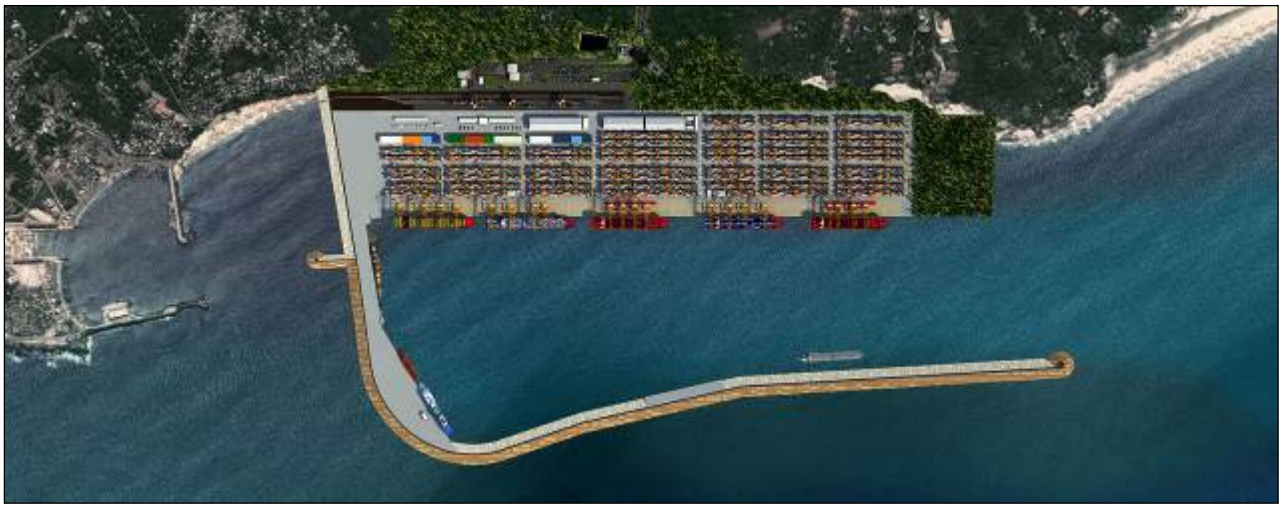
Environment Monitoring Report



Adani Vizhinjam Port Pvt. Ltd.

Vizhinjam, Kerala

April 2025

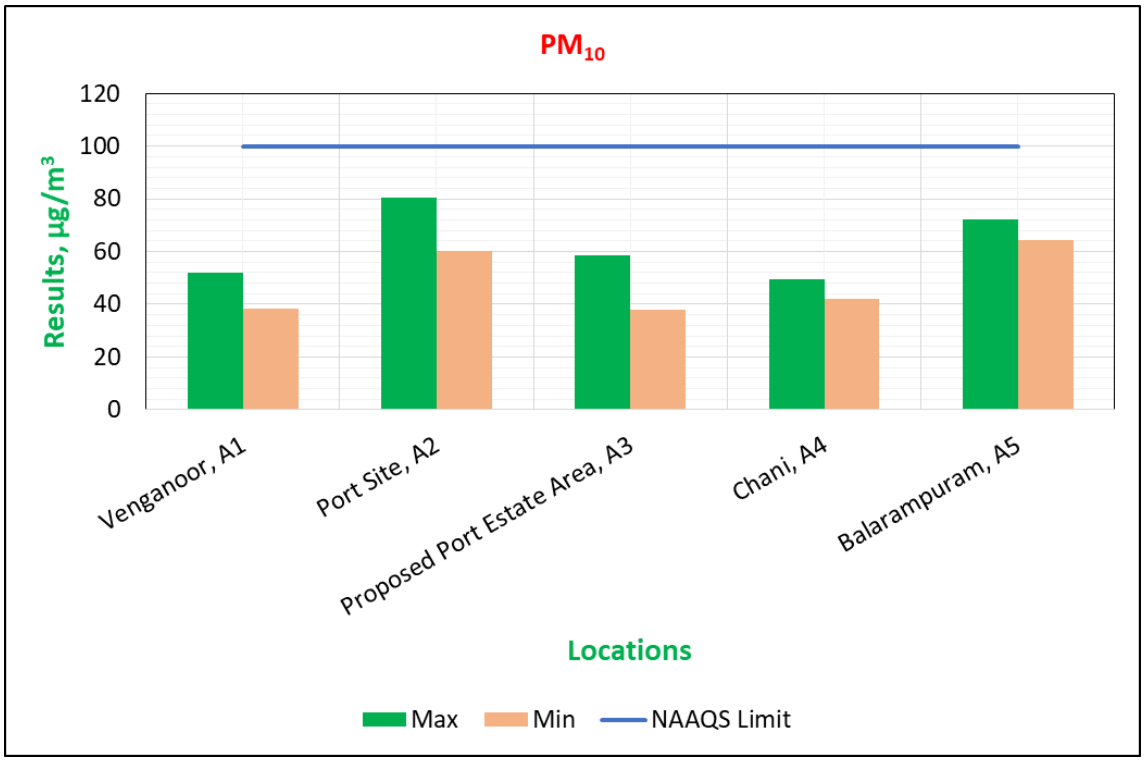
Environment Monitoring Locations:

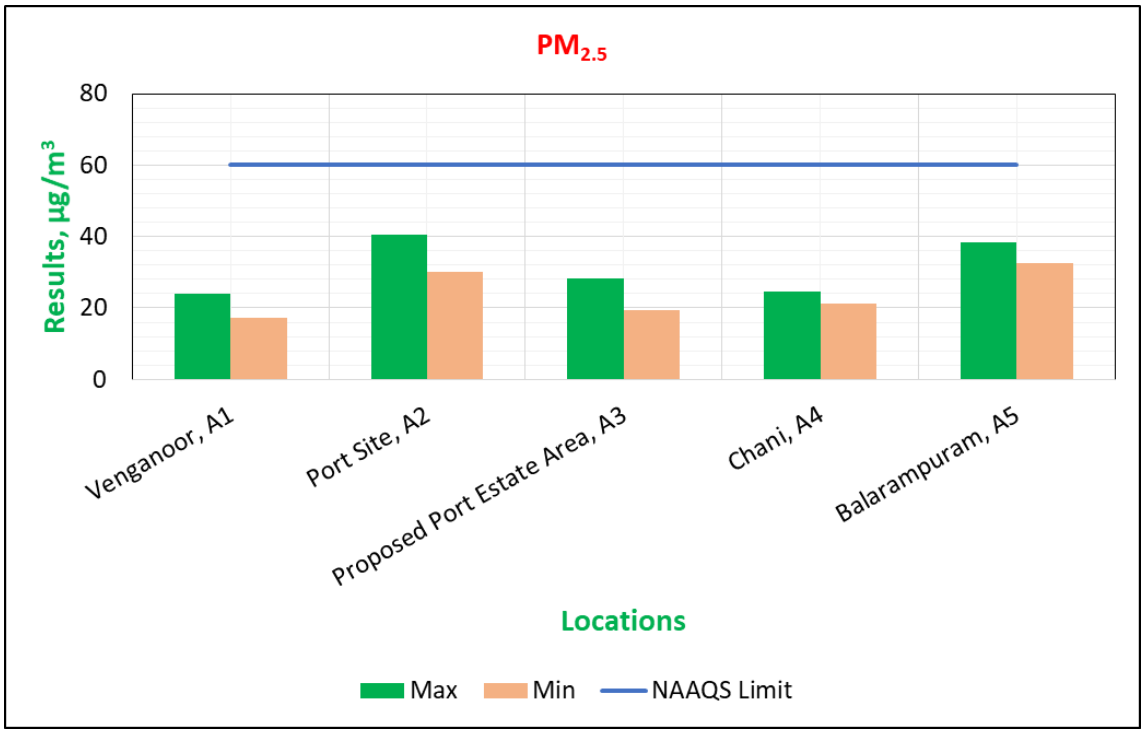
S. No.	Environmental Attribute	Location
1.	Ambient Air Quality Monitoring	Venganoor (A1)
		Port Site (A2)
		Proposed Port Estate Area (A3)
		Chani (A4)
		Balarampuram (A5)
2.	Ambient Noise	Venganoor (Residential) (N1)
		Port Site (Industrial) (N2)
		Proposed Port Estate Area (Residential) (N3)
		Chani (Residential) (N4)
		Balarampuram (Commercial) (N5)
3.	Marine Water/Sediment	Near Kovalam Beach (M1)
		Proposed Dredging Site (M2)
		Port Basin (M3)
		South of Breakwater (M4)
		Inner Approach Channel (M5)
		Kovalam Beach (M6)
4.	Groundwater	Port Site (G1)
		Proposed Port Estate Area (G2)
		PAF Area (G3)
5.	Surface Water	Poovar West Canal (S1)
		Vizhinjam Branch Canal (S2)
		Vellayani Lake (S3)
		Poovar Estuary (S4)
		Along with Rail Network (Balarampuram)

