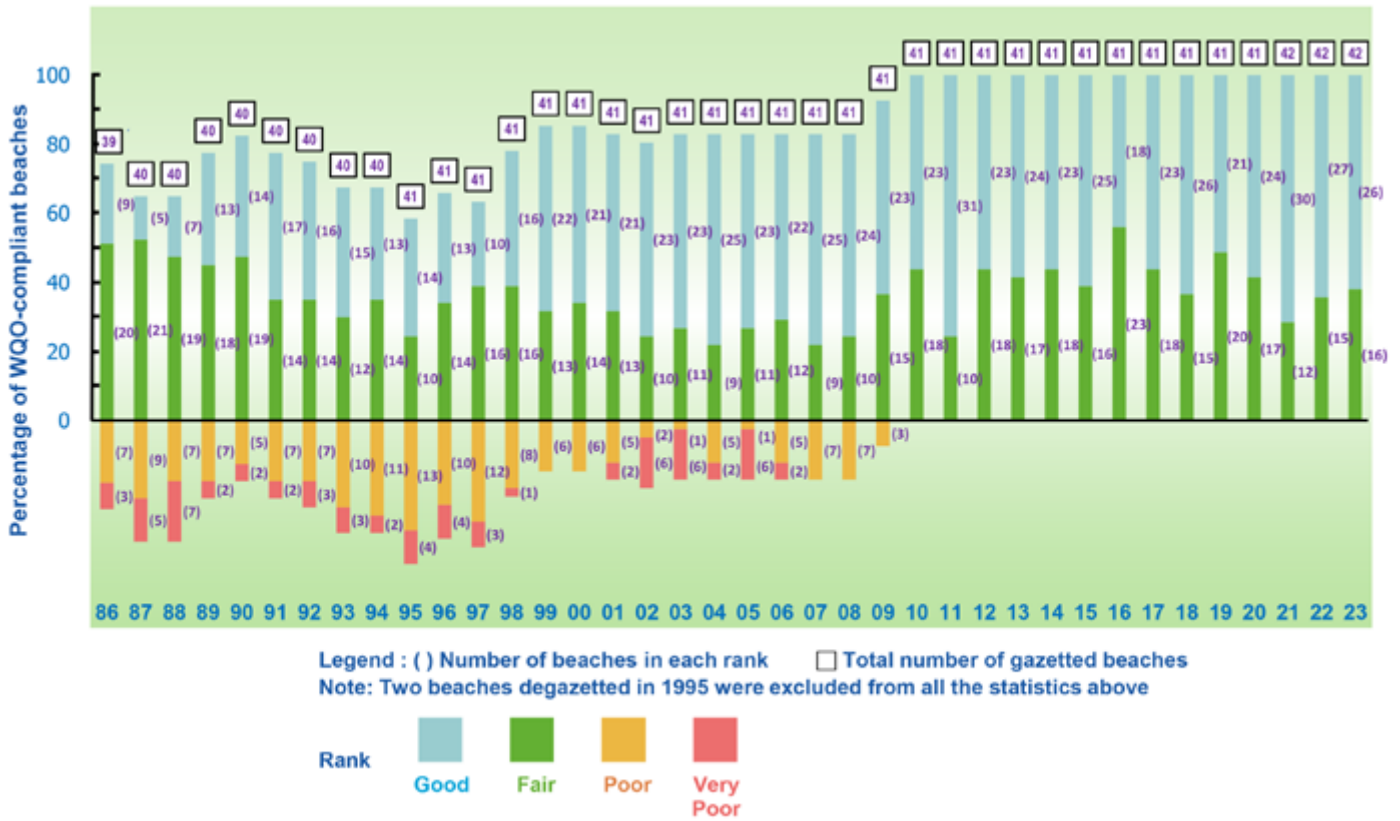


Tai Po Lung Mei

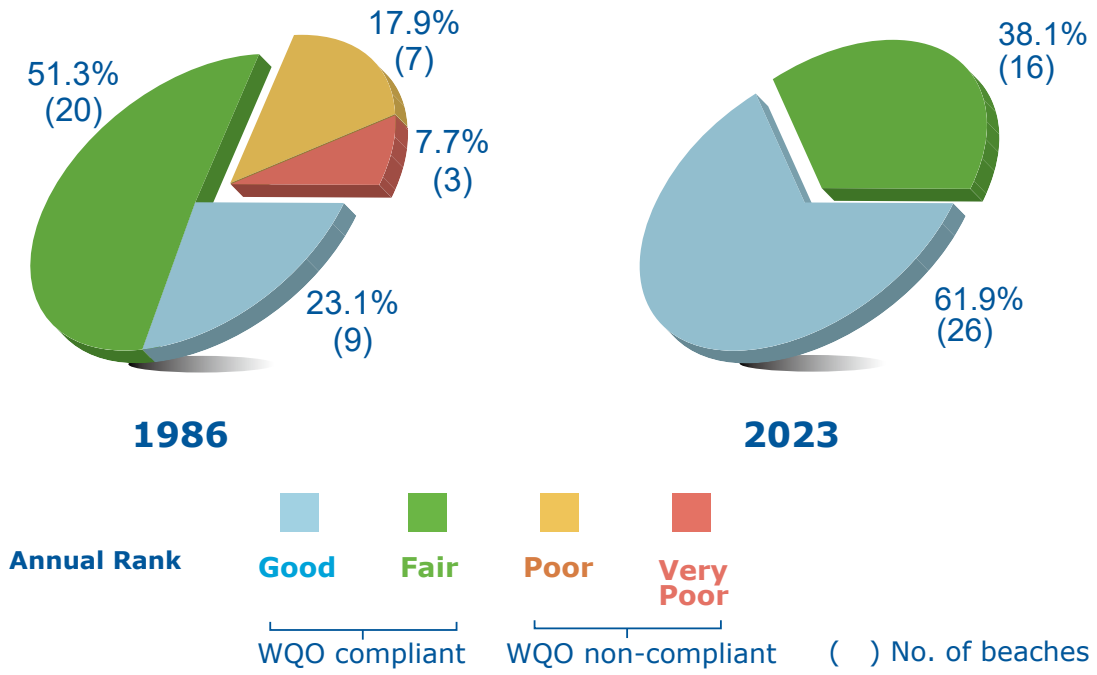


Note: Figures may not add up to 100% due to roundings

Annual ranking of gazetted beaches, 1986 - 2023



Comparison of annual beach ranking of gazetted beaches in 1986 and 2023



Note: Two beaches degazetted in 1995 were excluded from all the statistics above

Annual geometric mean of *E. coli* levels of gazetted beaches by district, 1997 - 2023



*The Tai Po Lung Mei Beach is opened for use by the public in June 2021.

Appendix A - Annual geometric mean *E. coli* levels (1997-2023)

Southern District

Annual geometric mean *E. coli* levels

Beach	<i>E. coli</i> counts per 100mL												
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Big Wave Bay	179	114	77	98	106	23	33	26	101	50	17	31	46
Chung Hom Kok	22	40	14	8	15	13	14	9	13	10	9	13	14
Deep Water Bay	55	46	14	16	18	9	9	7	8	7	7	9	12
Hairpin	44	72	17	18	10	6	7	7	13*	11*	19*	10*	12*
Middle Bay	40	16	11	11	8	9	14	12	20	18	9	11	12
Repulse Bay	23	11	8	9	13	9	12	4	8	12	7	14	11
Rocky Bay	399*	223*	72*	80*	118*	43*	28*	19*	30*	33*	17*	15*	13*
Shek O	102	70	32	29	31	13	11	16	19	24	18	22	11
South Bay	17	6	4	7	5	5	11	9	7	7	5	5	4
St. Stephen`s	40	26	11	6	7	5	9	4	12	11	6	9	6
Stanley Main	72	24	13	12	9	8	6	5	7	10	9	10	13
Turtle Cove	40	14	12	11	15	8	4	5	8	7	5	5	5

Beach	<i>E. coli</i> counts per 100mL													
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Big Wave Bay	149	17	31	21	40	21	78	36	34	103	37	28	27	31
Chung Hom Kok	9	5	5	8	13	13	6	6	4	6	9	5	18	7
Deep Water Bay	9	6	9	11	14	19	24	14	11	19	13	13	11	29
Hairpin	33*	6*	9*	14*	12*	8*	17*	5*	8*	7*	5*	6*	5*	11*
Middle Bay	12	6	15	14	13	13	20	14	9	18	11	16	24	17
Repulse Bay	7	6	7	10	11	14	10	5	4	4	5	5	6	6
Rocky Bay	50*	23*	30*	22*	16*	35*	47*	18*	29*	47*	10*	24*	15*	19*
Shek O	19	11	16	15	18	29	26	16	19	25	7	8	23	8
South Bay	4	4	5	4	5	9	5	3	2	4	3	4	4	4
St. Stephen`s	4	4	4	10	5	6	7	4	4	5	6	3	3	4
Stanley Main	20	6	34	19	9	20	23	8	11	7	6	9	7	12
Turtle Cove	8	4	6	6	8	5	11	5	3	9	8	6	7	7

Note: * Beach not open for swimming that year

Tai Po District

Annual geometric mean *E. coli* levels

Beach	<i>E. coli</i> counts per 100mL		
	2021	2022	2023
Tai Po Lung Mei	12	9	8

Sai Kung District Annual geometric mean *E. coli* levels

Beach	<i>E. coli</i> counts per 100mL												
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Clear Water Bay First	62	41	11	16	28	28	17	9	16	20	14	11	15
Clear Water Bay Second	66	44	12	26	22	14	21	10	19	13	9	19	27
Hap Mun Bay	3	2	2	2	1	2	4	3	4	4	3	5	3
Kiu Tsui	5	4	4	5	5	4	5	17	14	11	6	13	16
Silverstrand	148	99	32	61	100	133	97	74	67	30	33	35	51
Trio	30	21	17	10	12	6	10	2	6	5	2	12	5

Beach	<i>E. coli</i> counts per 100mL													
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Clear Water Bay First	10	7	8	24	15	14	31	20	19	23	19	8	18	19
Clear Water Bay Second	13	5	18	15	18	17	32	16	13	17	14	9	9	19
Hap Mun Bay	3	2	2	7	4	2	4	3	3	2	3	3	3	2
Kiu Tsui	13	9	10	13	11	6	10	5	8	8	11	7	7	6
Silverstrand	28	18	30	39	40	18	63	56	24	40	28	18	19	48
Trio	6	2	9	8	10	4	13	7	7	9	6	4	6	5

Tsuen Wan District Annual geometric mean *E. coli* levels

Beach	<i>E. coli</i> counts per 100mL												
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Anglers'	691*	502*	442*	326*	621*	1 169*	693*	619*	895*	772*	496*	510*	276*
Approach	1 009*	435*	387*	316*	411*	696*	762*	470*	663*	599*	352*	251*	208*
Casam	609	239	231	209	233	741	702*	594*	716*	426*	305*	289*	144*
Gemini	458	399	350	258	323	1 155	875*	1 102*	1 042*	853*	566*	481*	410*
Hoi Mei Wan	471	280	109	177	199	547	442*	287*	641*	308*	286*	271*	130*
Lido	600	262	231	181	269	683	734*	523*	782*	459*	280*	296*	178*
Ma Wan Tung Wan	110	92	51	39	133	201	159	101	132	171	78	53	60
Ting Kau	1 583*	1 045*	515*	593*	739*	742*	831*	412*	512*	469*	405*	258*	145*

Beach	<i>E. coli</i> counts per 100mL													
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Anglers'	134*	27*	69*	133	130	77	76	45	143	88	105	135	142	162
Approach	124*	59	83	106	121	143	78	114	92	97	133	71	84	92
Casam	102*	21	50	71	63	52	42	43	94	79	84	74	109	59
Gemini	137*	19*	40*	135*	110*	56*	40*	39*	120*	79*	101*	127*	139*	107*
Hoi Mei Wan	87*	23	51	86	58	90	65	63	92	112	84	76	75	85
Lido	87*	21	32	53	57	52	39	34	76	65	66	98	111	56
Ma Wan Tung Wan	17	10	24	41	31	20	32	29	74	46	84	93	54	133
Ting Kau	141*	58*	88*	107*	89	151	140	75	101	102	93	85	96	113

Note: * Beach not open for swimming that year

Tuen Mun District Annual geometric mean *E. coli* levels

Beach	<i>E. coli</i> counts per 100mL												
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Butterfly	259	121	44	61	74	60	74	55	55	94	84	56	49
Cafeteria New	309	100	60	51	104	62	80	54	70	120	68	48	38
Cafeteria Old	435	138	58	57	125	74	76	61	81	150	67	45	46
Castle Peak	332*	199*	57*	58*	105*	58*	64*	80*	90	139	64	47	35
Golden	352	98	44	50	87	66	84	46	62	117	87	63	42
Kadoorie	290	130	109	68	120	114	160	98	117	118	101	87	48

Beach	<i>E. coli</i> counts per 100mL													
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Butterfly	30	41	42	71	38	98	131	81	39	91	129	57	50	30
Cafeteria New	31	27	47	50	31	30	38	31	18	40	37	17	20	16
Cafeteria Old	34	29	48	39	45	41	70	50	30	64	53	23	34	20
Castle Peak	63	49	48	78	91	71	106	65	70	128	112	103	162	149
Golden	37	26	62	45	39	31	45	37	22	41	45	19	24	23
Kadoorie	45	37	40	52	37	29	48	31	28	52	55	19	31	29

Note: * Beach not open for swimming that year

Islands District Annual geometric mean *E. coli* levels

Beach	<i>E. coli</i> counts per 100mL												
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Cheung Chau Tung Wan	24	19	11	12	16	17	11	12	14	37	21	15	17
Hung Shing Yeh	5	3	3	5	6	2	5	4	4	4	6	4	6
Kwun Yam	32	21	6	10	11	9	7	5	10	13	9	10	9
Lo So Shing	3	2	4	2	5	2	3	2	3	4	3	5	7
Lower Cheung Sha	85	23	10	12	22	10	14	7	12	11	12	20	13
Pui O	36	16	10	10	17	10	15	9	10	16	30	24	12
Silver Mine Bay	481	123	39	50	67	42	50	14	34	52	22	43	45
Tong Fuk	14	10	4	5	6	4	3	4	5	5	4	10	5
Upper Cheung Sha	8	3	2	3	5	3	3	3	3	4	4	7	5

Beach	<i>E. coli</i> counts per 100mL													
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Cheung Chau Tung Wan	12	6	13	10	14	19	9	18	9	8	11	10	12	9
Hung Shing Yeh	4	3	4	4	5	4	6	5	4	4	5	3	4	4
Kwun Yam	8	5	5	9	8	12	12	9	8	7	8	15	11	12
Lo So Shing	3	3	4	5	5	4	6	6	4	3	4	2	3	4
Lower Cheung Sha	11	9	10	17	21	17	47	19	9	25	10	20	31	34
Pui O	14	13	22	51	60	24	29	34	19	22	21	22	15	14
Silver Mine Bay	31	28	38	39	51	59	119	141*	36	106	37	56	51	100
Tong Fuk	5	4	4	7	4	4	9	3	4	5	4	5	6	5
Upper Cheung Sha	4	3	4	4	5	3	7	3	4	7	4	4	4	5

Note: * Beach not open for swimming that year

Appendix B - Physicochemical water quality data for gazetted beaches, 2023

Southern District

Summary of physicochemical water quality data of gazetted beaches, 2023

Appendix B

Beach	pH	Salinity (psu) ¹	Turbidity (NTU) ²	Temperature (°C)	Dissolved Oxygen (mg/L) (% Saturation)	
Big Wave Bay	8.24 (7.99 - 8.52)	30.6 (18.8 - 33.6)	3.06 (1.36 - 8.12)	26.2 (19.5 - 31.3)	6.7 (5.6 - 9.8)	96 (81 - 124)
Chung Hom Kok	8.25 (8.11 - 8.51)	30.8 (22.4 - 33.6)	4.02 (1.42 - 13.70)	26.6 (19.7 - 31.2)	6.7 (5.3 - 10.0)	96 (78 - 130)
Deep Water Bay	8.19 (7.94 - 8.48)	29.7 (21.2 - 33.6)	6.76 (2.03 - 15.80)	27.2 (19.8 - 31.6)	6.4 (4.0 - 9.7)	92 (62 - 130)
Hairpin*	8.26 (8.05 - 8.59)	30.4 (22.8 - 33.7)	2.63 (0.74 - 12.70)	27.3 (19.2 - 30.9)	6.7 (5.3 - 9.2)	97 (81 - 127)
Middle Bay	8.24 (8.01 - 8.49)	30.3 (23.1 - 33.7)	5.37 (1.98 - 29.20)	26.6 (19.4 - 31.1)	6.7 (5.0 - 10.0)	96 (75 - 133)
Repulse Bay	8.24 (8.04 - 8.49)	31.1 (24.3 - 33.6)	4.30 (1.50 - 9.26)	26.7 (19.3 - 31.6)	6.6 (4.9 - 10.0)	95 (75 - 130)
Rocky Bay*	8.20 (7.94 - 8.48)	31.0 (20.6 - 33.6)	3.72 (1.27 - 12.10)	26.1 (19.7 - 30.3)	6.5 (4.6 - 10.0)	93 (68 - 127)
Shek O	8.24 (8.03 - 8.50)	31.5 (26.0 - 33.8)	3.66 (1.06 - 7.62)	26.5 (19.9 - 31.4)	6.5 (5.4 - 9.4)	93 (80 - 121)
South Bay	8.26 (8.09 - 8.44)	31.0 (24.6 - 33.7)	3.22 (0.90 - 9.11)	26.7 (19.6 - 31.2)	6.5 (4.8 - 10.0)	96 (73 - 141)
St. Stephen's	8.21 (7.94 - 8.43)	30.9 (22.2 - 33.7)	3.09 (1.01 - 7.28)	26.7 (19.9 - 30.9)	6.4 (5.1 - 9.6)	93 (77 - 130)
Stanley Main	8.26 (8.06 - 8.56)	29.8 (20.8 - 33.5)	4.02 (1.13 - 13.70)	27.4 (19.8 - 31.3)	6.7 (5.1 - 9.2)	97 (76 - 124)
Turtle Cove	8.26 (8.03 - 8.50)	30.4 (22.7 - 33.6)	6.58 (1.02 - 32.20)	27.4 (20.4 - 31.4)	6.4 (4.9 - 9.2)	95 (75 - 120)