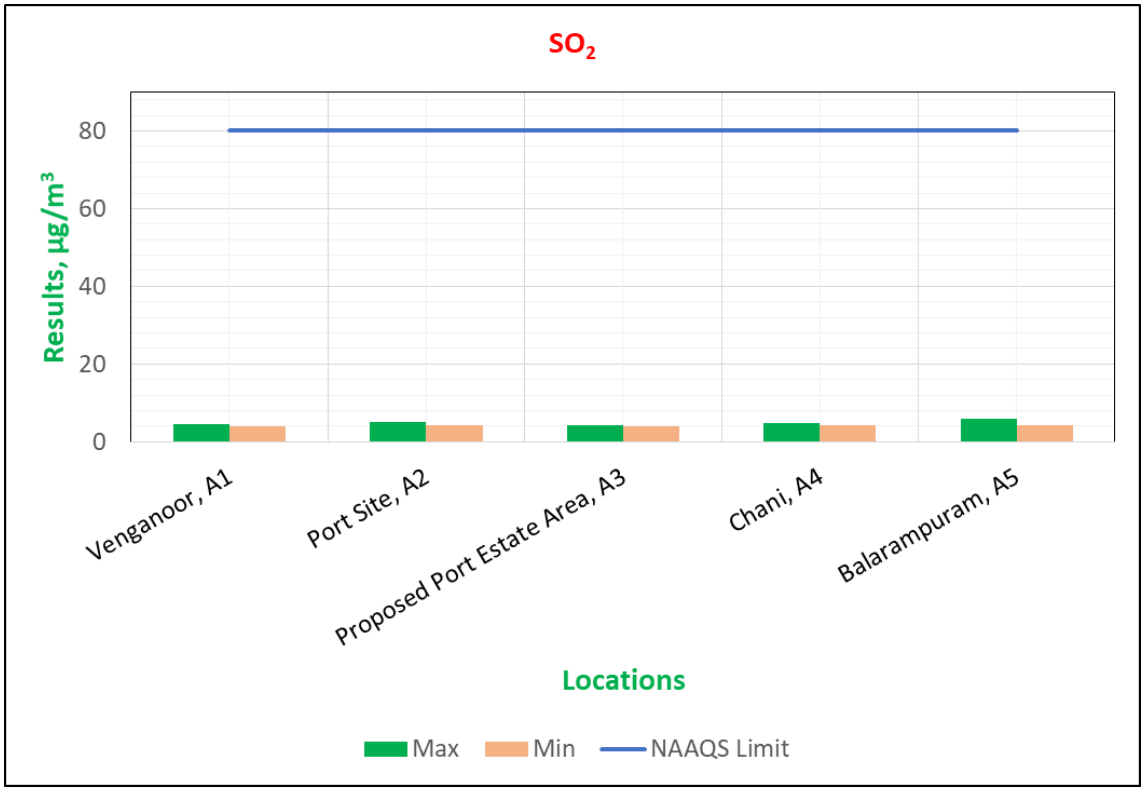
1. Summary of Environmental Monitoring Results for the Month of April 2025:

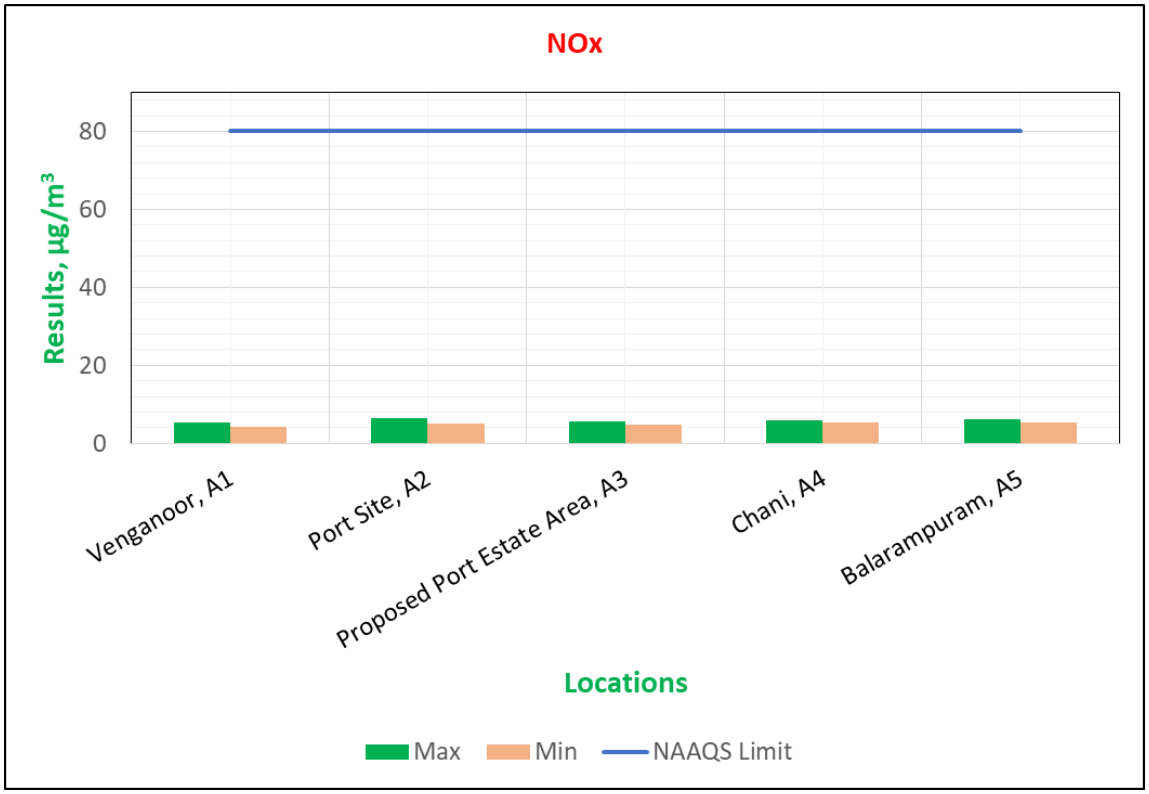
- The ambient air quality monitoring results were observed to be within National Ambient Air Quality Standards (NAAQS), 2009 at all the five locations.
- The Leq values in the locations were within the limits except at Balaramapuram on 15-04-2025 night time due to the sound played from Loud speaker on account of Mutharamman temple festival.
- Marine water and sediment samples results were observed to be comparable with the baseline.
- Ground water samples were collected from 3 locations (open wells). All the parameters at all locations were within the acceptable limits as per IS 10500:2012. The water from these locations is not used for drinking purposes.
- Surface water sample results were observed to be comparable with the baseline.

2. Ambient Air Quality

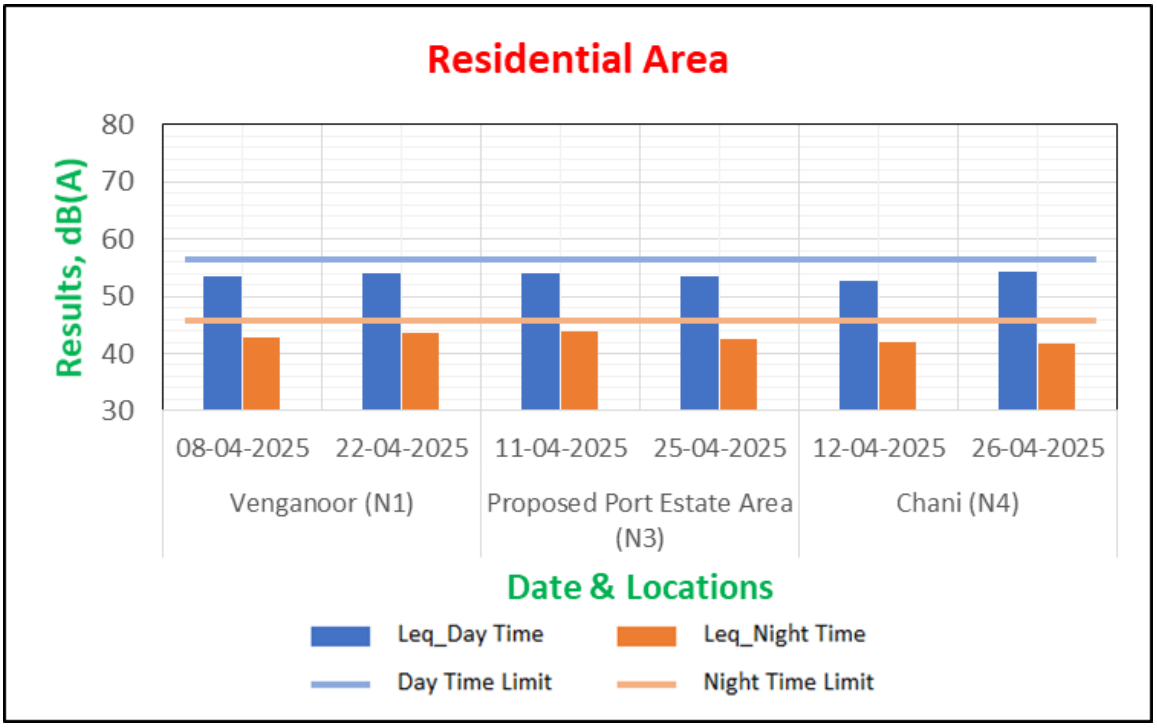


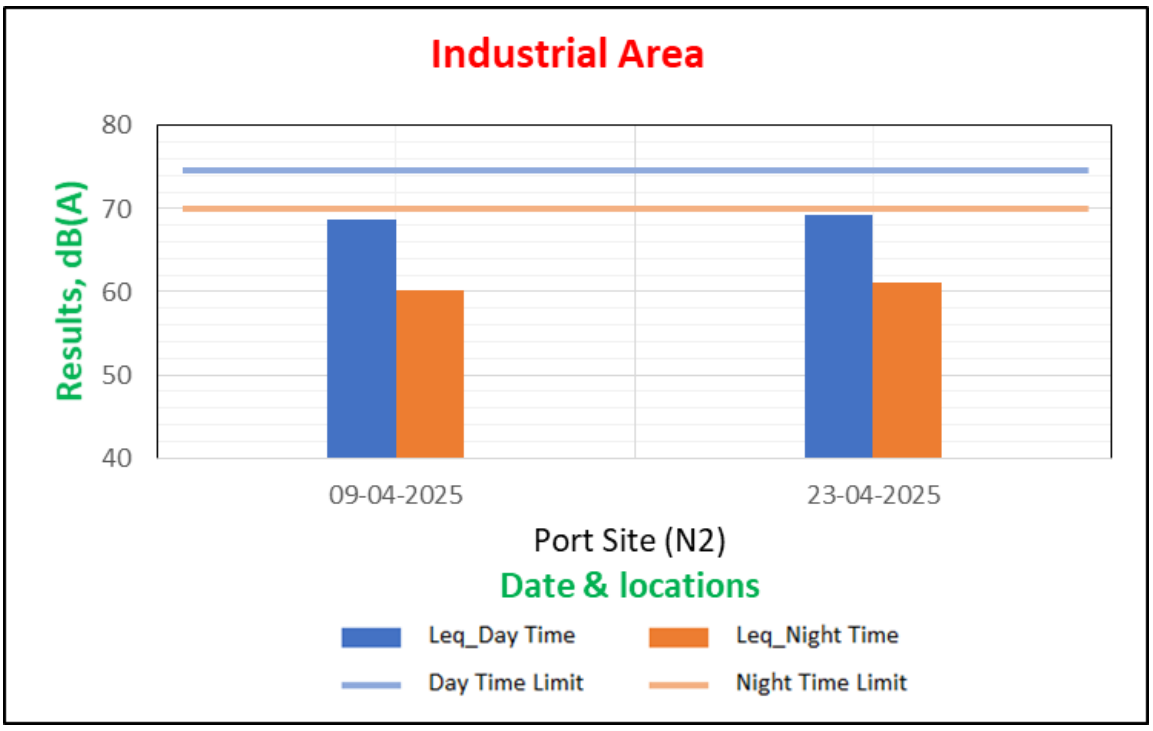


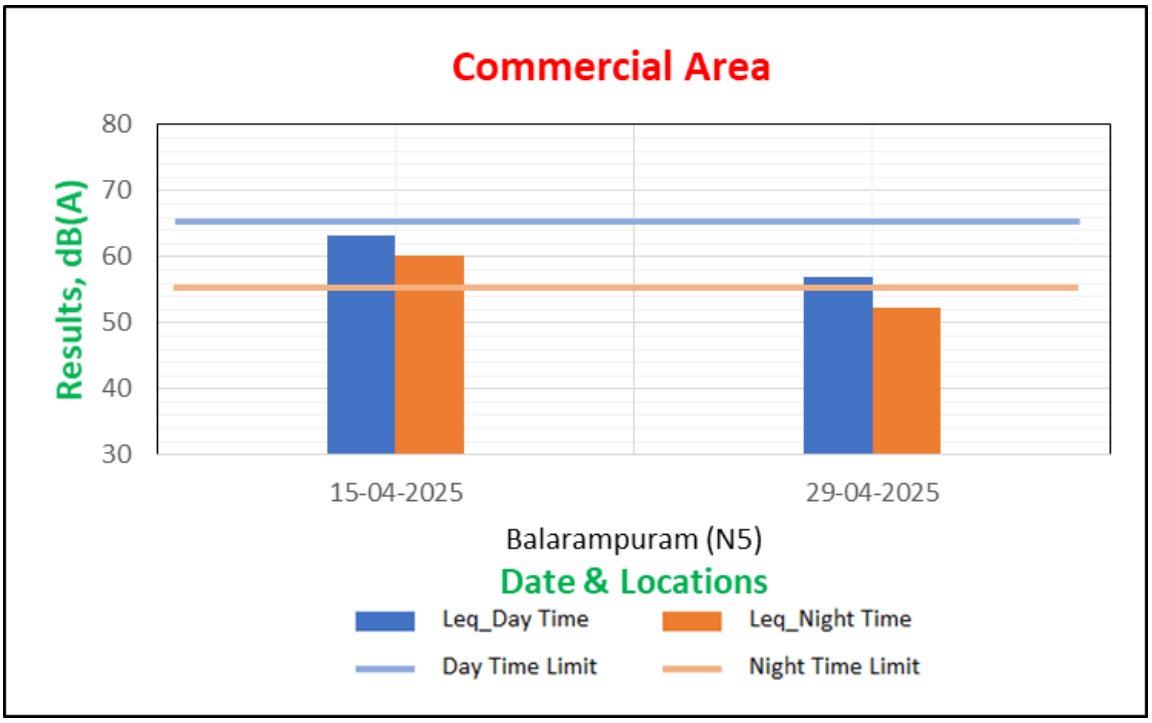

SO_2
Results, µg/m³
80
60
40
20
0
Venganoor, A1
Port Site, A2
Proposed Port Estate Area, A3
Chani, A4
Balarampuram, A5
Locations
Max
Min
NAAQS Limit


NOx
Results, µg/m³
80
60
40
20
0
Venganoor, A1
Port Site, A2
Proposed Port Estate Area, A3
Chani, A4
Balarampuram, A5
Locations
Max
Min
NAAQS Limit