Note: Data presented are arithmetic means; figures in brackets are ranges

1. Practical Salinity Unit; 2. Nephelometric Turbidity Unit

* Beach not open for swimming (no lifeguard service)

Tai Po District

Summary of physicochemical water quality data of gazetted beaches, 2023

Beach	pH	Salinity (psu) ¹	Turbidity (NTU) ²	Temperature (°C)	Dissolved Oxygen (mg/L) (% Saturation)	
Tai Po Lung Mei	8.23 (7.82 - 8.58)	28.2 (9.2 - 32.5)	1.84 (0.71 - 7.45)	28.0 (21.0 - 33.8)	6.4 (4.7 - 9.8)	94 (62 - 130)

Sai Kung District

Summary of physicochemical water quality data of gazetted beaches, 2023

Beach	pH	Salinity (psu) ¹	Turbidity (NTU) ²	Temperature (°C)	Dissolved Oxygen (mg/L) (% Saturation)	
Clear Water Bay First	8.23 (7.95 - 8.46)	31.2 (22.8 - 33.7)	4.03 (1.19 - 9.54)	27.1 (20.1 - 32.1)	6.5 (5.2 - 9.8)	94 (79 - 128)
Clear Water Bay Second	8.20 (7.89 - 8.44)	31.6 (23.4 - 33.8)	7.11 (1.69 - 59.70)	27.2 (20.2 - 32.2)	6.3 (5.2 - 9.9)	93 (80 - 127)
Hap Mun Bay	8.23 (8.08 - 8.39)	31.6 (24.2 - 33.5)	2.14 (0.66 - 5.46)	27.3 (19.6 - 31.7)	6.5 (5.2 - 10.0)	94 (78 - 139)
Kiu Tsui	8.22 (8.03 - 8.41)	31.2 (23.3 - 33.5)	2.06 (0.51 - 8.25)	27.3 (19.6 - 31.5)	6.4 (4.8 - 8.1)	95 (75 - 117)
Silverstrand	8.21 (8.01 - 8.43)	29.7 (11.0 - 33.1)	4.98 (0.91 - 16.30)	26.9 (19.8 - 31.4)	6.6 (5.3 - 10.0)	96 (80 - 130)
Trio	8.19 (7.96 - 8.41)	29.9 (11.9 - 33.4)	2.79 (1.03 - 7.62)	27.8 (20.2 - 32.4)	6.4 (4.8 - 9.9)	94 (74 - 130)

Note: Data presented are arithmetic means; figures in brackets are ranges

1. Practical Salinity Unit; 2. Nephelometric Turbidity Unit

Tsuen Wan District

Summary of physicochemical water quality data of gazetted beaches, 2023

Beach	pH	Salinity (psu) ¹	Turbidity (NTU) ²	Temperature (°C)	Dissolved Oxygen (mg/L) (% Saturation)	
Anglers'	8.14 (7.94 - 8.42)	28.6 (16.1 - 32.6)	4.57 (1.39 - 13.40)	26.6 (20.4 - 30.5)	6.1 (4.6 - 7.4)	85 (33 - 105)
Approach	8.17 (7.97 - 8.49)	27.8 (20.3 - 32.2)	4.33 (1.46 - 20.60)	26.7 (19.9 - 30.3)	6.3 (4.5 - 9.0)	89 (37 - 116)
Casam	8.18 (7.99 - 8.46)	28.2 (21.9 - 32.2)	3.34 (1.04 - 14.10)	26.8 (20.3 - 30.3)	6.3 (4.6 - 9.7)	90 (30 - 130)
Gemini*	8.13 (7.92 - 8.43)	28.6 (18.2 - 32.7)	3.08 (1.16 - 7.46)	26.6 (20.3 - 29.8)	6.0 (4.5 - 9.9)	85 (31 - 130)
Hoi Mei Wan	8.14 (7.96 - 8.43)	28.0 (21.6 - 32.2)	2.96 (1.07 - 6.75)	27.0 (20.3 - 30.4)	6.2 (4.5 - 8.8)	88 (30 - 130)
Lido	8.17 (7.99 - 8.44)	28.2 (21.6 - 32.2)	3.61 (1.13 - 8.75)	26.8 (20.3 - 30.1)	6.2 (4.2 - 7.9)	88 (31 - 112)
Ma Wan Tung Wan	8.13 (7.93 - 8.40)	29.3 (23.9 - 32.2)	6.40 (2.51 - 37.20)	26.5 (20.0 - 30.8)	6.1 (4.9 - 8.5)	89 (72 - 122)
Ting Kau	8.19 (8.00 - 8.47)	27.7 (20.9 - 32.1)	3.74 (1.14 - 14.30)	26.8 (20.0 - 31.1)	6.3 (4.6 - 10.0)	90 (35 - 130)

Note: Data presented are arithmetic means; figures in brackets are ranges

1. Practical Salinity Unit; 2. Nephelometric Turbidity Unit

* Beach not open for swimming (no lifeguard service)

Tuen Mun District

Summary of physicochemical water quality data of gazetted beaches, 2023

Beach	pH	Salinity (psu) ¹	Turbidity (NTU) ²	Temperature (°C)	Dissolved Oxygen	
					(mg/L)	(% Saturation)
Butterfly	8.15 (7.97 - 8.55)	25.9 (15.4 - 31.0)	7.31 (2.02 - 32.40)	27.2 (20.2 - 31.2)	6.4 (4.5 - 8.2)	92 (70 - 122)
Cafeteria New	8.16 (8.03 - 8.59)	25.9 (13.3 - 31.2)	5.73 (1.56 - 24.10)	27.1 (20.3 - 31.0)	6.3 (5.0 - 7.9)	90 (72 - 113)
Cafeteria Old	8.14 (7.82 - 8.48)	25.5 (13.5 - 31.1)	5.39 (1.28 - 11.10)	27.1 (20.3 - 31.2)	6.3 (5.0 - 9.7)	90 (72 - 130)
Castle Peak	8.13 (7.82 - 8.65)	24.9 (13.8 - 30.9)	4.25 (1.59 - 28.40)	27.3 (20.3 - 31.5)	6.5 (4.5 - 9.4)	93 (70 - 129)
Golden	8.17 (8.00 - 8.55)	25.9 (13.5 - 31.3)	4.72 (1.26 - 11.20)	27.0 (20.3 - 30.7)	6.2 (5.0 - 8.6)	89 (69 - 123)
Kadoorie	8.16 (7.90 - 8.65)	25.6 (14.2 - 31.2)	4.67 (1.76 - 13.10)	27.3 (20.2 - 30.9)	6.5 (4.7 - 9.4)	92 (72 - 130)

Note: Data presented are arithmetic means; figures in brackets are ranges

1. Practical Salinity Unit; 2. Nephelometric Turbidity Unit

Islands District

Summary of physicochemical water quality data of gazetted beaches, 2023

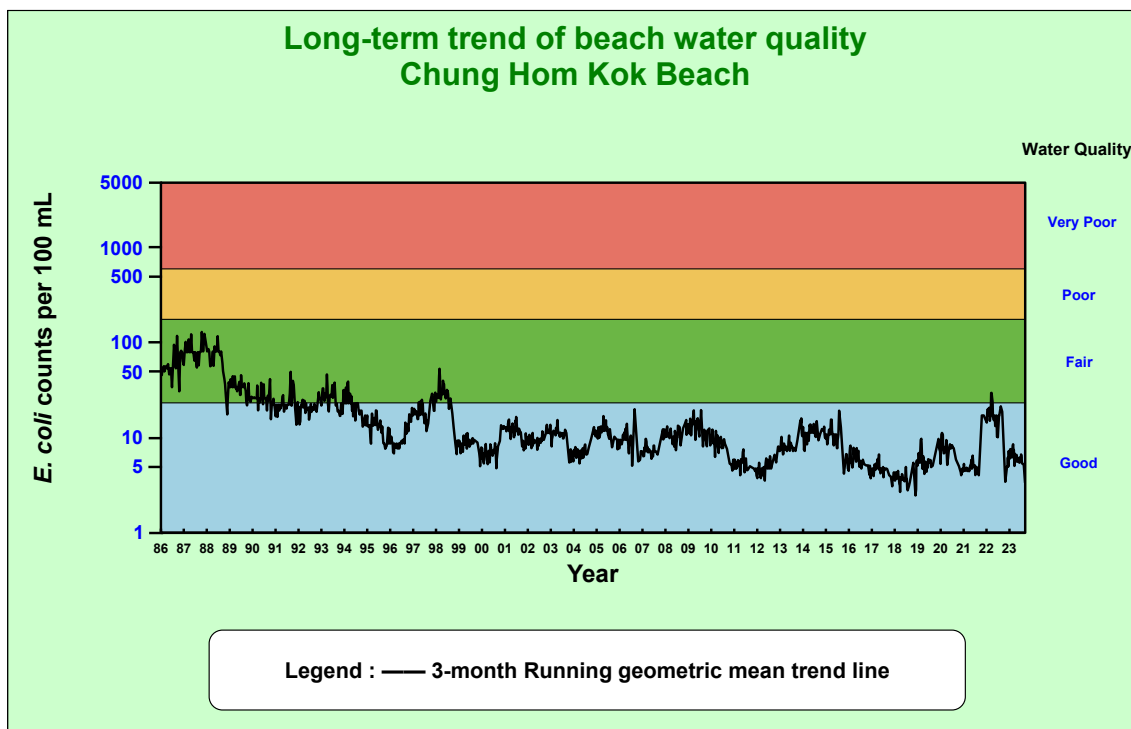
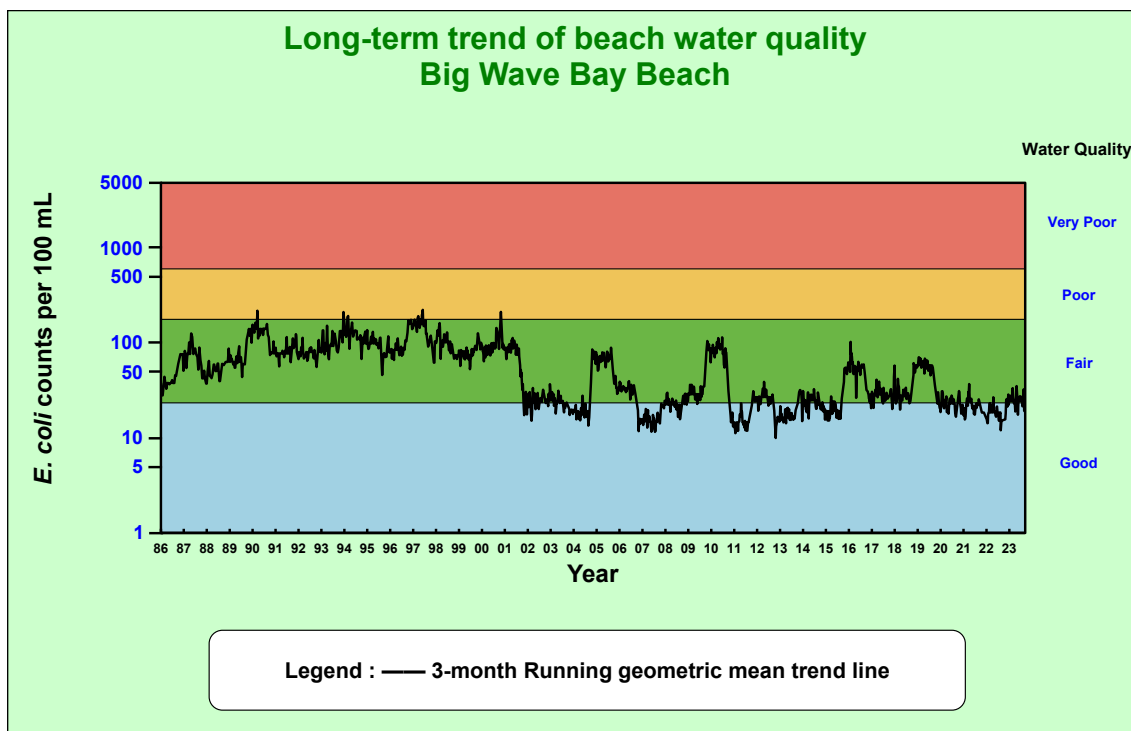
Beach	pH	Salinity (psu) ¹	Turbidity (NTU) ²	Temperature (°C)	Dissolved Oxygen	
					(mg/L)	(% Saturation)
Cheung Chau Tung Wan	8.18 (7.89 - 8.46)	29.9 (24.6 - 32.8)	2.88 (1.07 - 5.87)	26.6 (19.1 - 30.7)	6.5 (3.8 - 8.0)	93 (60 - 125)
Hung Shing Yeh	8.18 (7.99 - 8.53)	30.3 (21.3 - 33.6)	7.22 (1.34 - 37.20)	26.7 (19.9 - 31.6)	6.8 (5.2 - 11.4)	97 (78 - 153)
Kwun Yam	8.16 (7.89 - 8.44)	29.5 (24.3 - 32.8)	2.81 (1.14 - 8.27)	26.5 (19.5 - 30.6)	6.5 (4.7 - 8.7)	95 (73 - 130)
Lo So Shing	8.20 (7.99 - 8.55)	30.8 (21.5 - 33.7)	4.04 (1.52 - 16.40)	26.8 (20.1 - 32.3)	6.7 (5.0 - 8.6)	96 (78 - 130)
Lower Cheung Sha	8.32 (7.97 - 8.64)	27.6 (12.5 - 33.1)	8.04 (2.61 - 16.90)	27.3 (20.5 - 31.8)	6.4 (4.9 - 9.3)	92 (74 - 120)
Pui O	8.28 (7.80 - 8.51)	29.5 (23.9 - 33.1)	10.14 (3.91 - 42.50)	28.4 (21.4 - 34.8)	5.9 (4.8 - 7.9)	88 (76 - 108)
Silver Mine Bay	8.23 (7.91 - 8.55)	24.9 (9.2 - 32.6)	13.75 (3.82 - 72.40)	28.3 (20.7 - 34.6)	6.4 (4.7 - 9.9)	95 (71 - 130)
Tong Fuk	8.31 (8.03 - 8.60)	29.6 (23.1 - 33.2)	6.69 (1.79 - 26.90)	27.8 (20.9 - 33.8)	6.2 (4.9 - 8.2)	90 (78 - 113)
Upper Cheung Sha	8.31 (7.91 - 8.61)	29.7 (24.2 - 33.1)	6.43 (1.98 - 24.90)	27.6 (20.9 - 33.2)	6.4 (5.0 - 8.9)	92 (81 - 119)

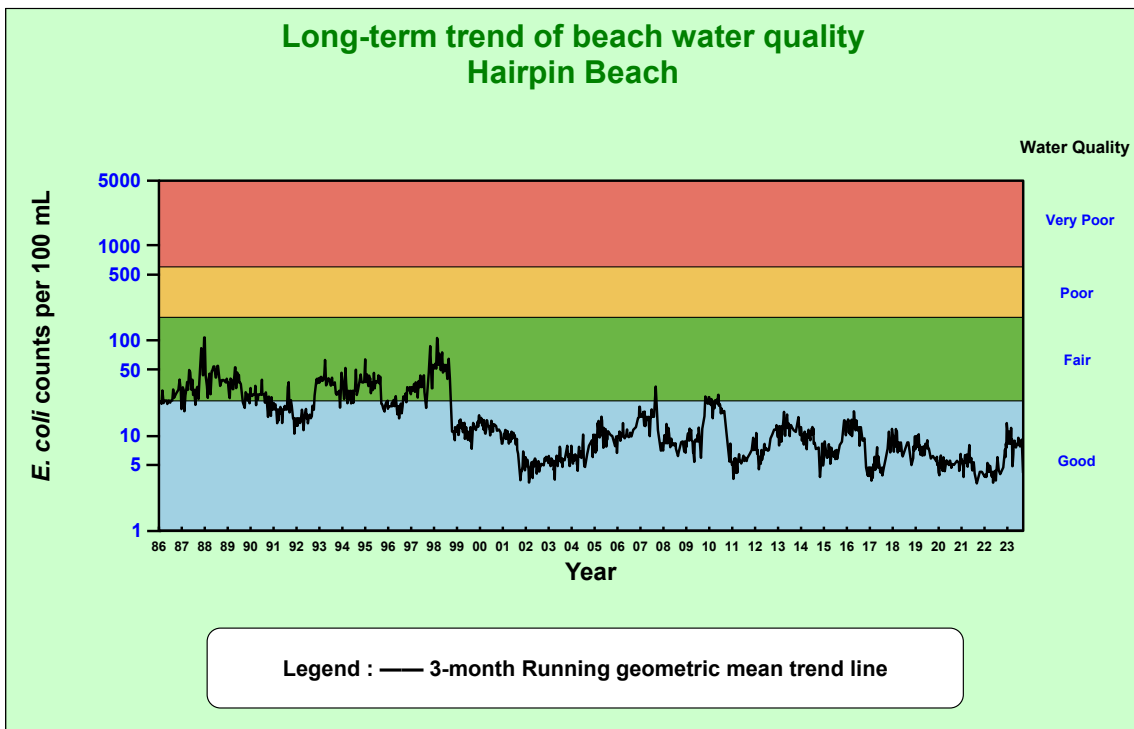
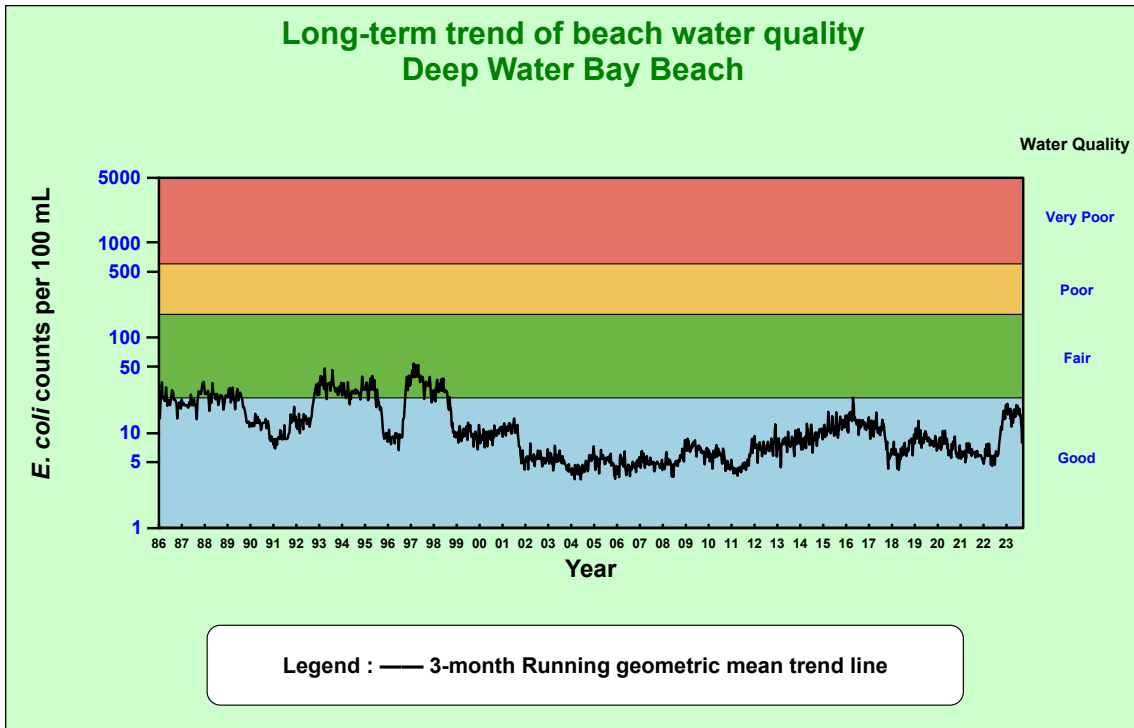
Note: Data presented are arithmetic means; figures in brackets are ranges

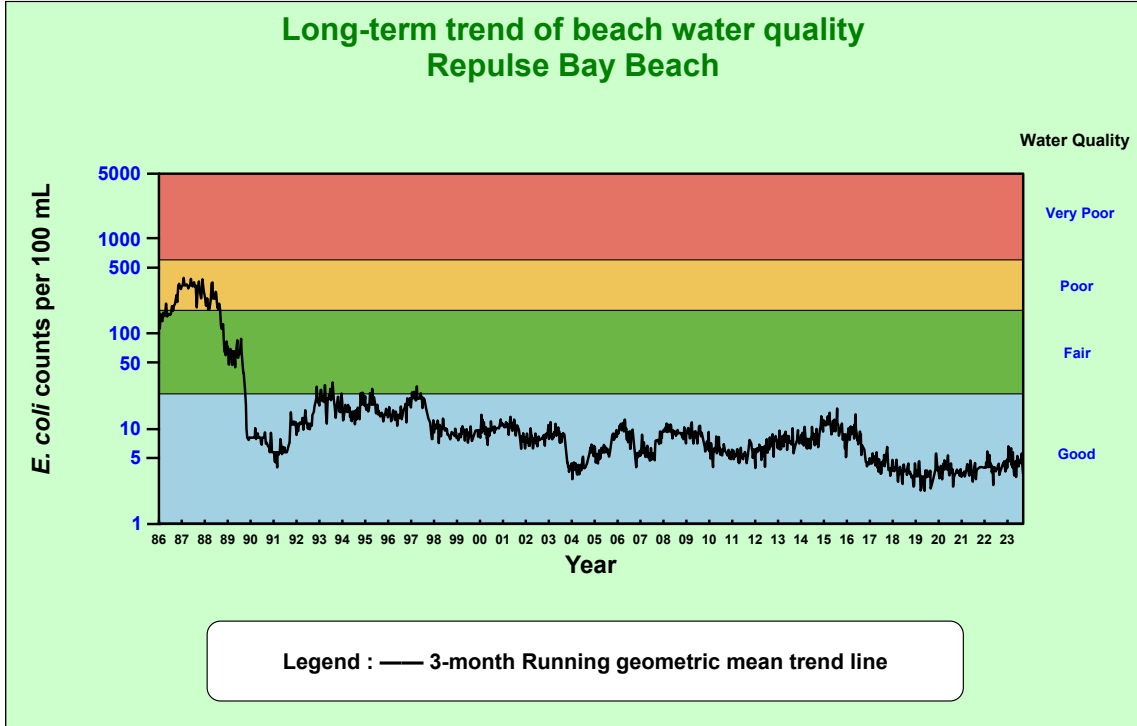
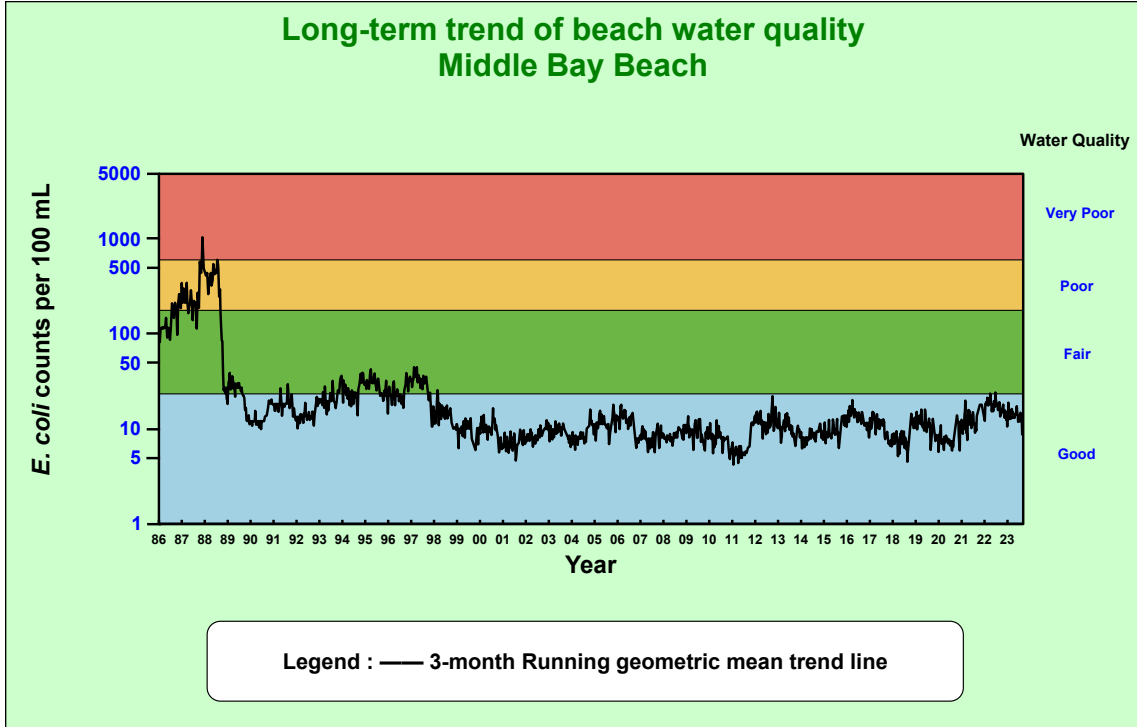
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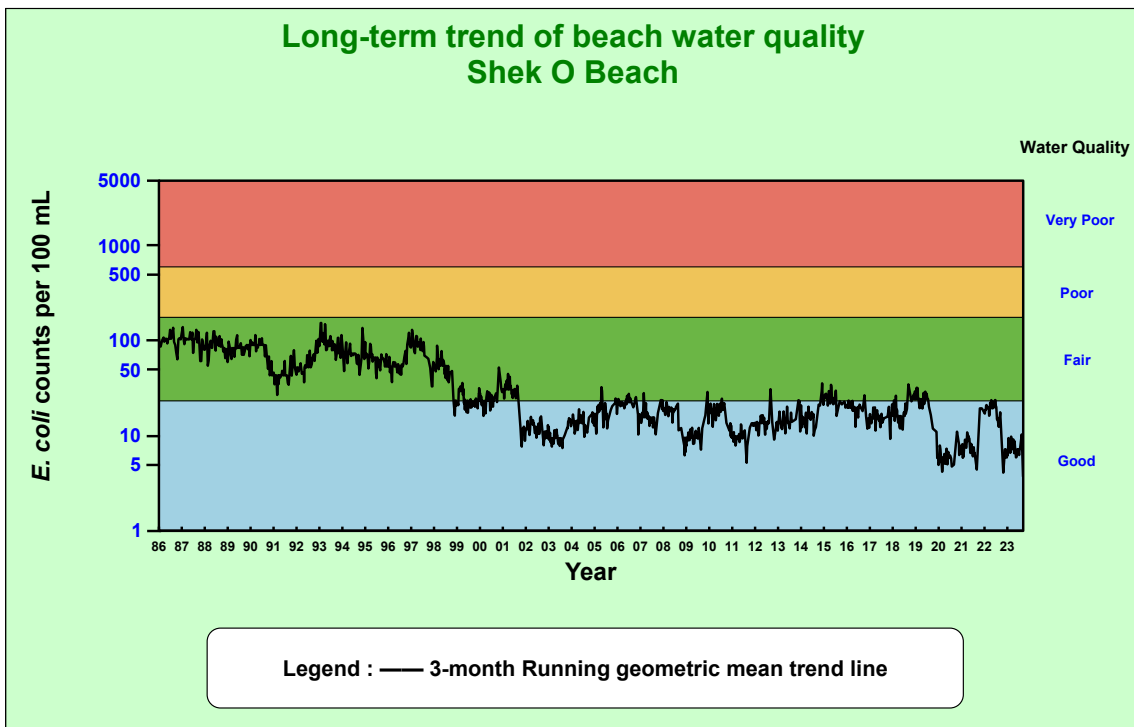
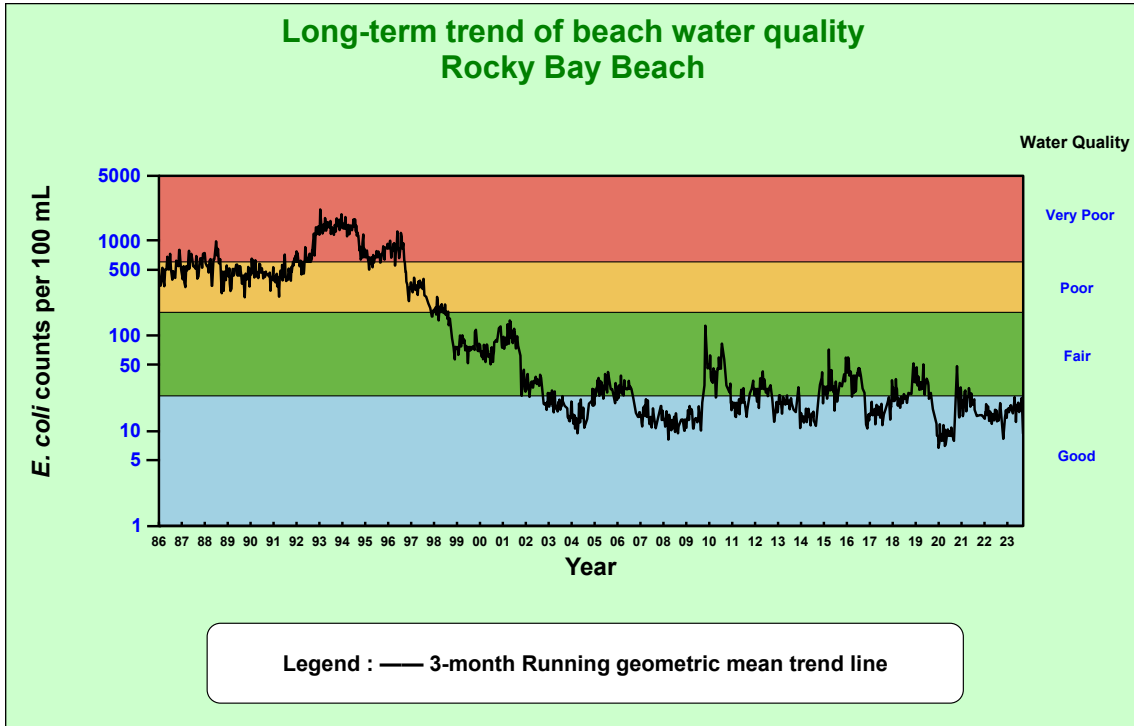
Appendix C - Long-term trend of beach water quality (1986 - 2023)

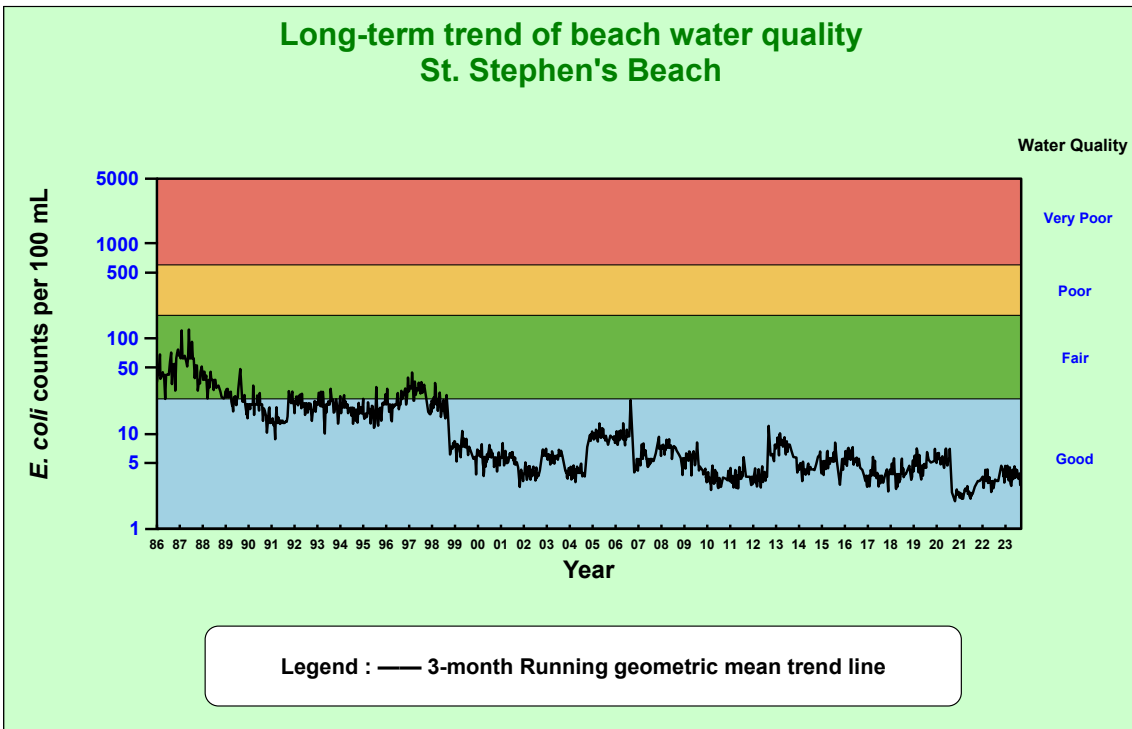
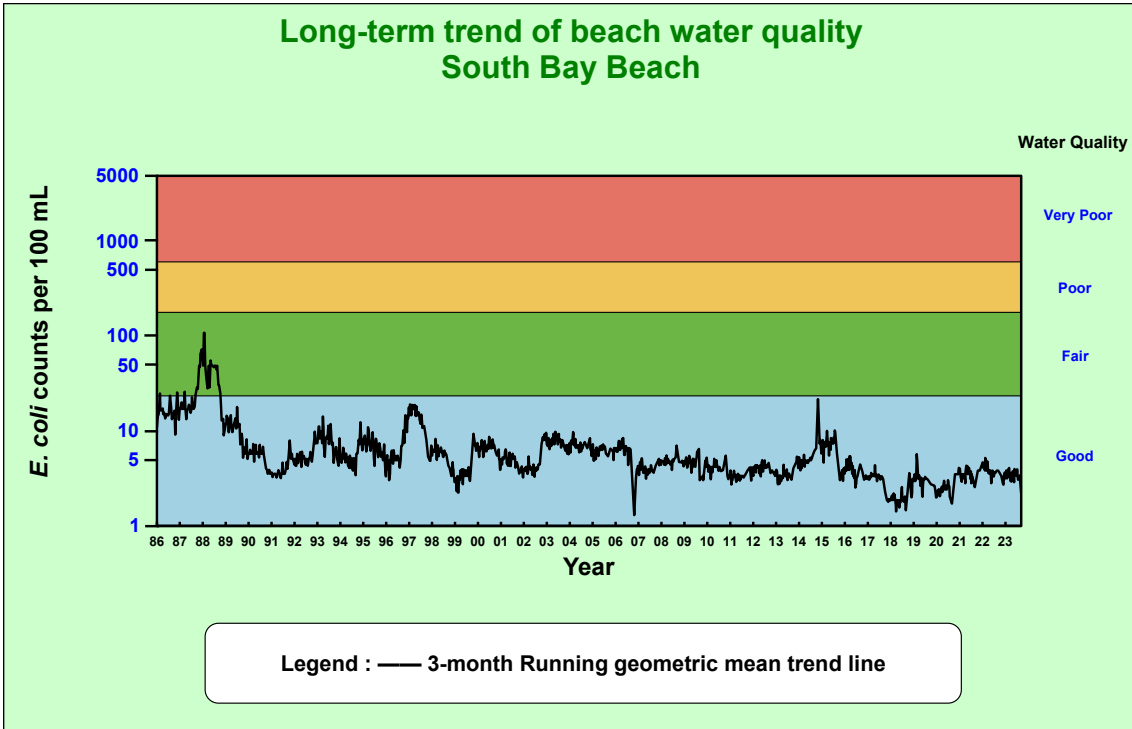
Southern District