3. Ambient Noise

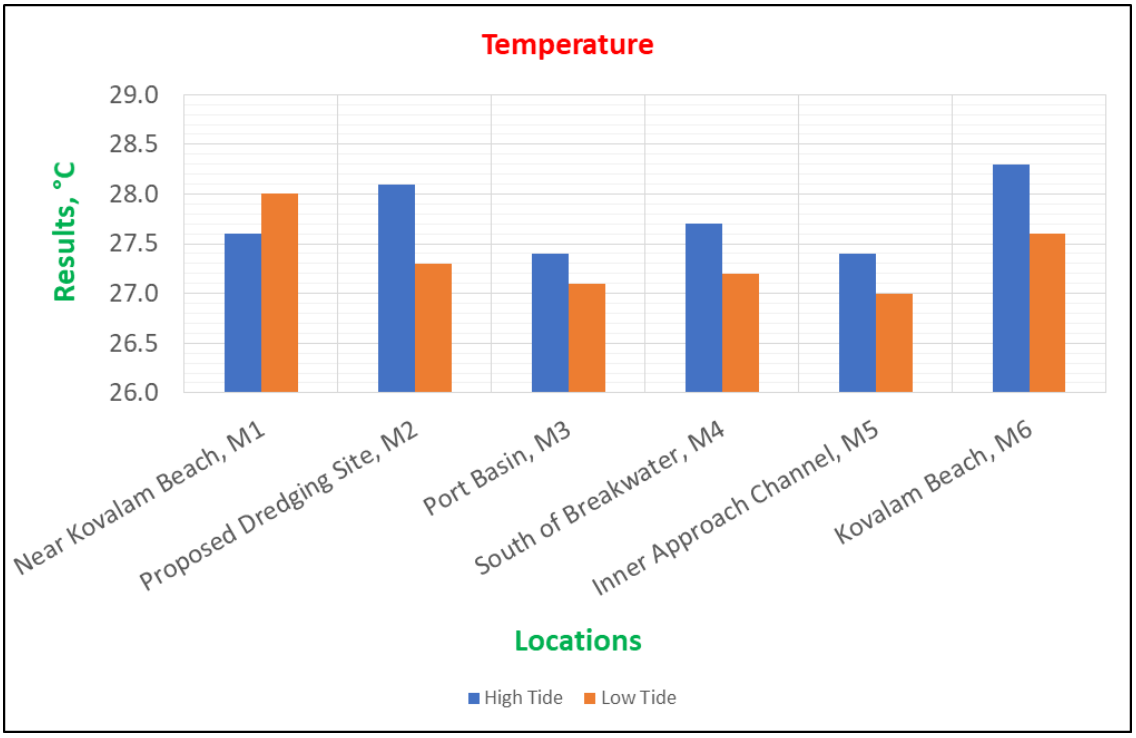


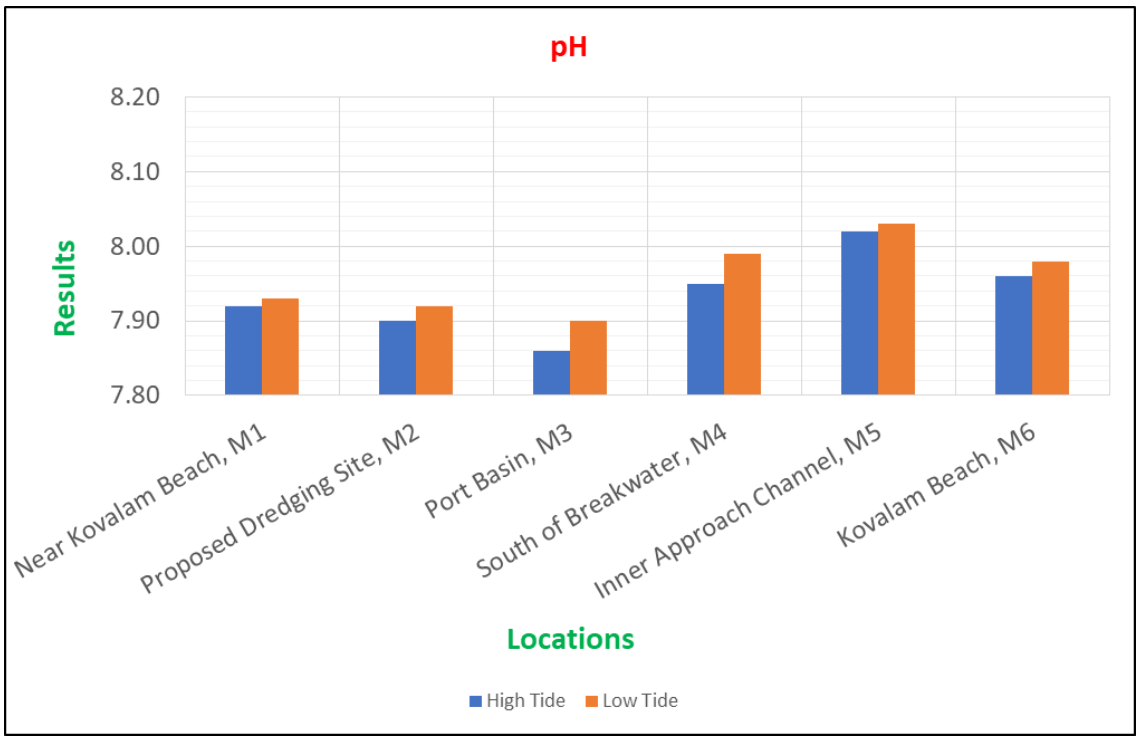


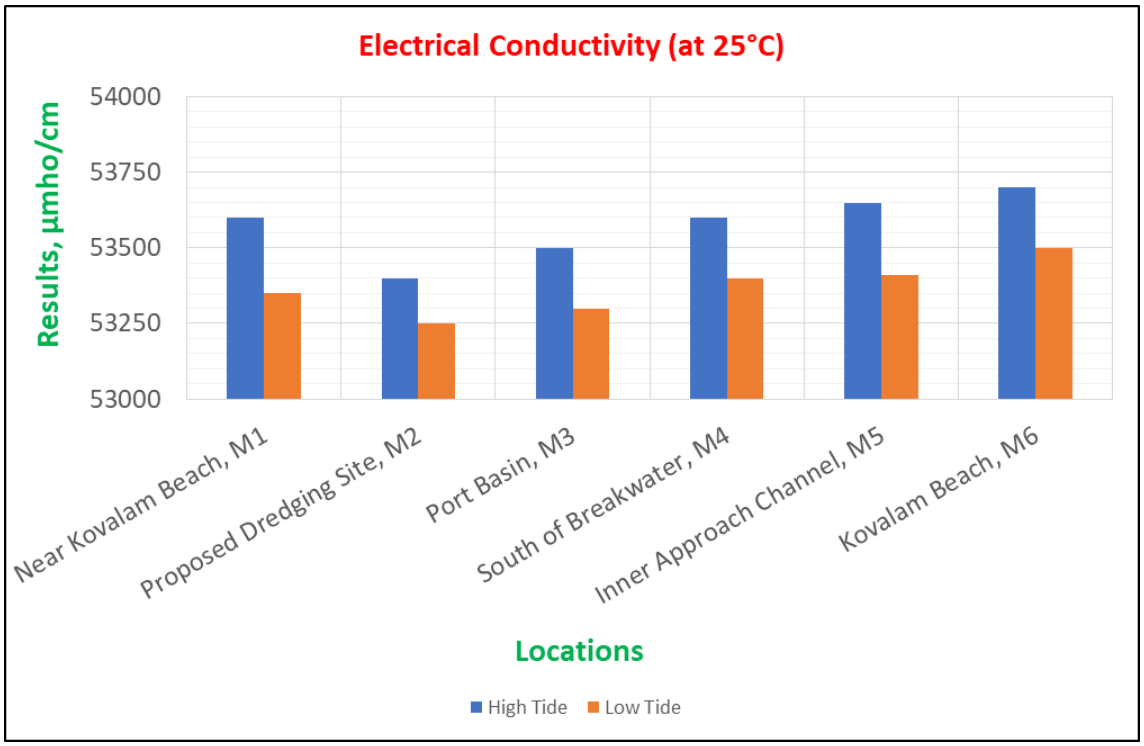

Commercial Area
80
70
60
50
40
30
Results, dB(A)
15-04-2025
29-04-2025
Balarampuram (N5)
Date & Locations
Leq_Day Time
Leq_Night Time
Day Time Limit
Night Time Limit