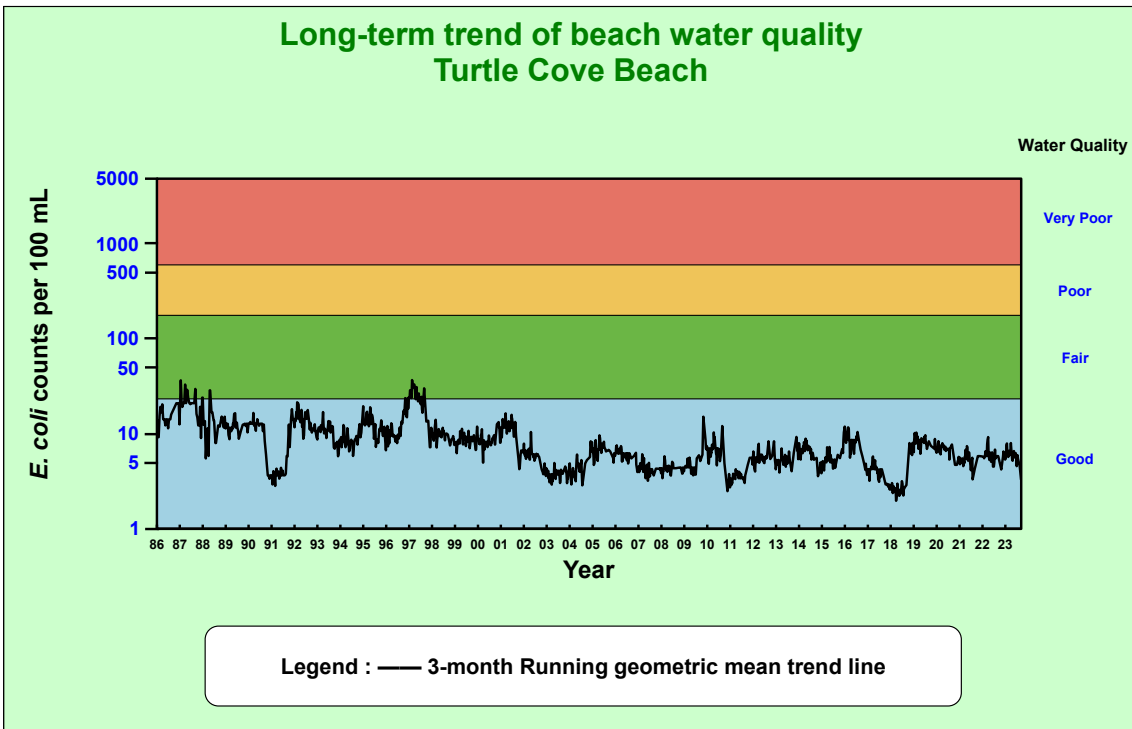
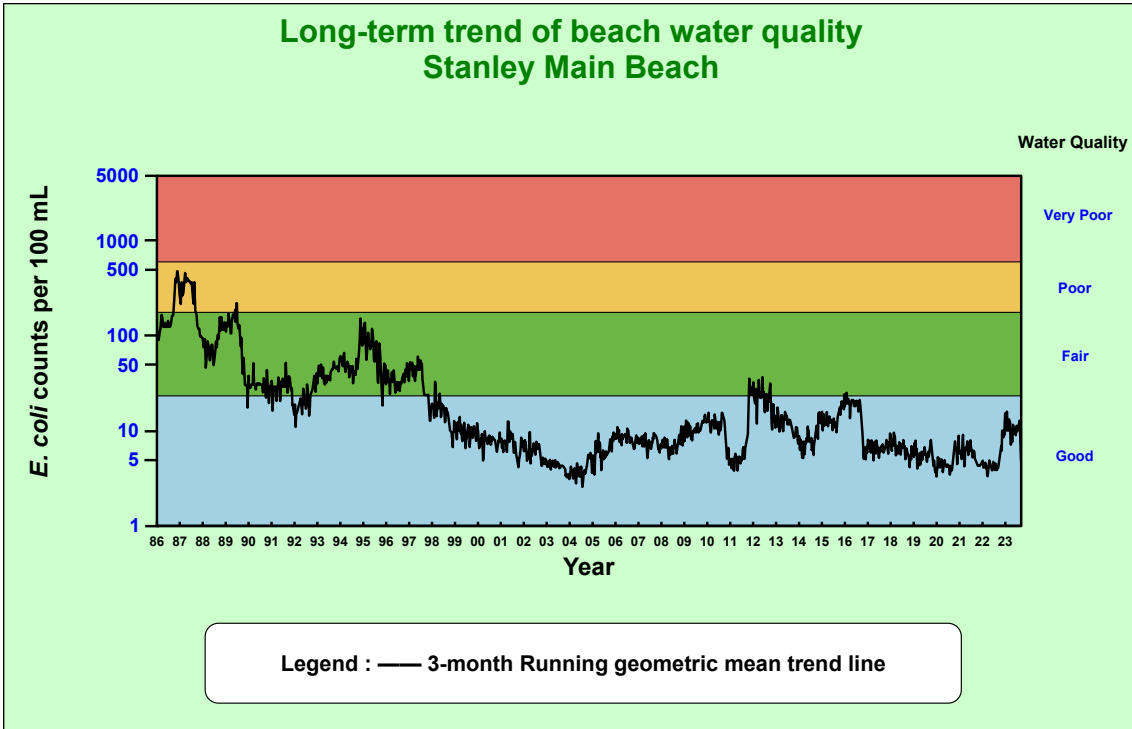




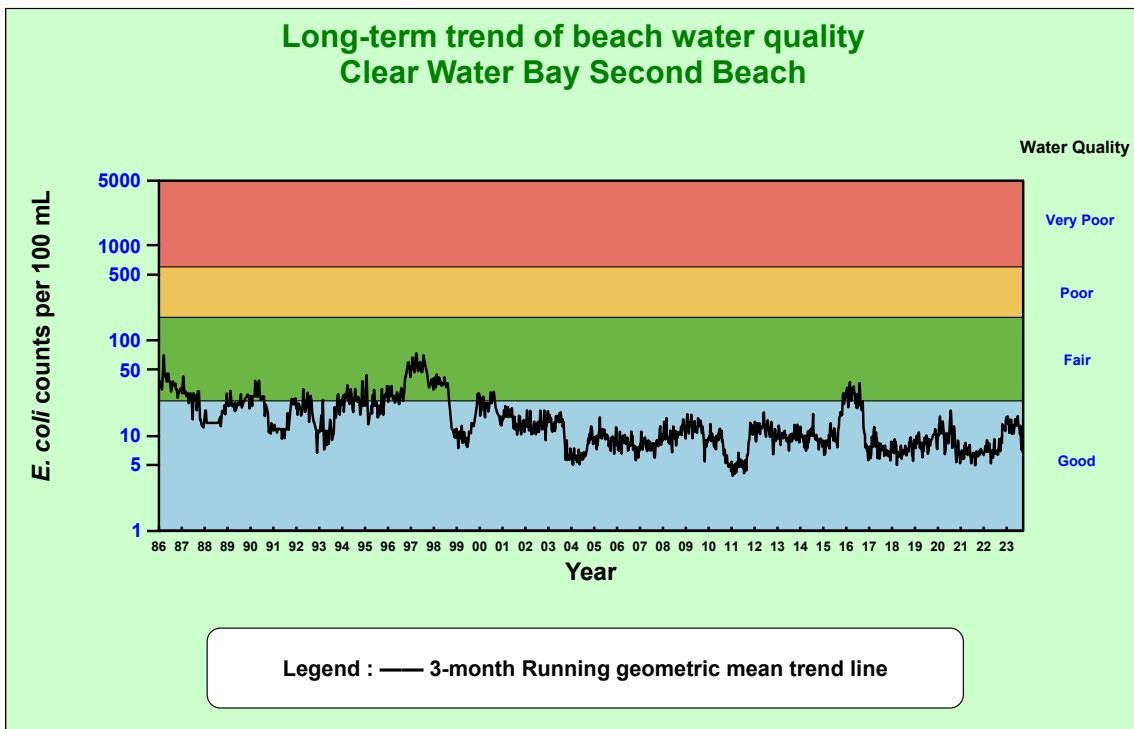
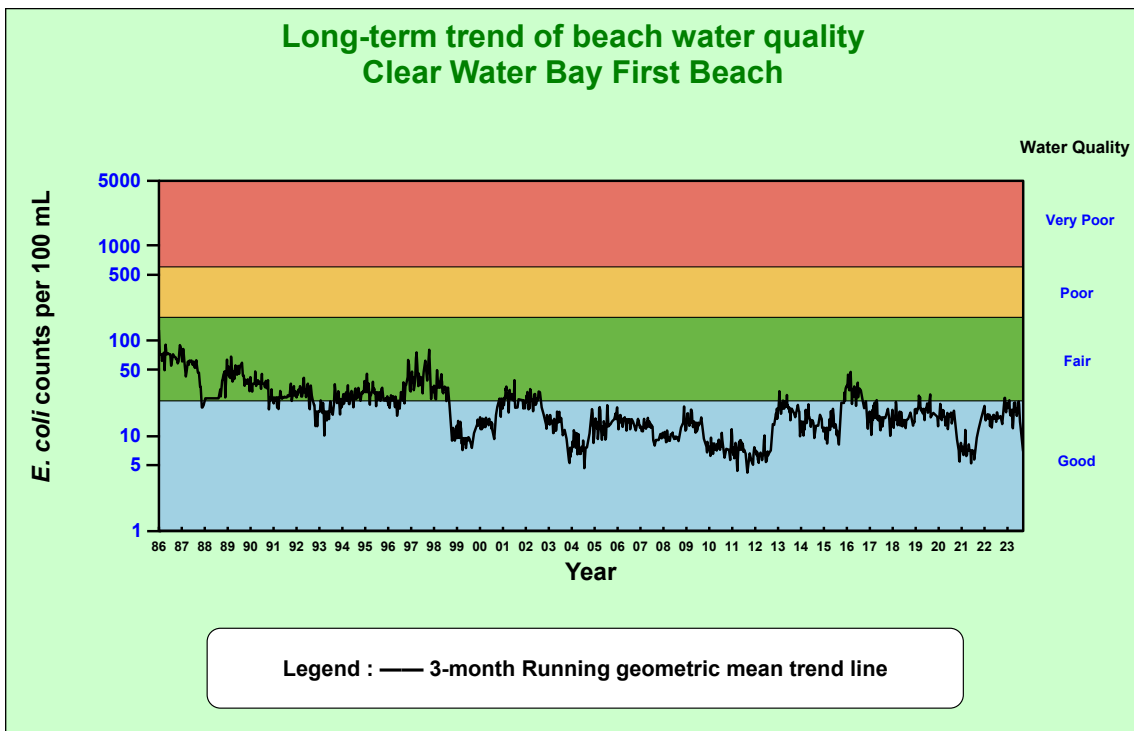


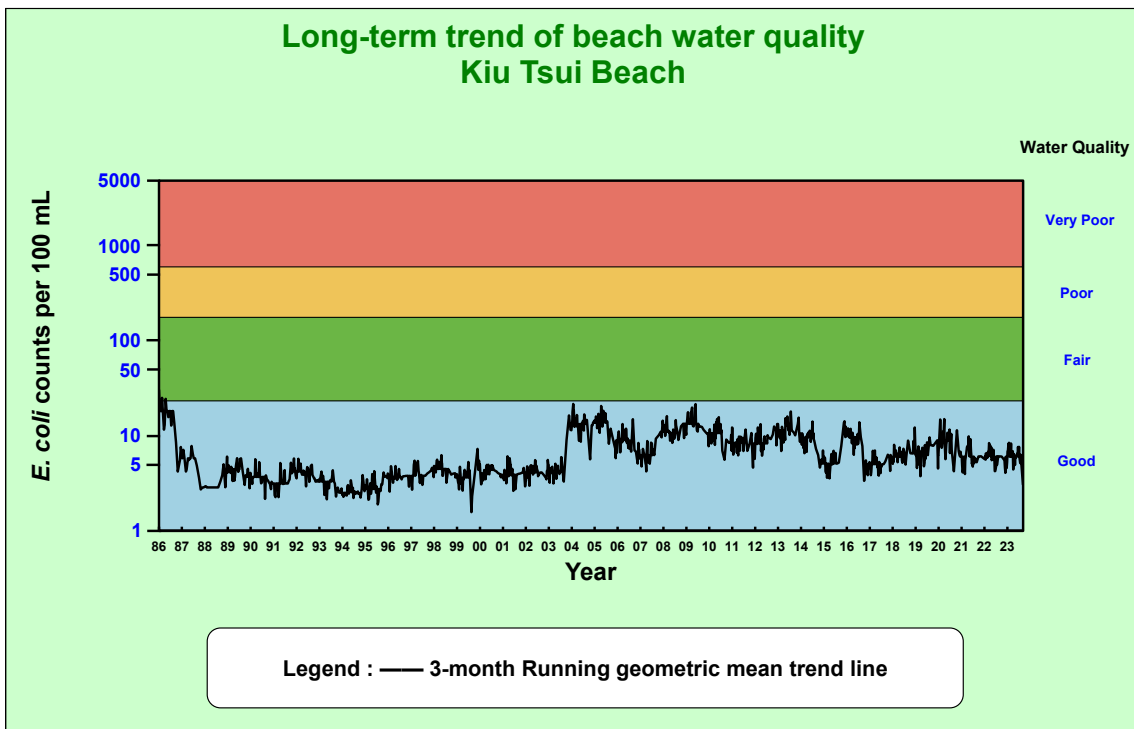
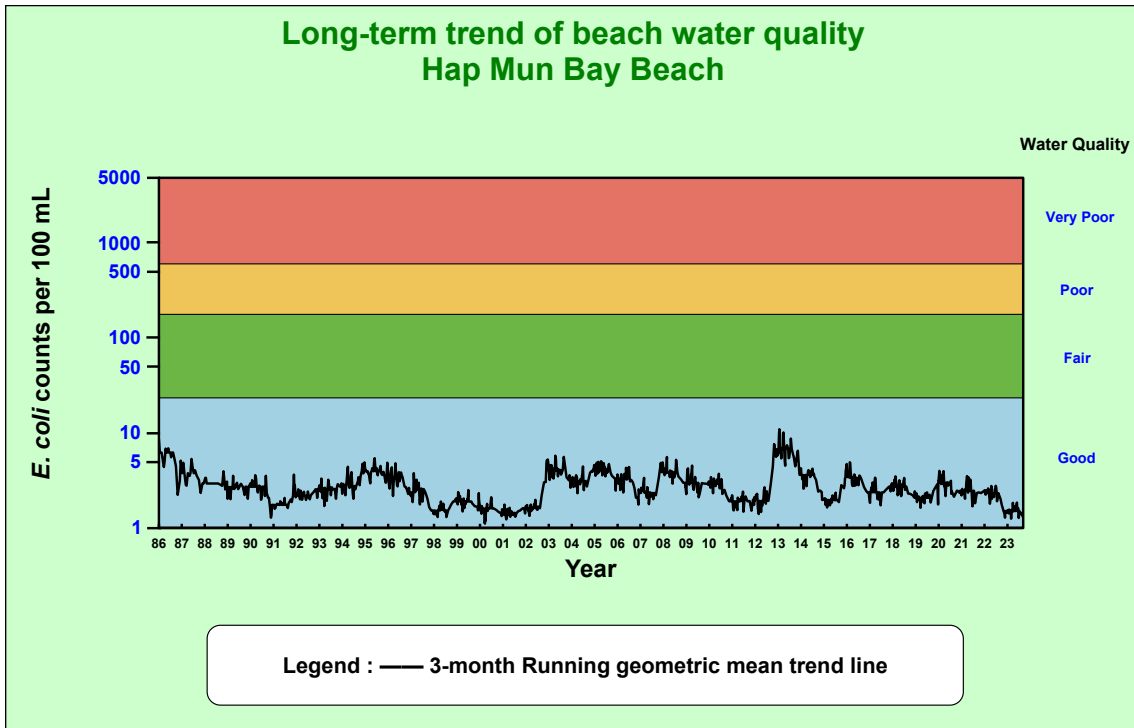