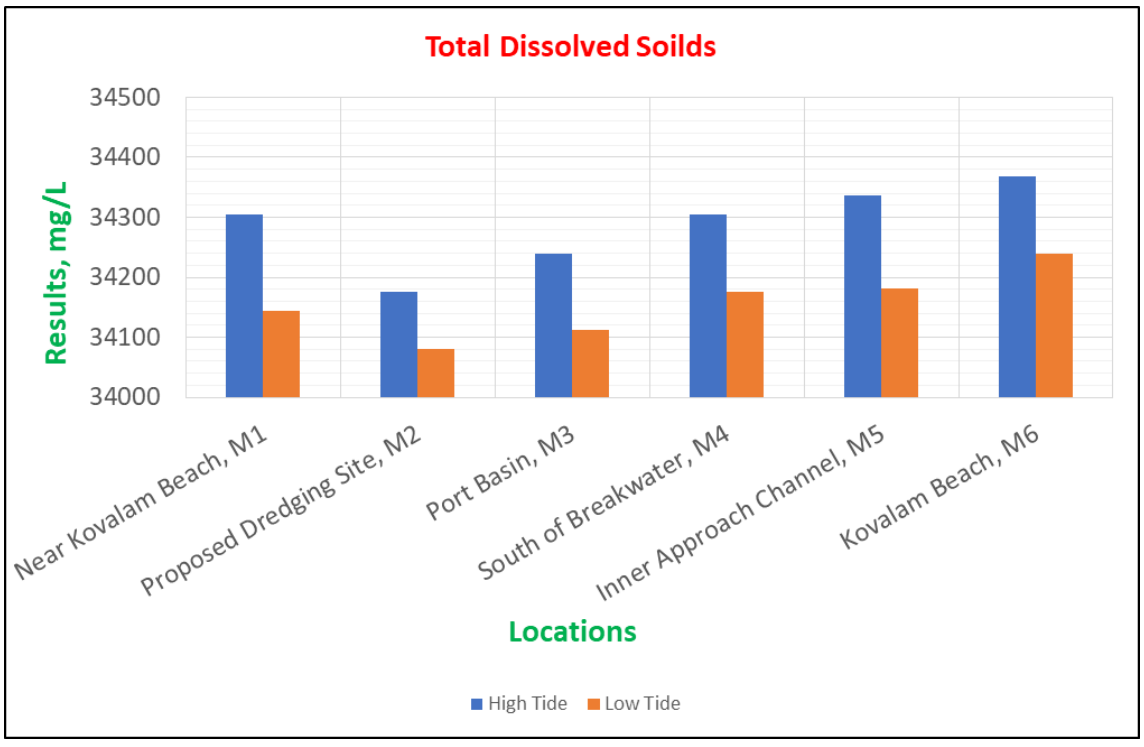
4. Marine Survey

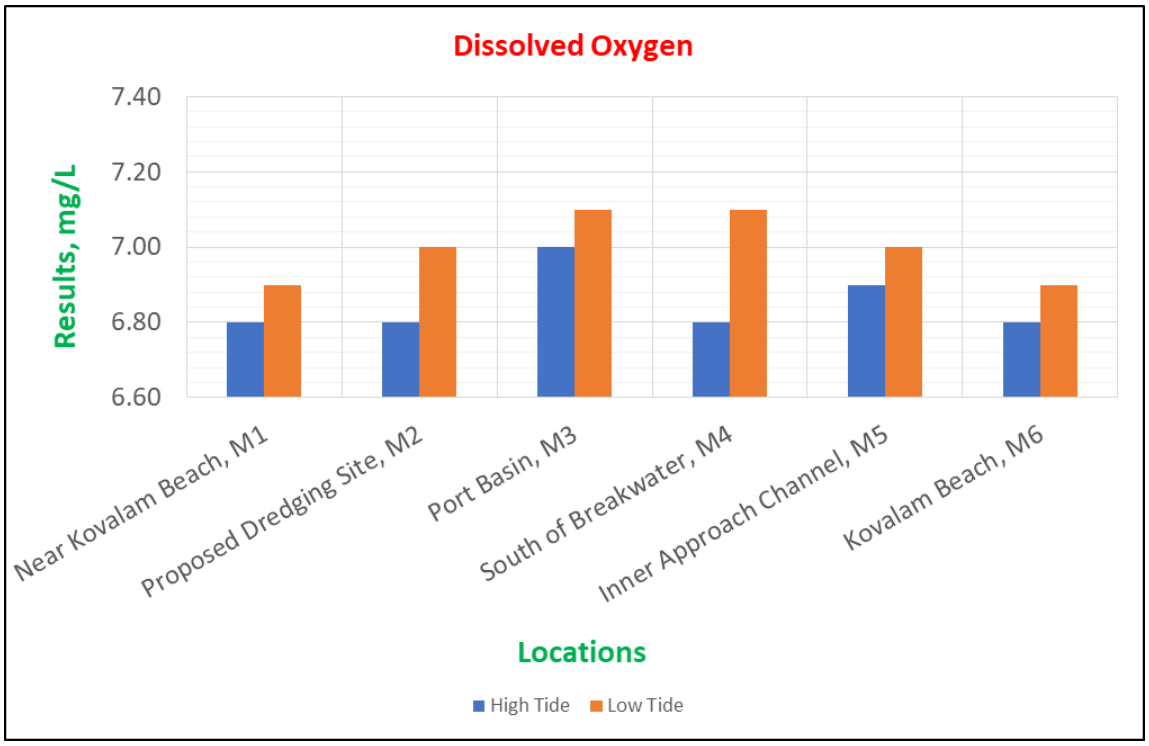
4 a. Marine Water Analysis

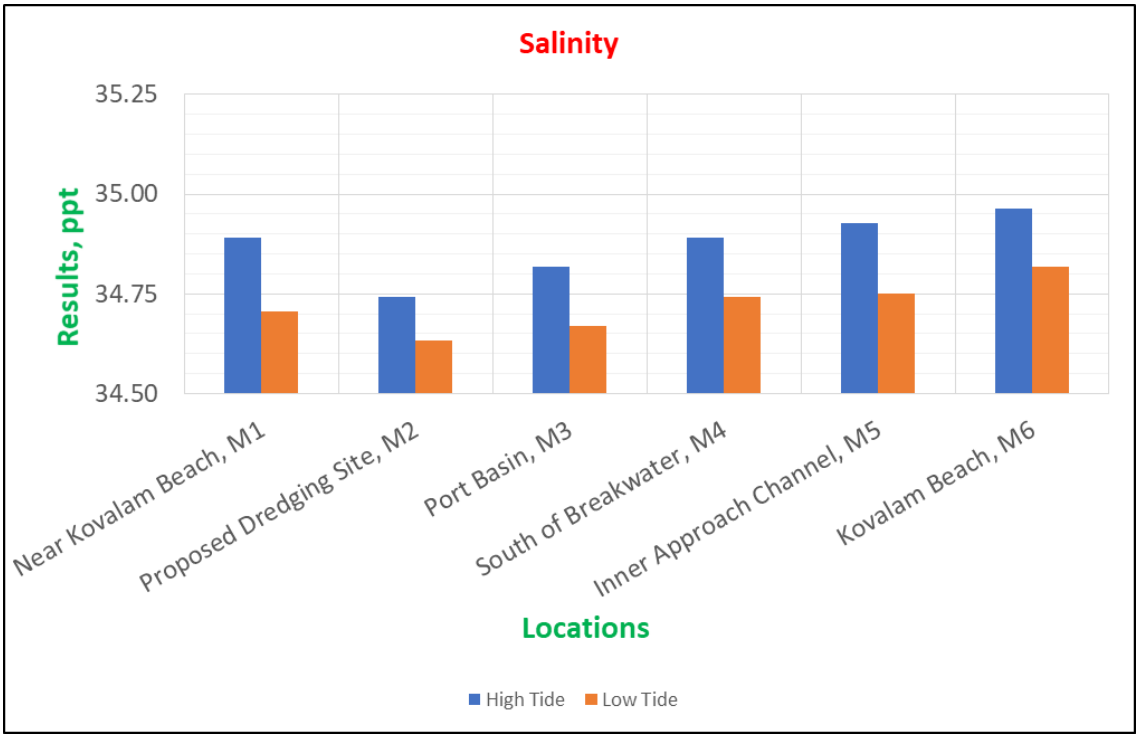


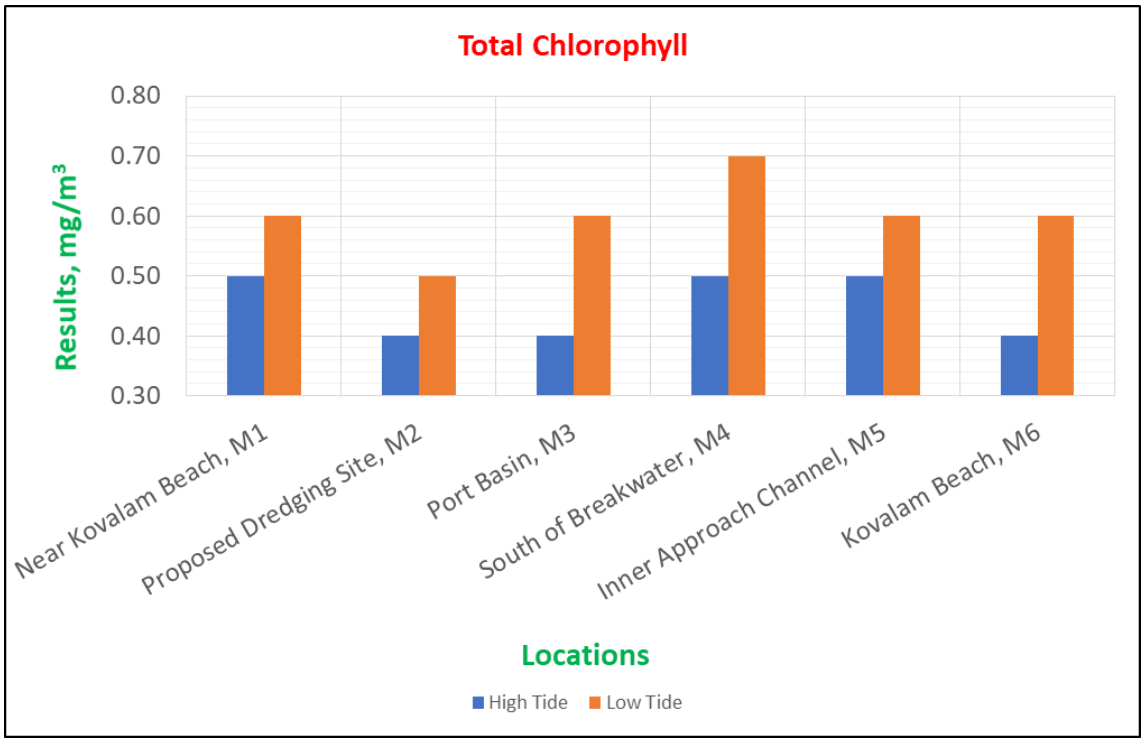


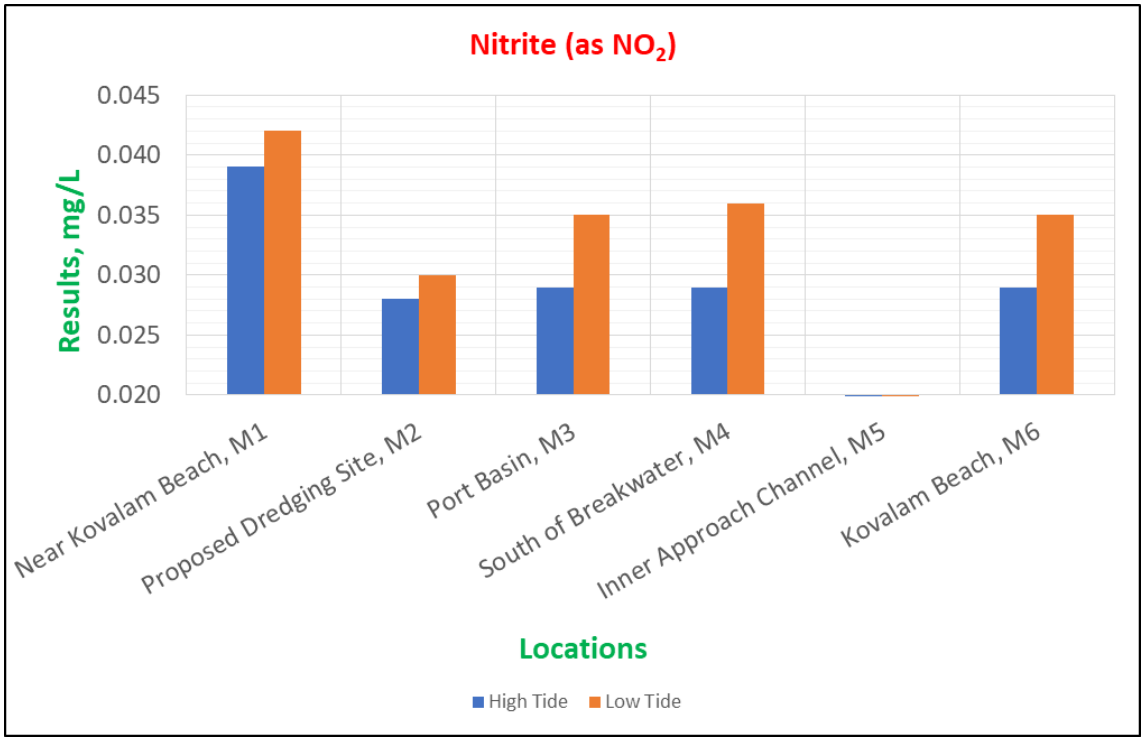

Electrical Conductivity (at 25°C)
Results, µmho/cm
54000
53750
53500
53250
53000
Near Kovalam Beach, M1
Proposed Dredging Site, M2
Port Basin, M3
South of Breakwater, M4
Inner Approach Channel, M5
Kovalam Beach, M6
Locations
High Tide
Low Tide


Total Dissolved Soilds
Results, mg/L
34500
34400
34300
34200
34100
34000
Near Kovalam Beach, M1
Proposed Dredging Site, M2
Port Basin, M3
South of Breakwater, M4
Inner Approach Channel, M5
Kovalam Beach, M6
Locations
High Tide
Low Tide

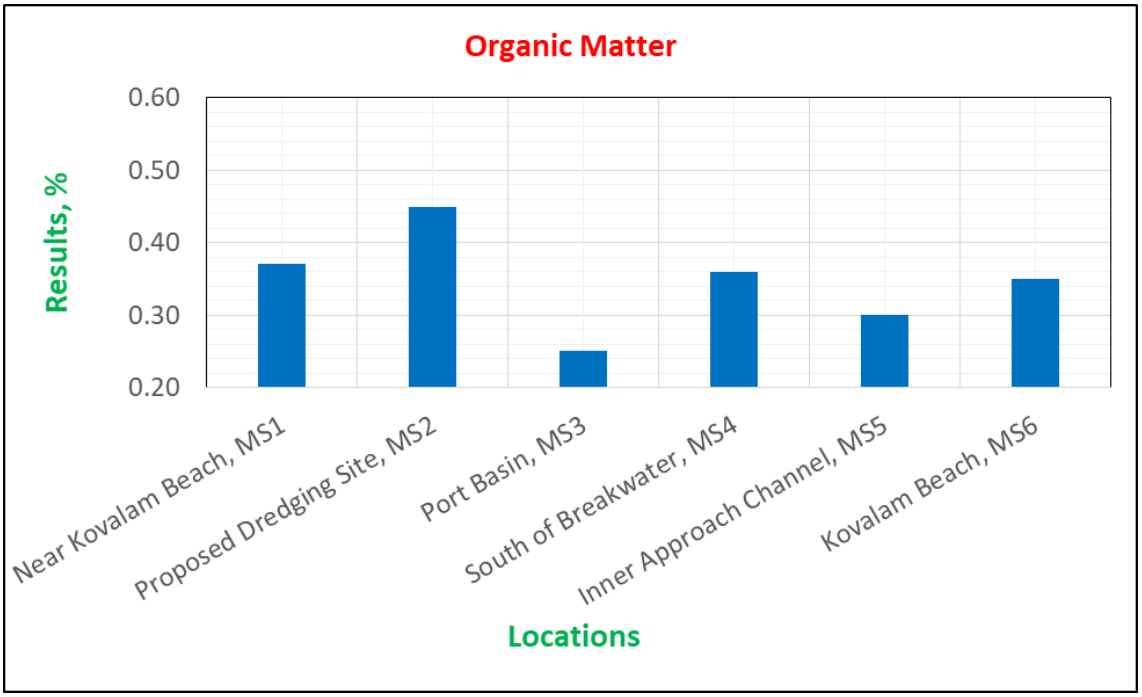

Dissolved Oxygen
Results, mg/L
7.40
7.20
7.00
6.80
6.60
Near Kovalam Beach, M1
Proposed Dredging Site, M2
Port Basin, M3
South of Breakwater, M4
Inner Approach Channel, M5
Kovalam Beach, M6
Locations
High Tide
Low Tide