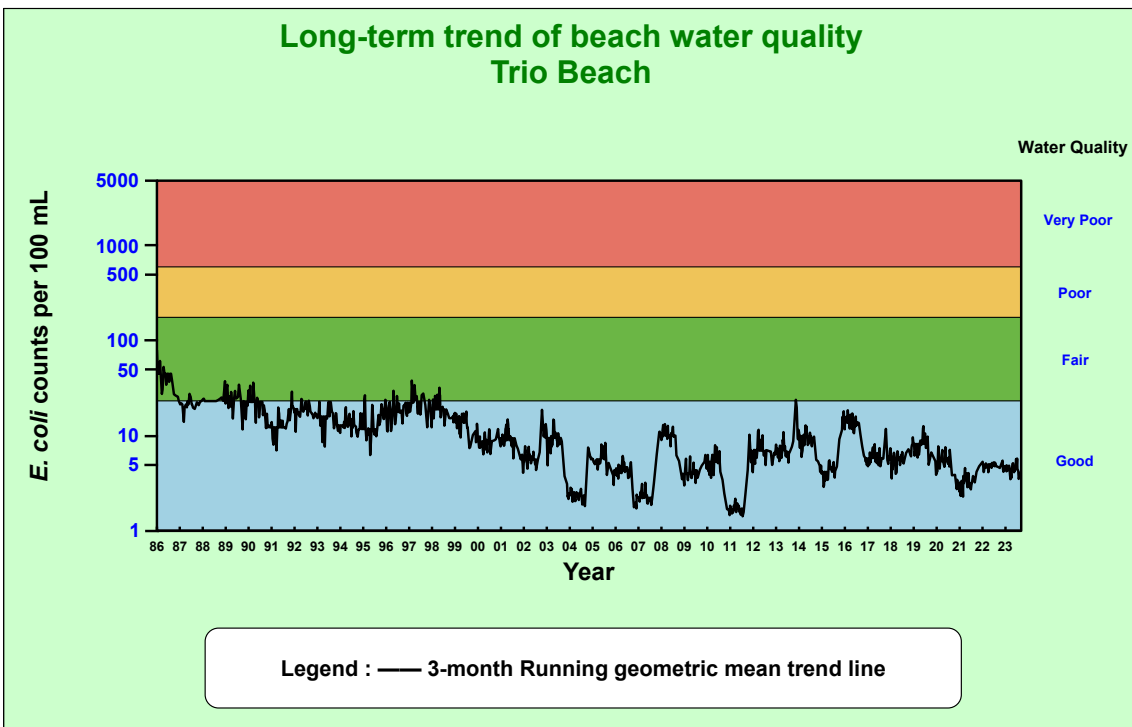
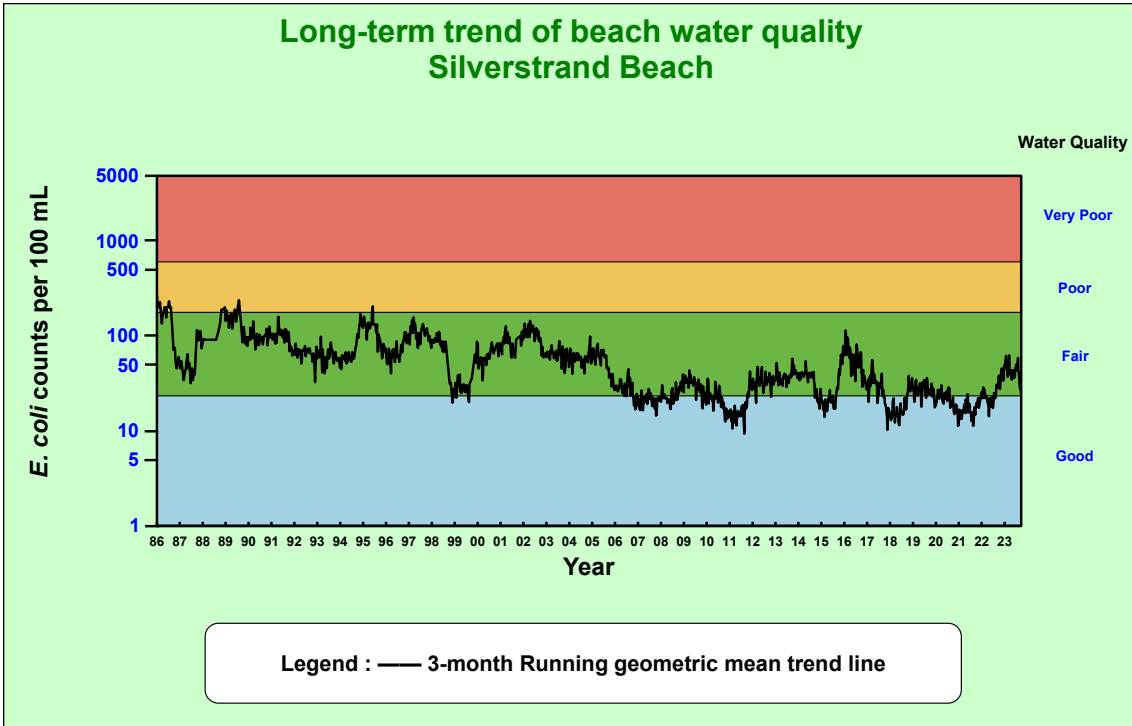




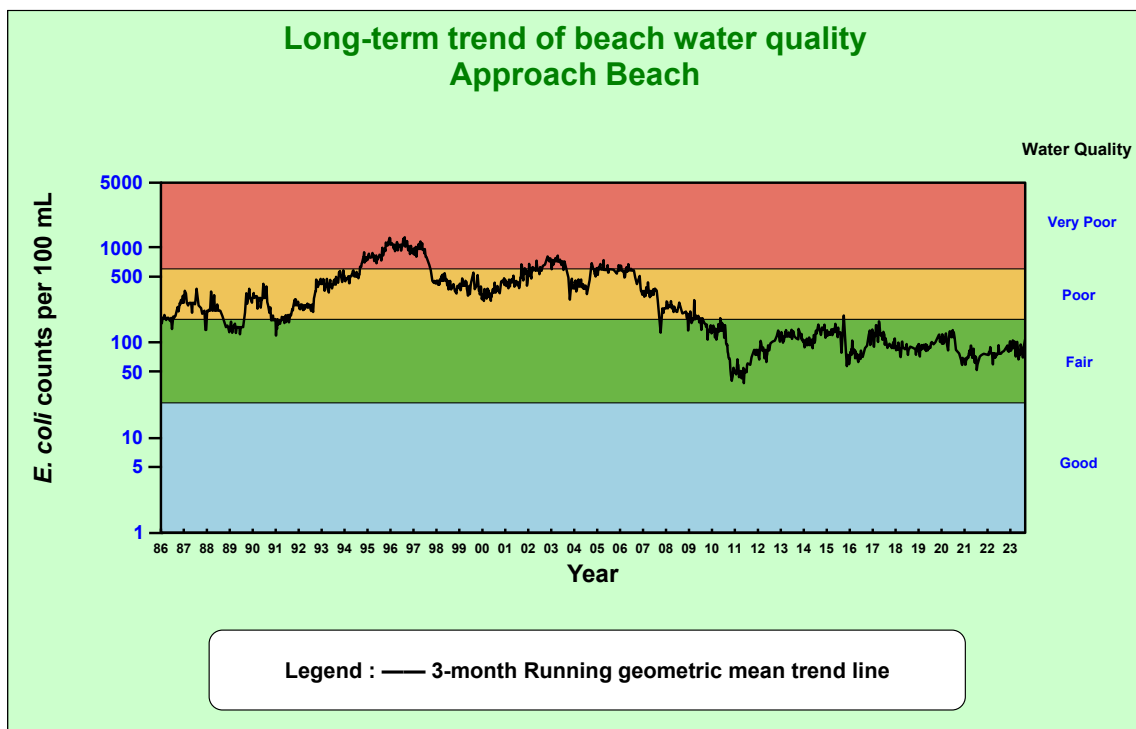
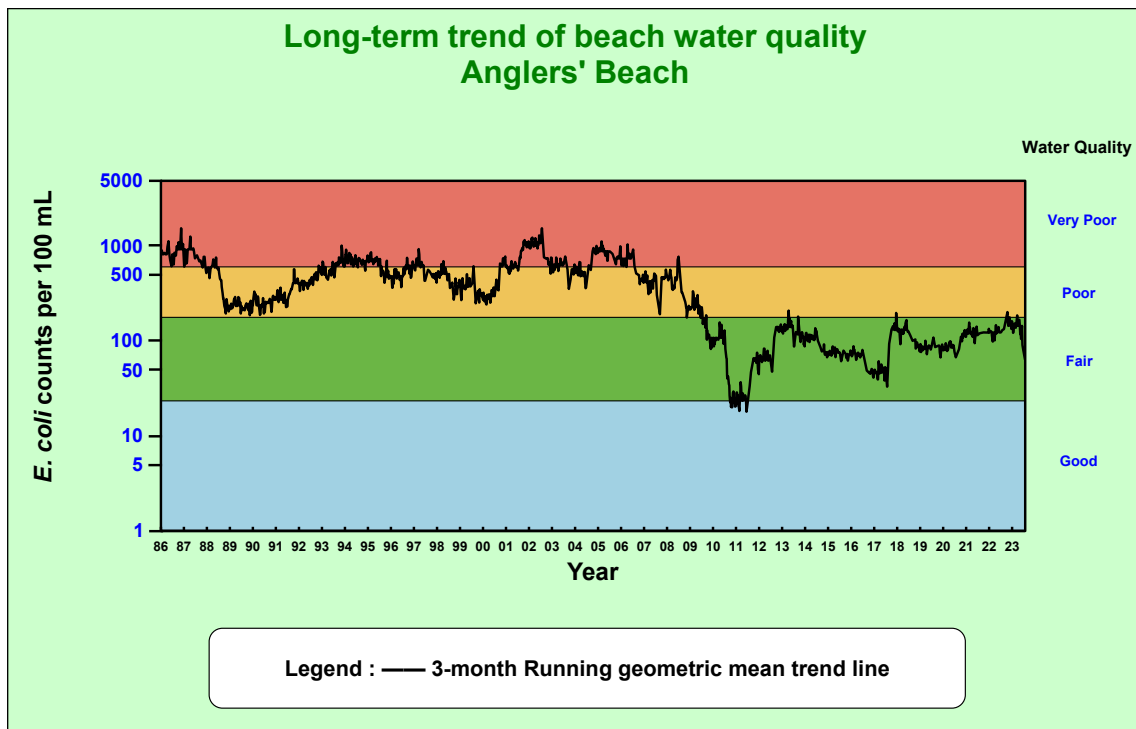
Sai Kung District

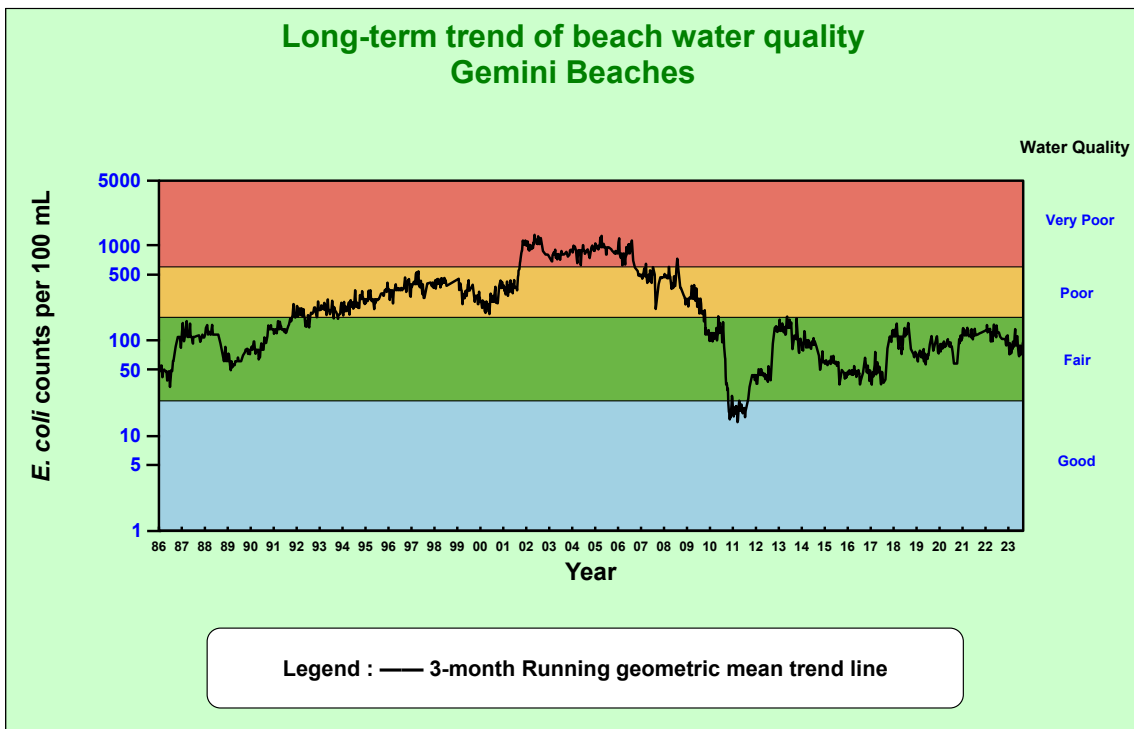
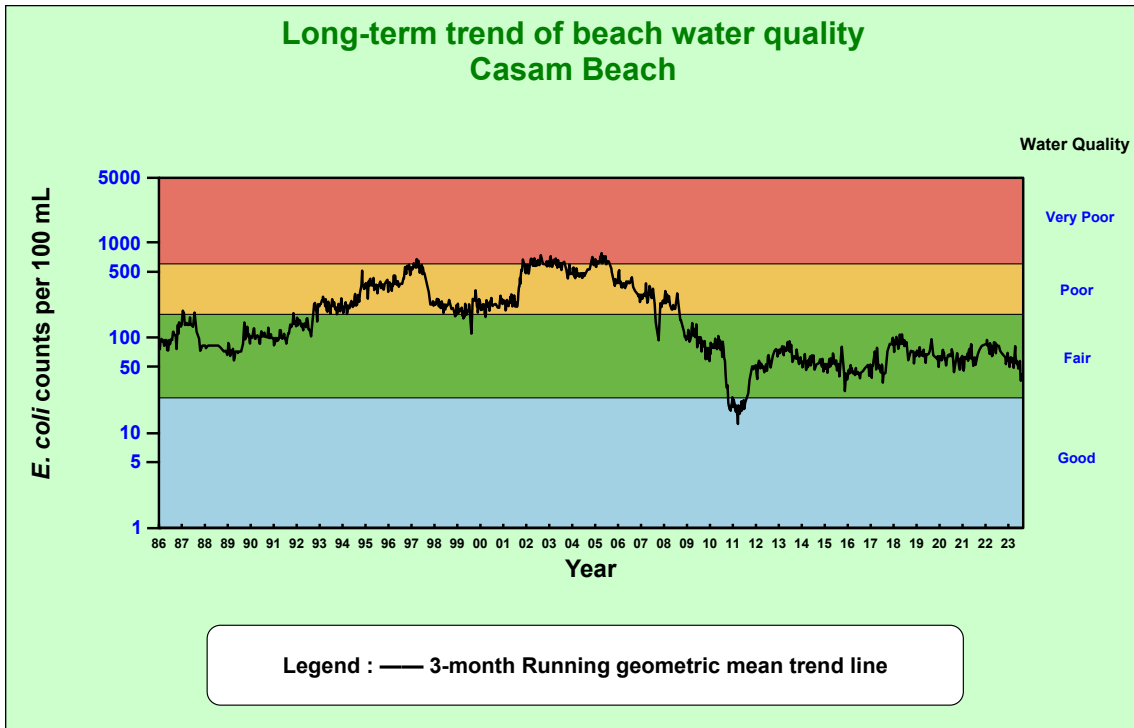