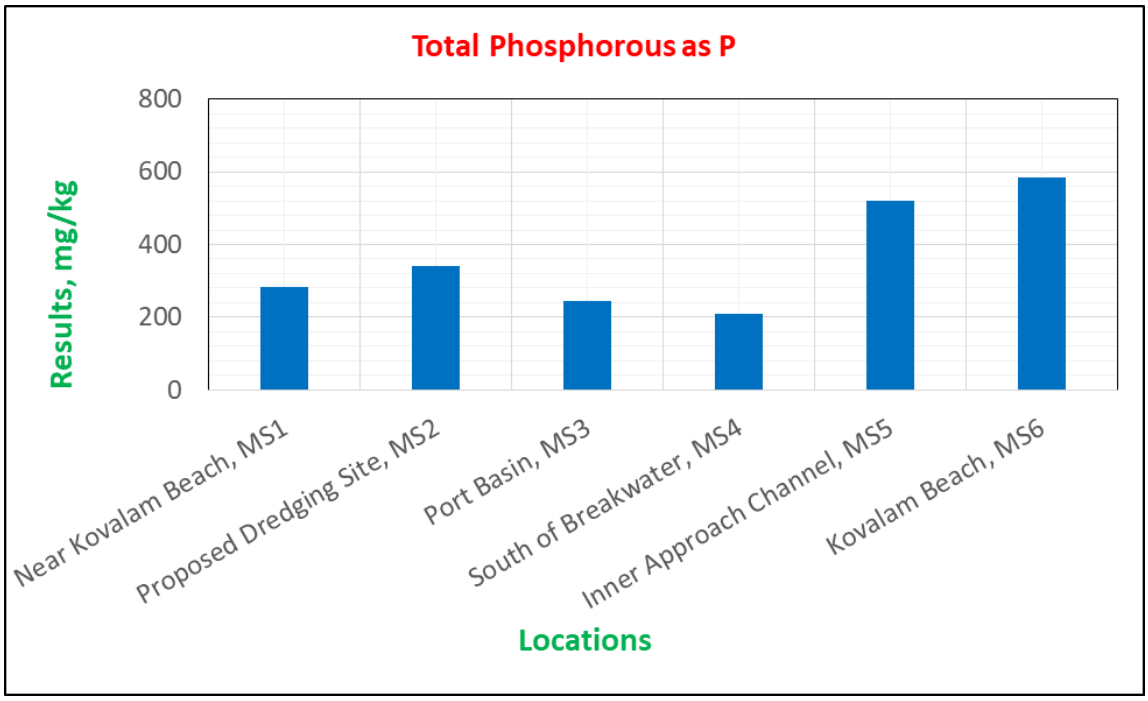

Salinity
Results, ppt
35.25
35.00
34.75
34.50
Near Kovalam Beach, M1
Proposed Dredging Site, M2
Port Basin, M3
South of Breakwater, M4
Inner Approach Channel, M5
Kovalam Beach, M6
Locations
High Tide
Low Tide

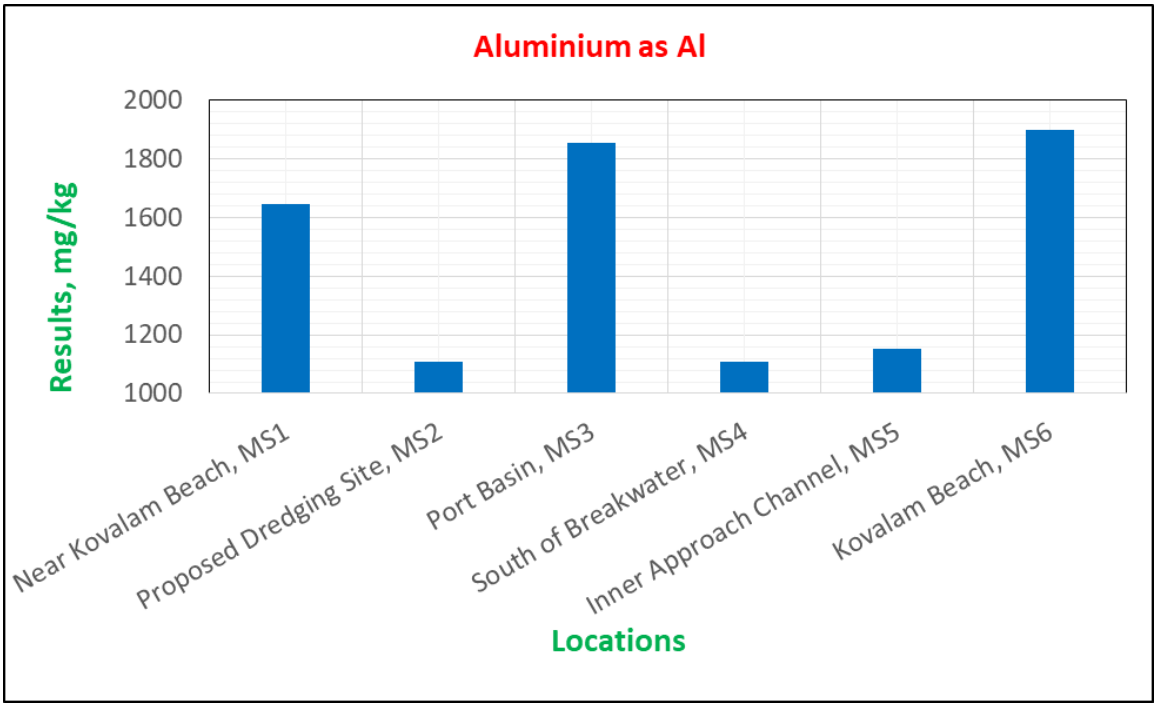

Total Chlorophyll
Results, mg/m³
0.80
0.70
0.60
0.50
0.40
0.30
Near Kovalam Beach, M1
Proposed Dredging Site, M2
Port Basin, M3
South of Breakwater, M4
Inner Approach Channel, M5
Kovalam Beach, M6
Locations
High Tide
Low Tide

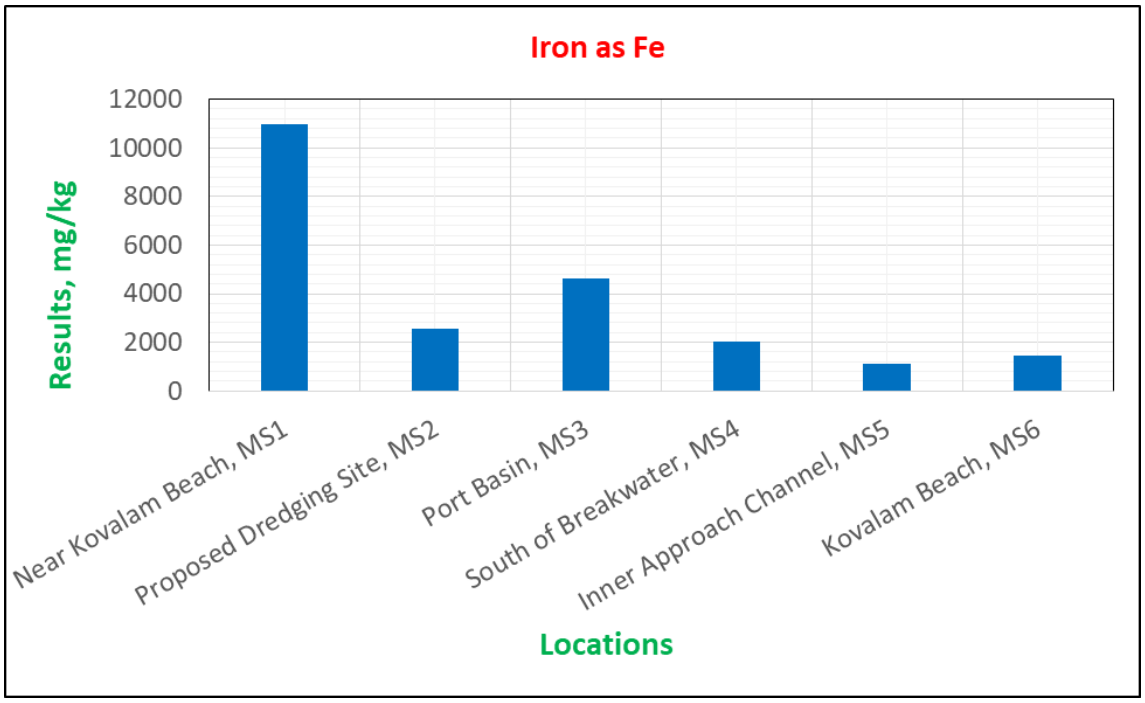

Nitrite (as NO2)
Results, mg/L
0.045
0.040
0.035
0.030
0.025
0.020
Near Kovalam Beach, M1
Proposed Dredging Site, M2
Port Basin, M3
South of Breakwater, M4
Inner Approach Channel, M5
Kovalam Beach, M6
Locations
High Tide
Low Tide