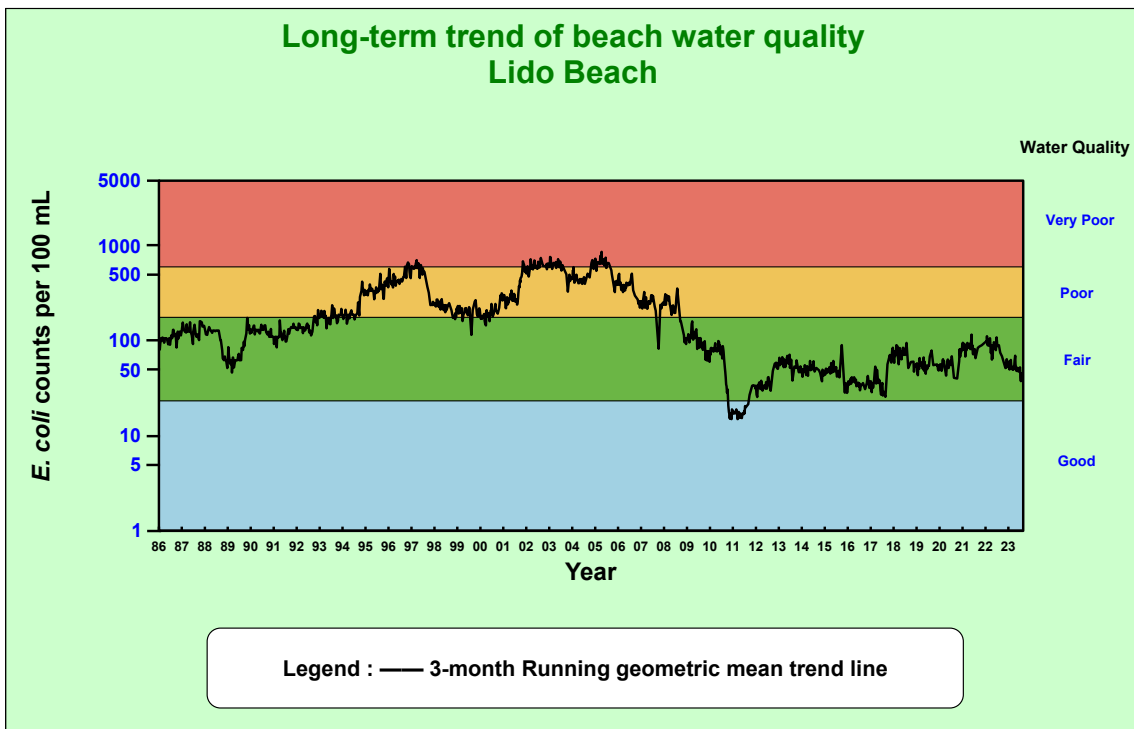
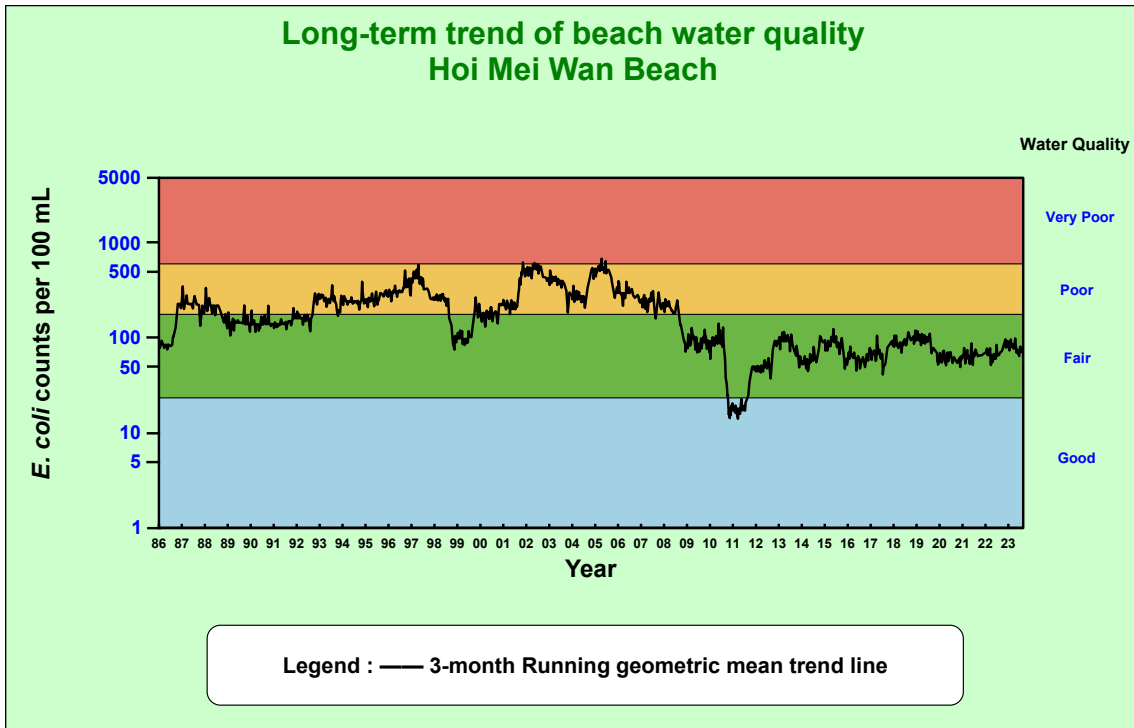


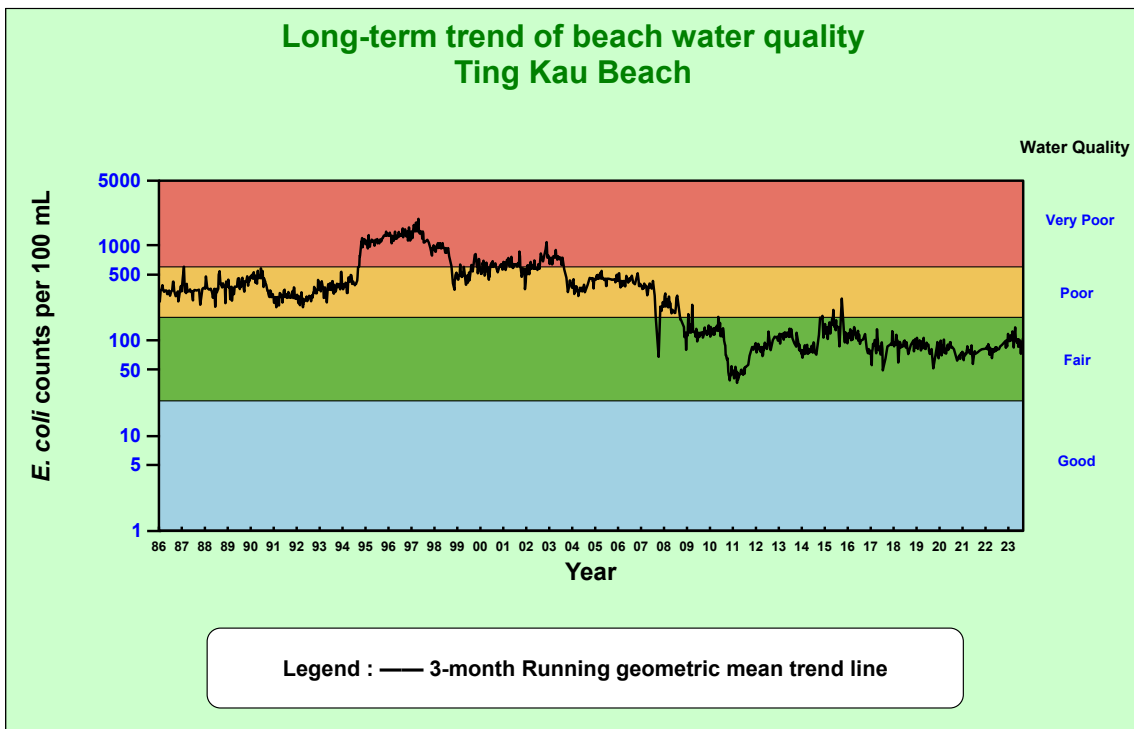
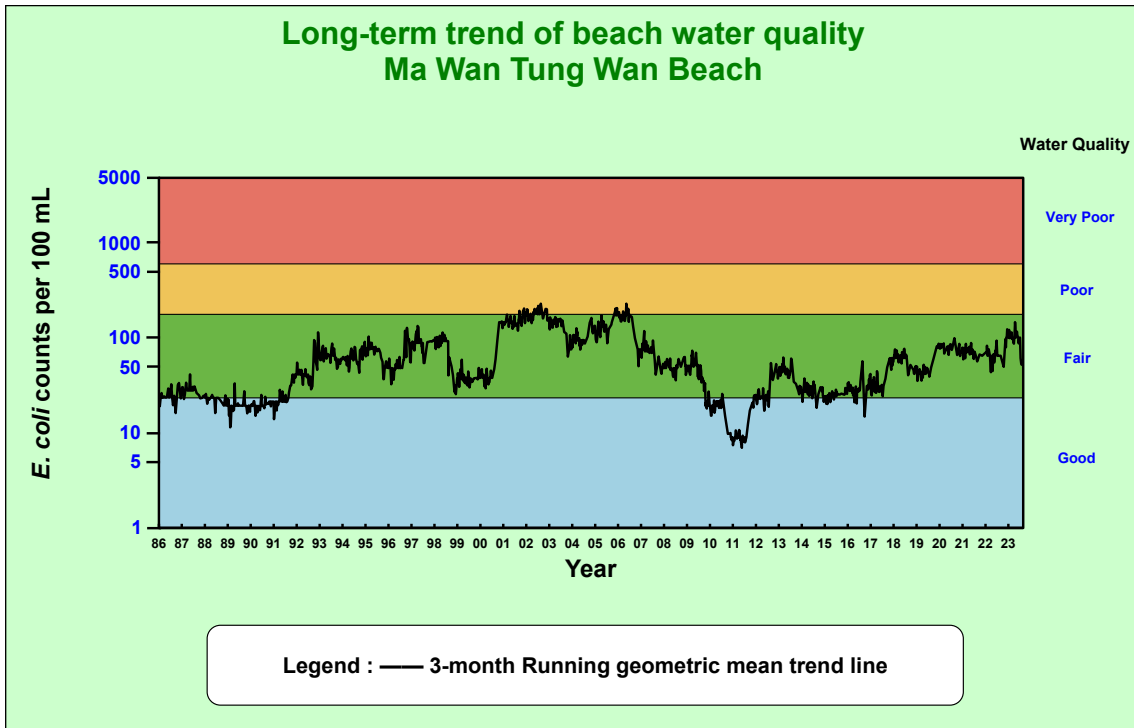


Tsuen Wan District



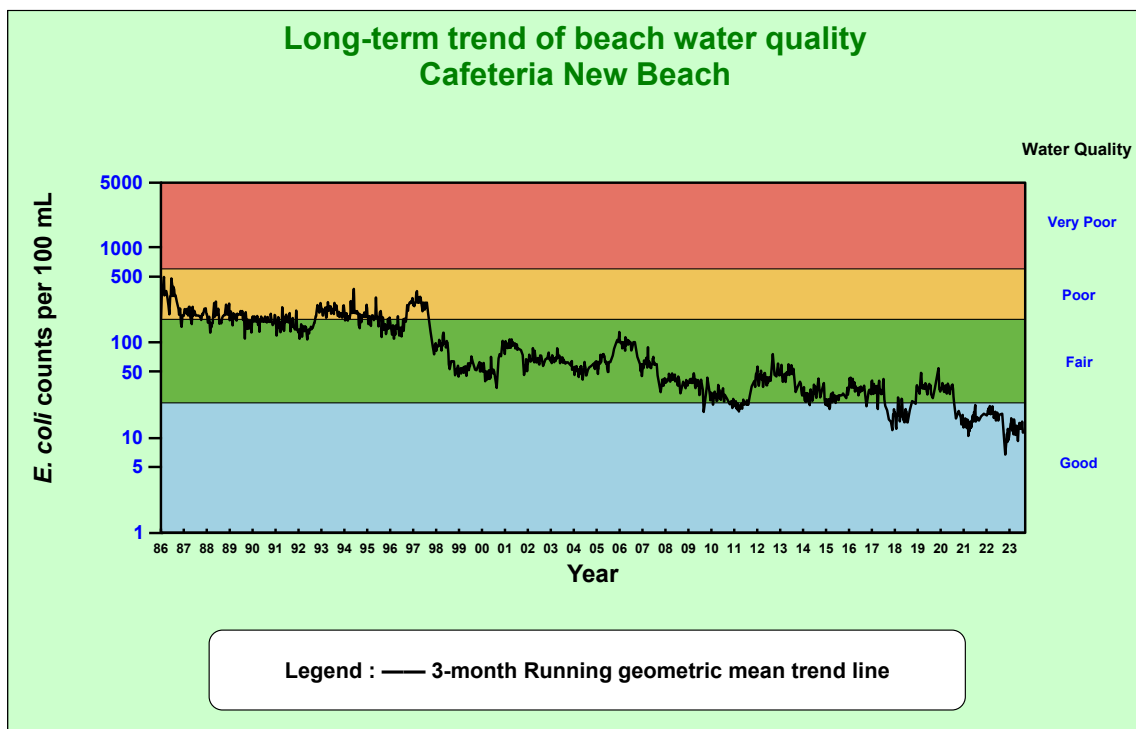
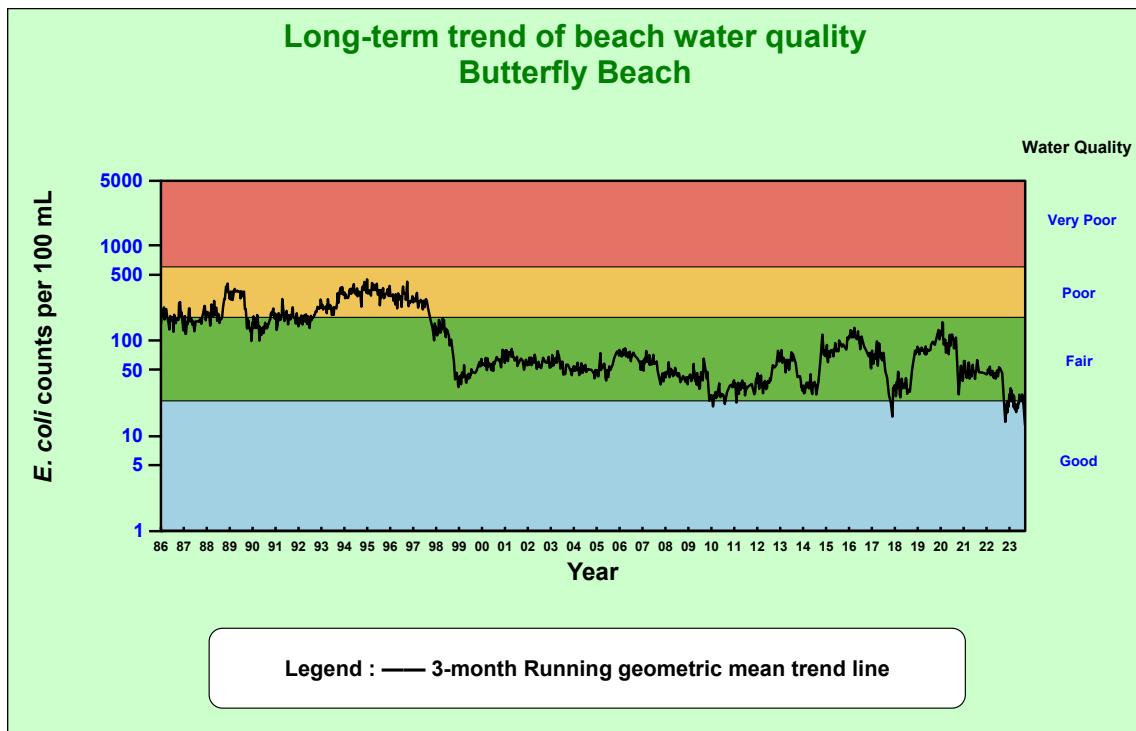


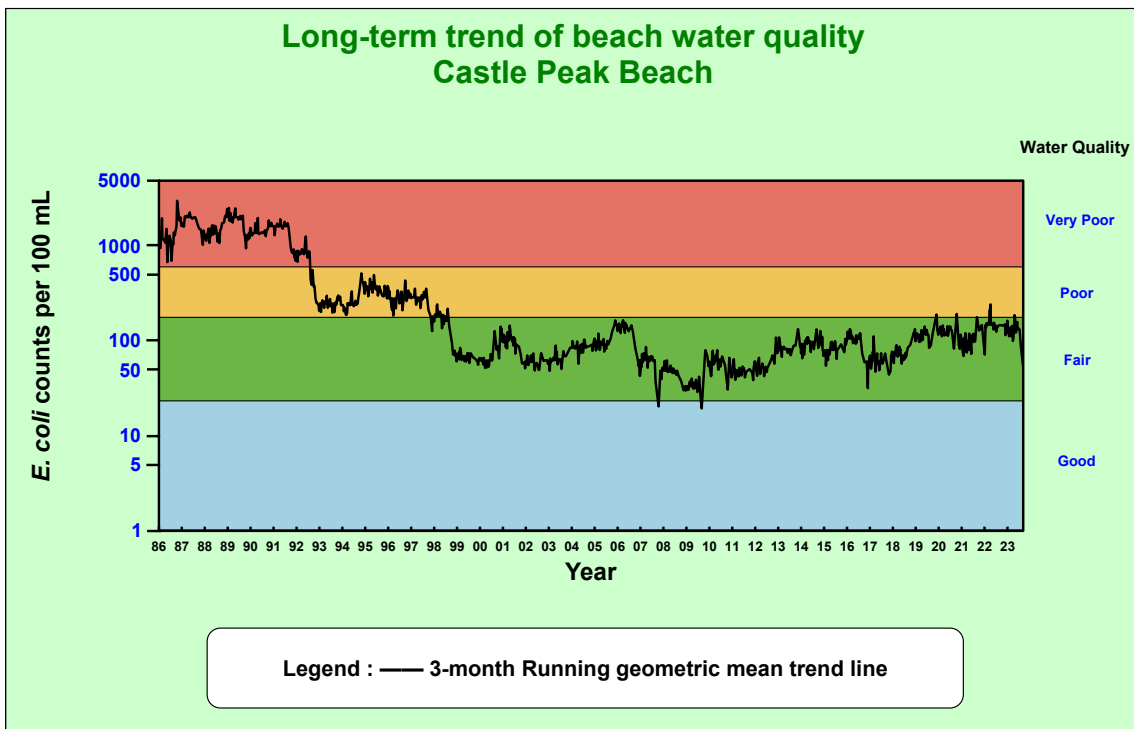
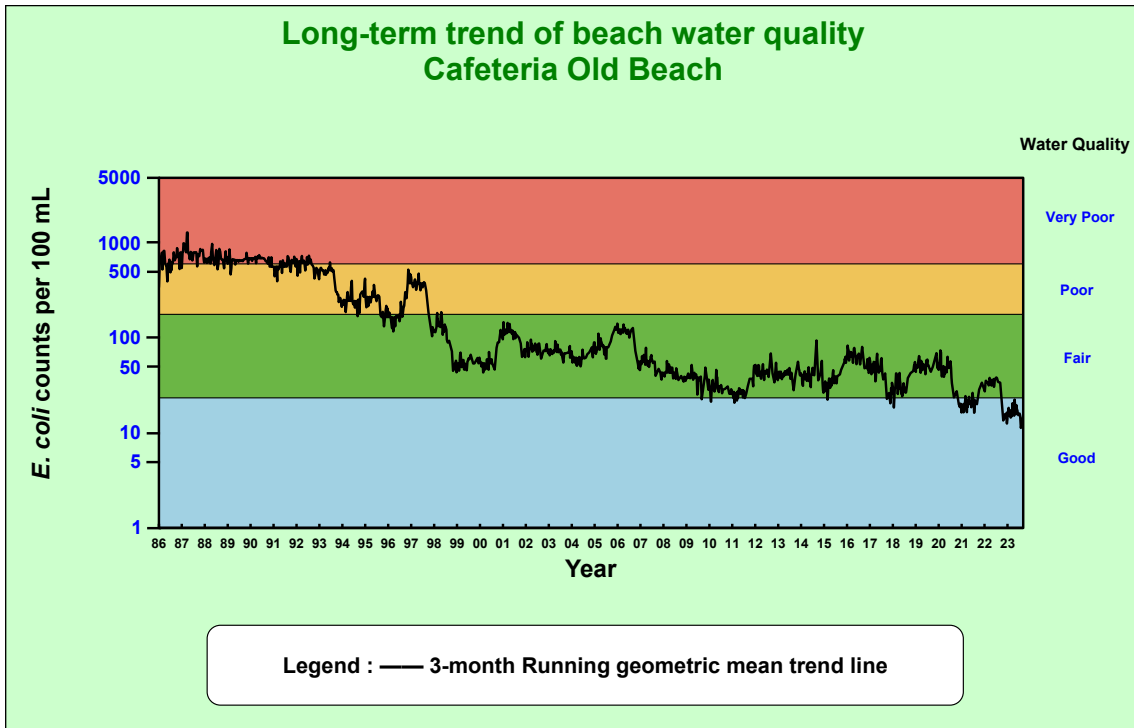


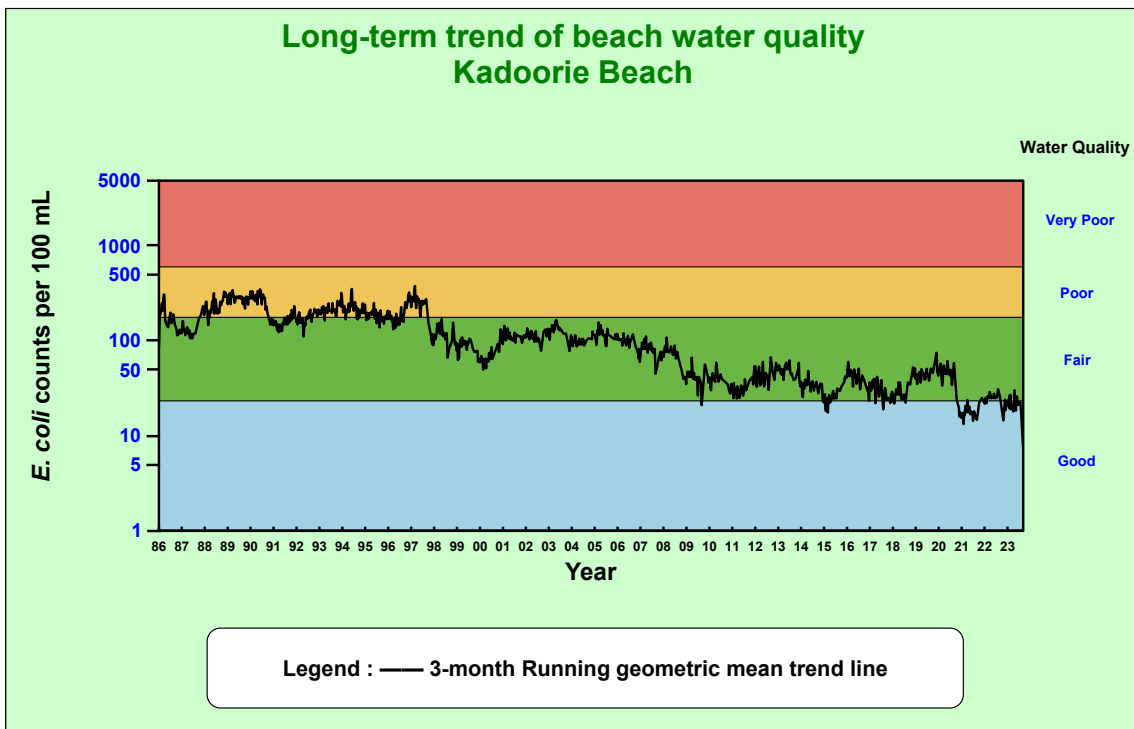
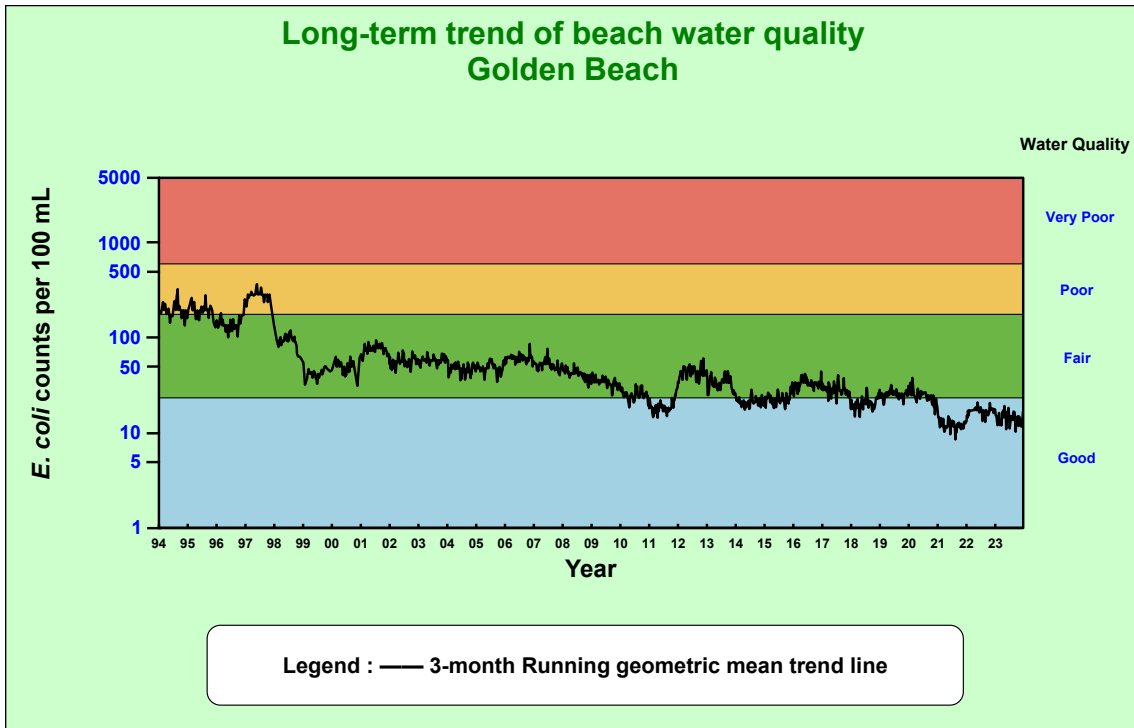


Tuen Mun District

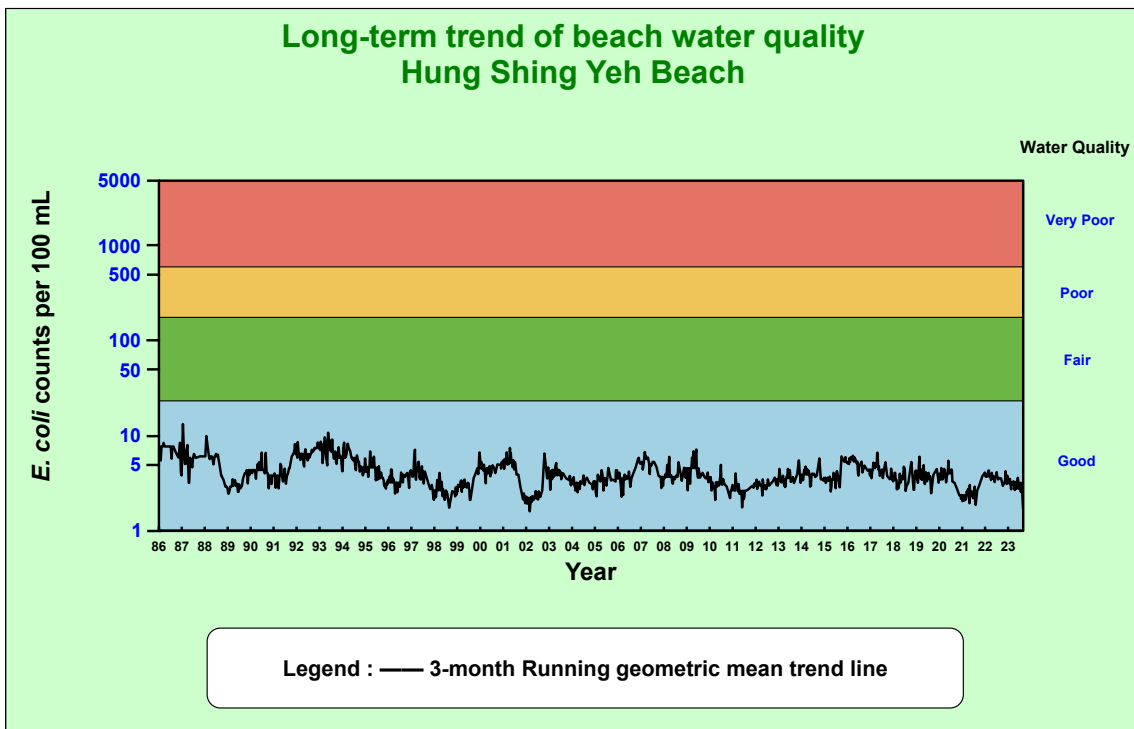
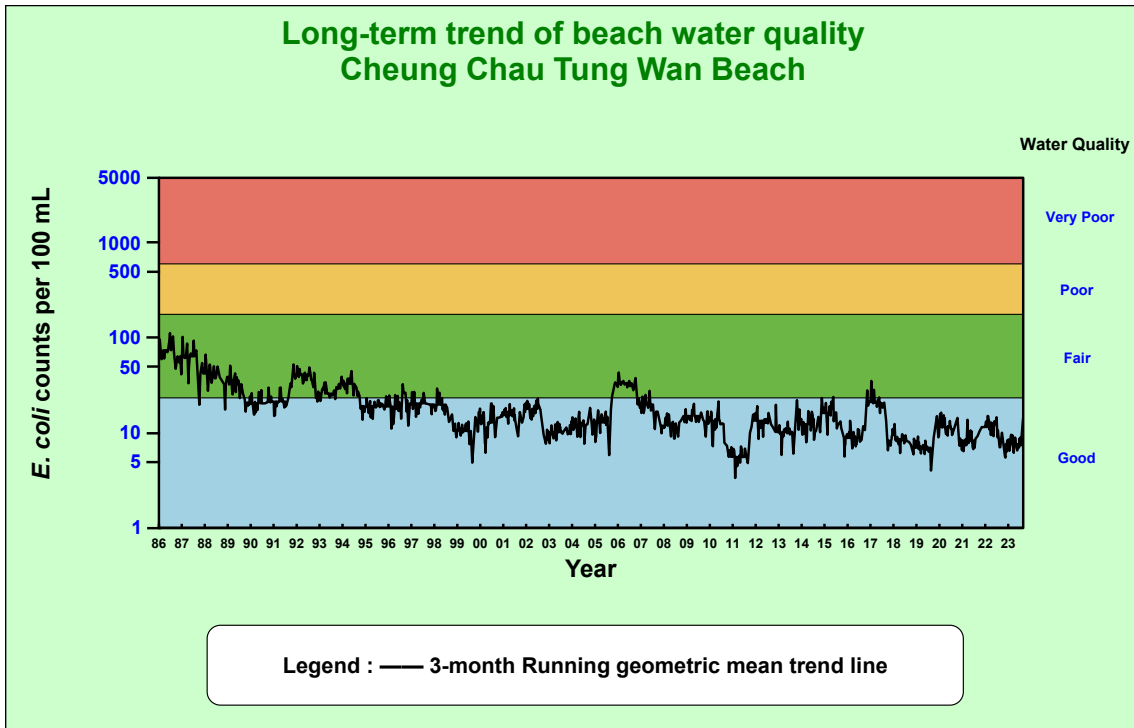
Appendix C

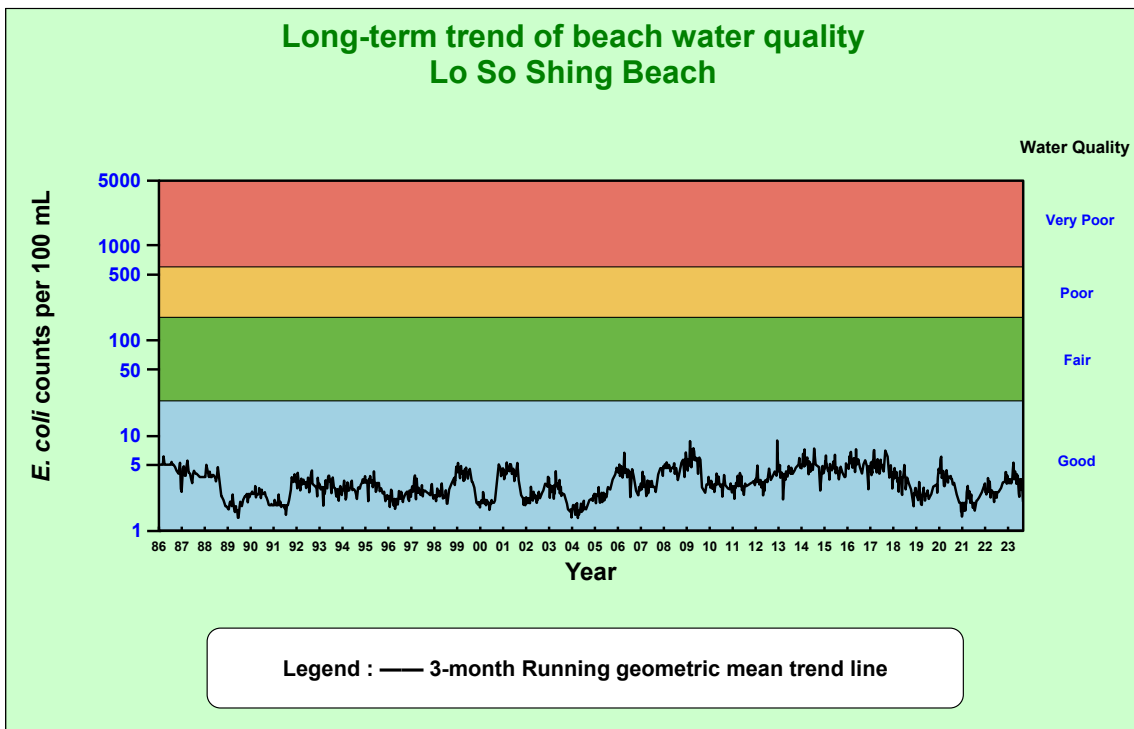
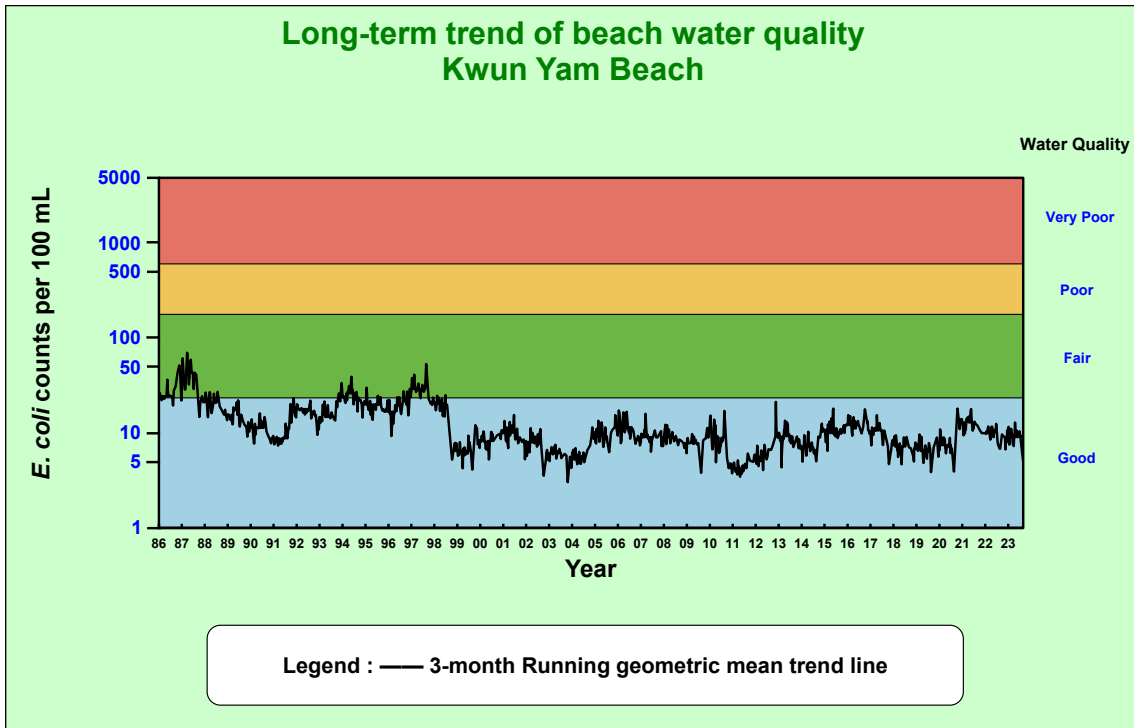


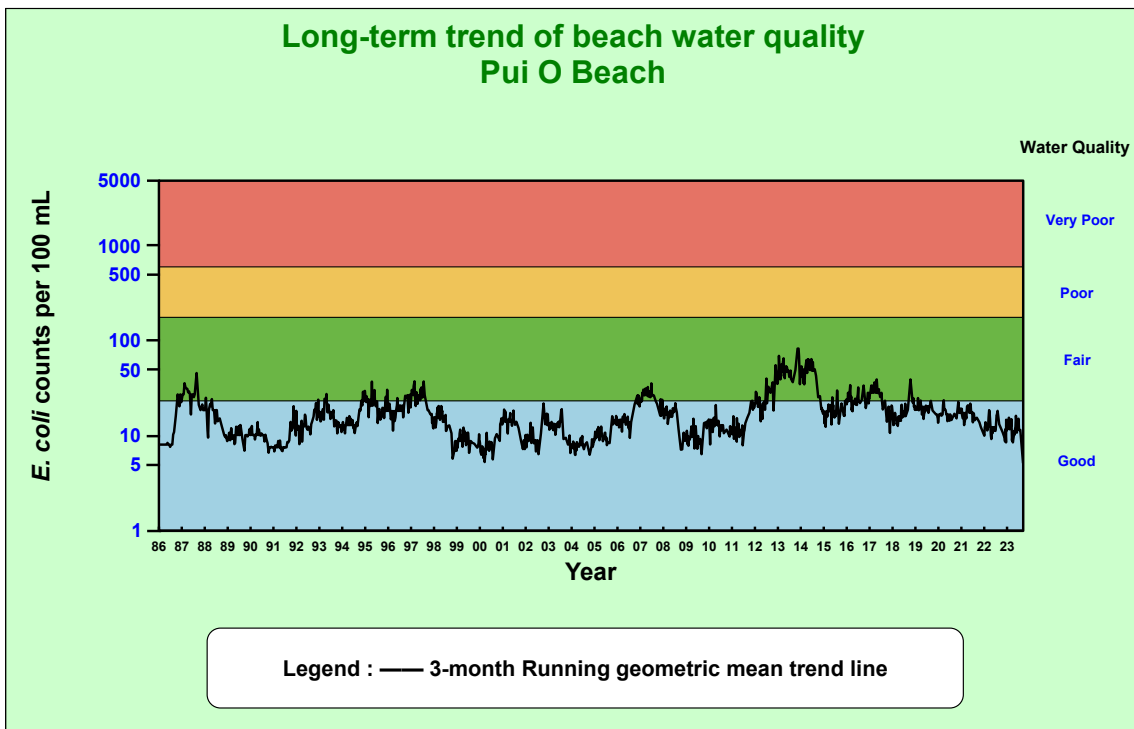
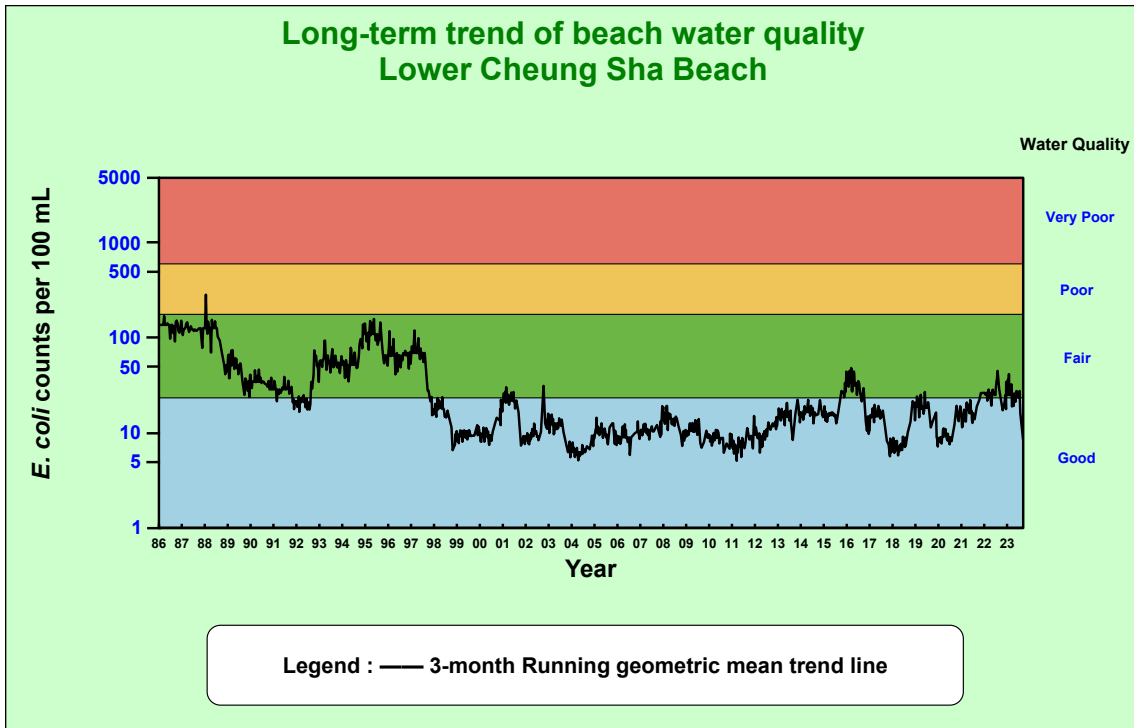


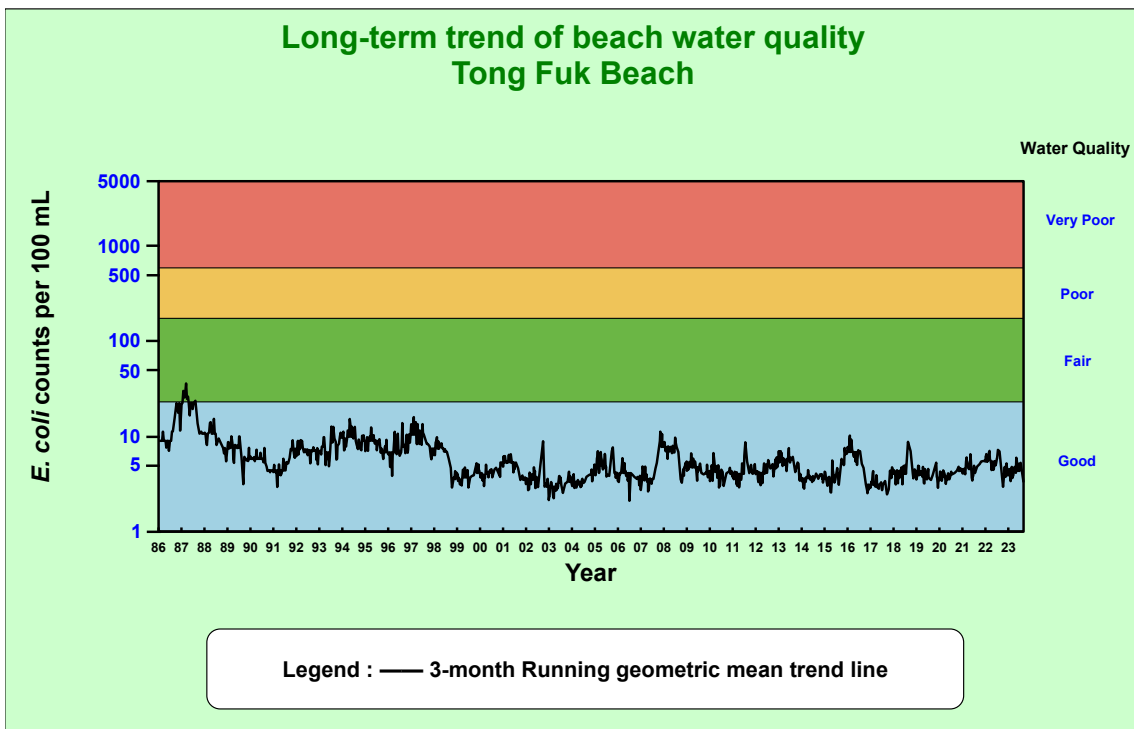
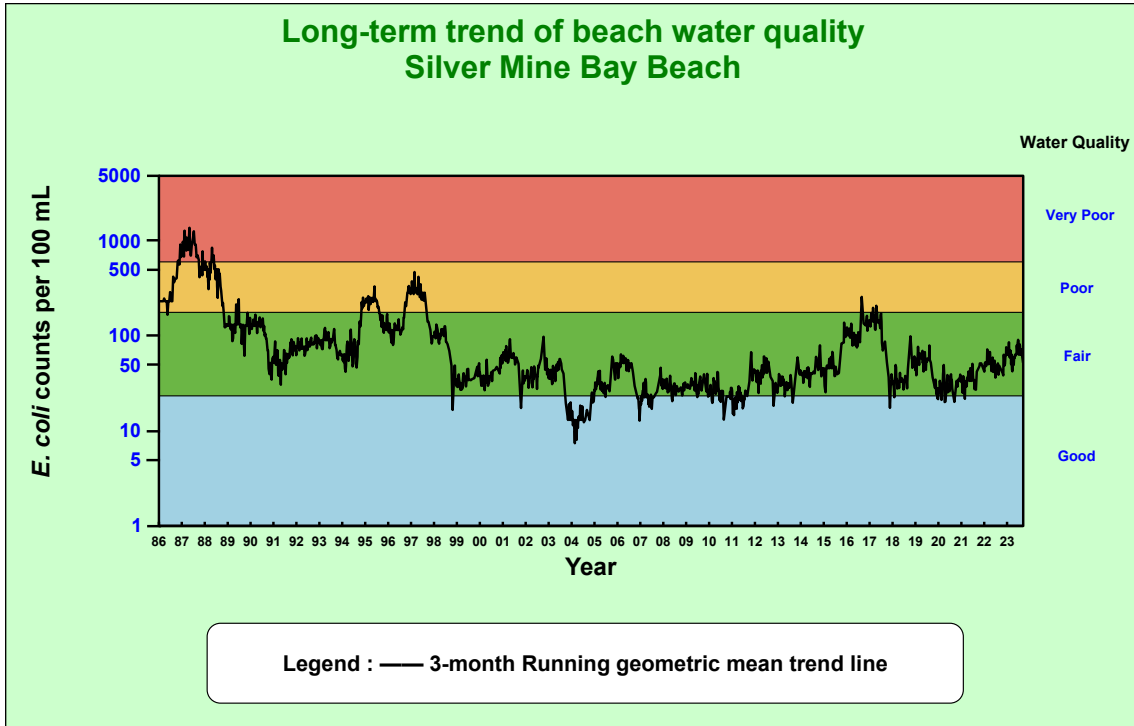


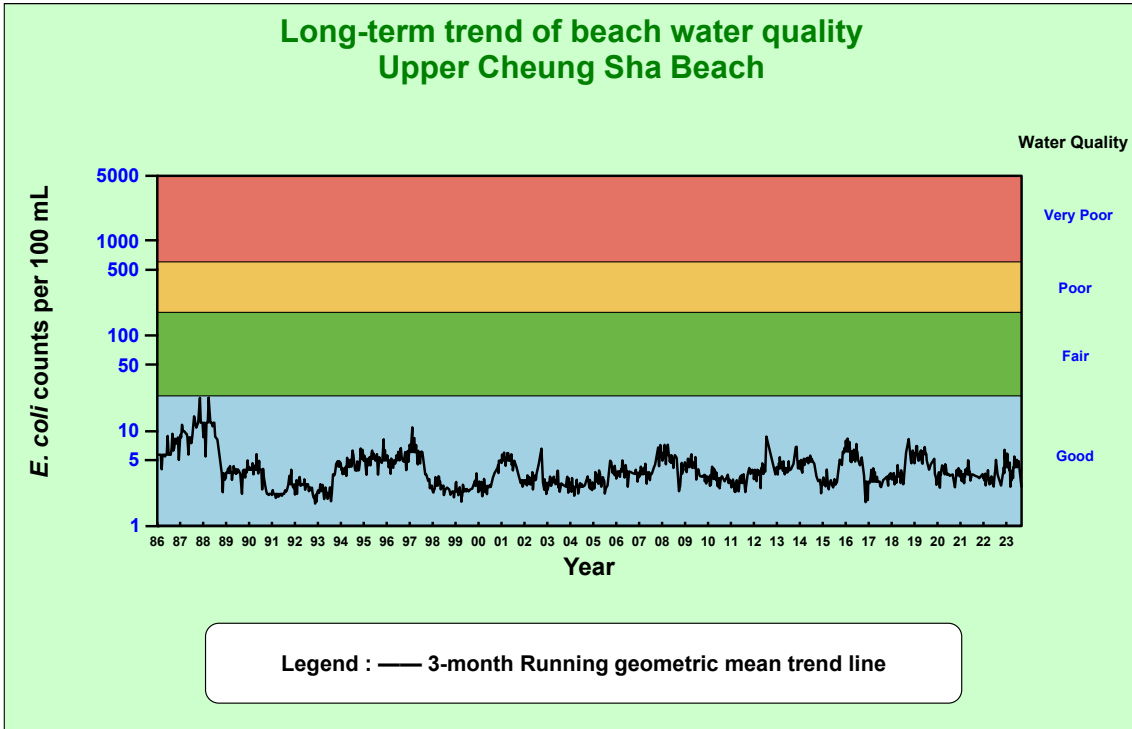
Islands District



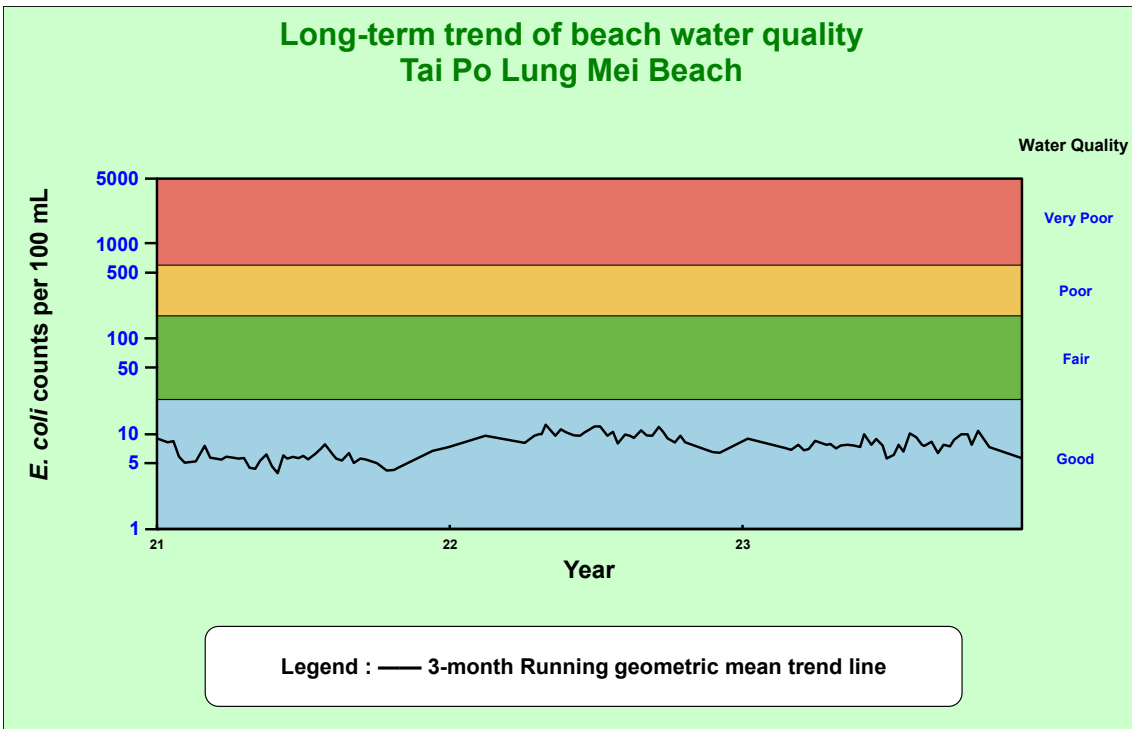








Tai Po District



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