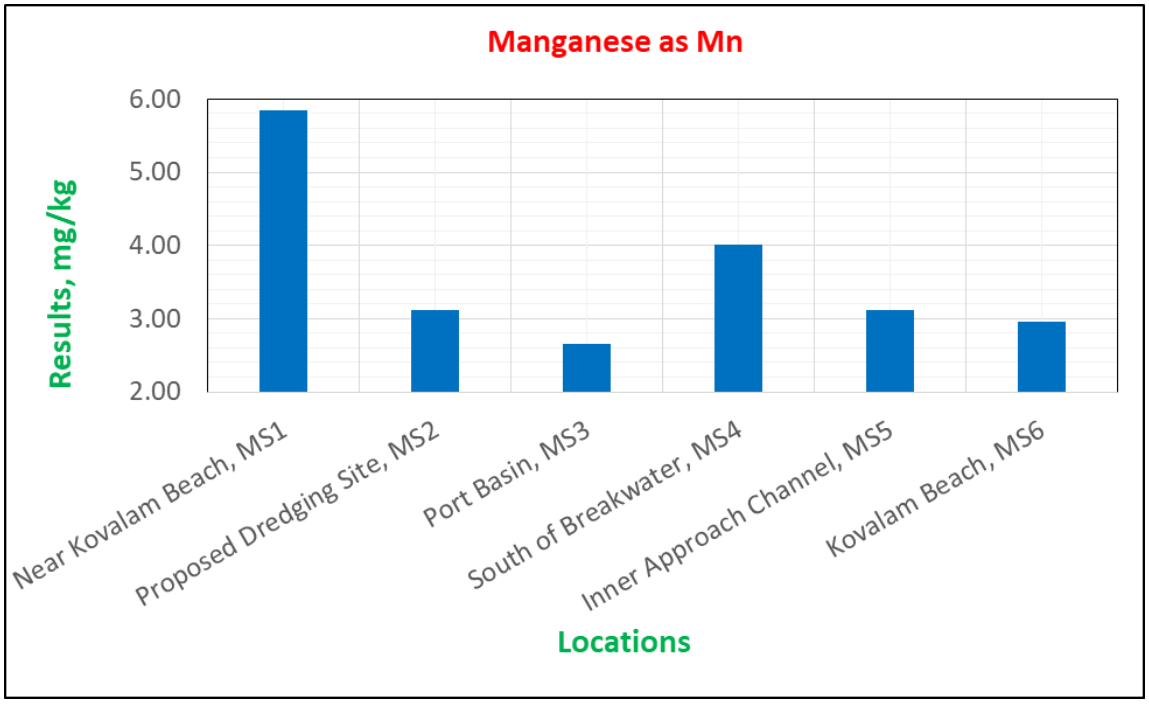
4 b. Sediment Analysis

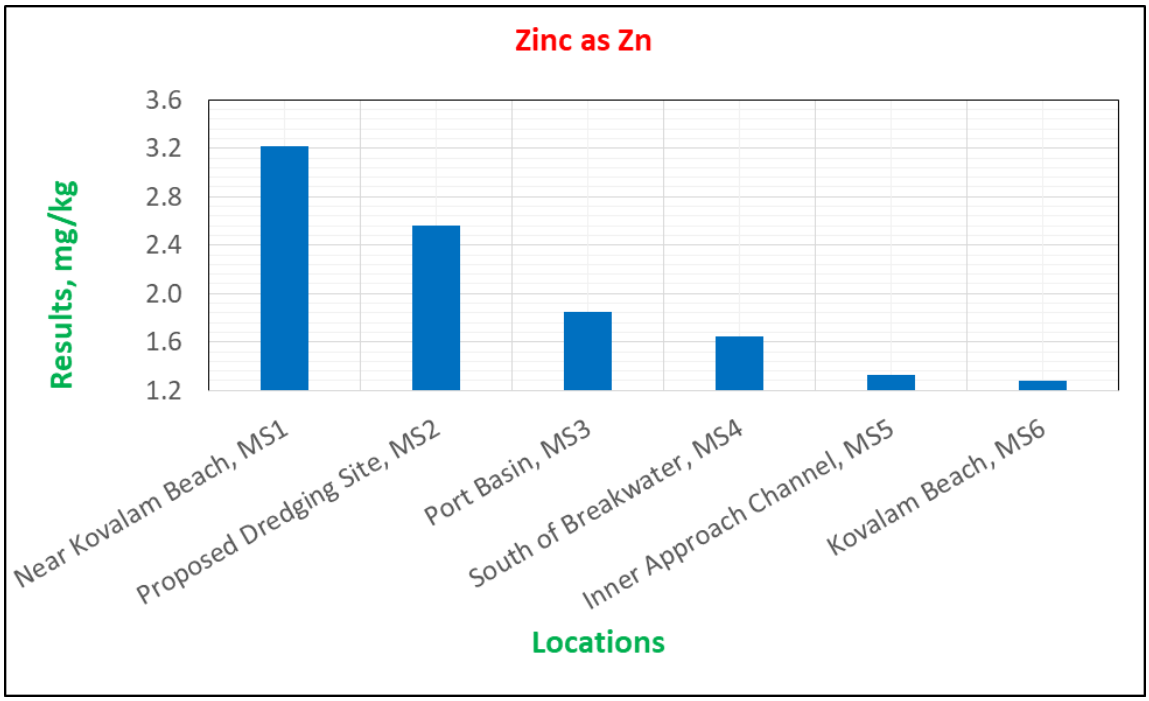


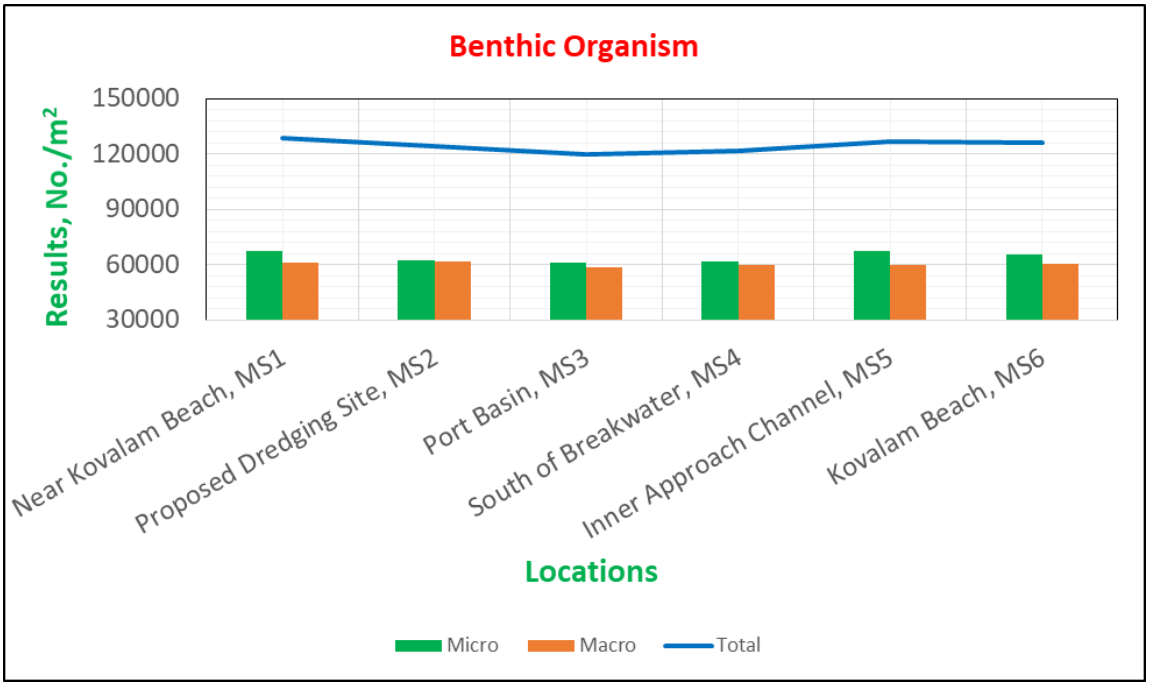

Total Phosphorous as P
Results, mg/kg
800
600
400
200
0
Near Kovalam Beach, MS1
Proposed Dredging Site, MS2
Port Basin, MS3
South of Breakwater, MS4
Inner Approach Channel, MS5
Kovalam Beach, MS6
Locations


Aluminium as Al
Results, mg/kg
2000
1800
1600
1400
1200
1000
Near Kovalam Beach, MS1
Proposed Dredging Site, MS2
Port Basin, MS3
South of Breakwater, MS4
Inner Approach Channel, MS5
Kovalam Beach, MS6
Locations

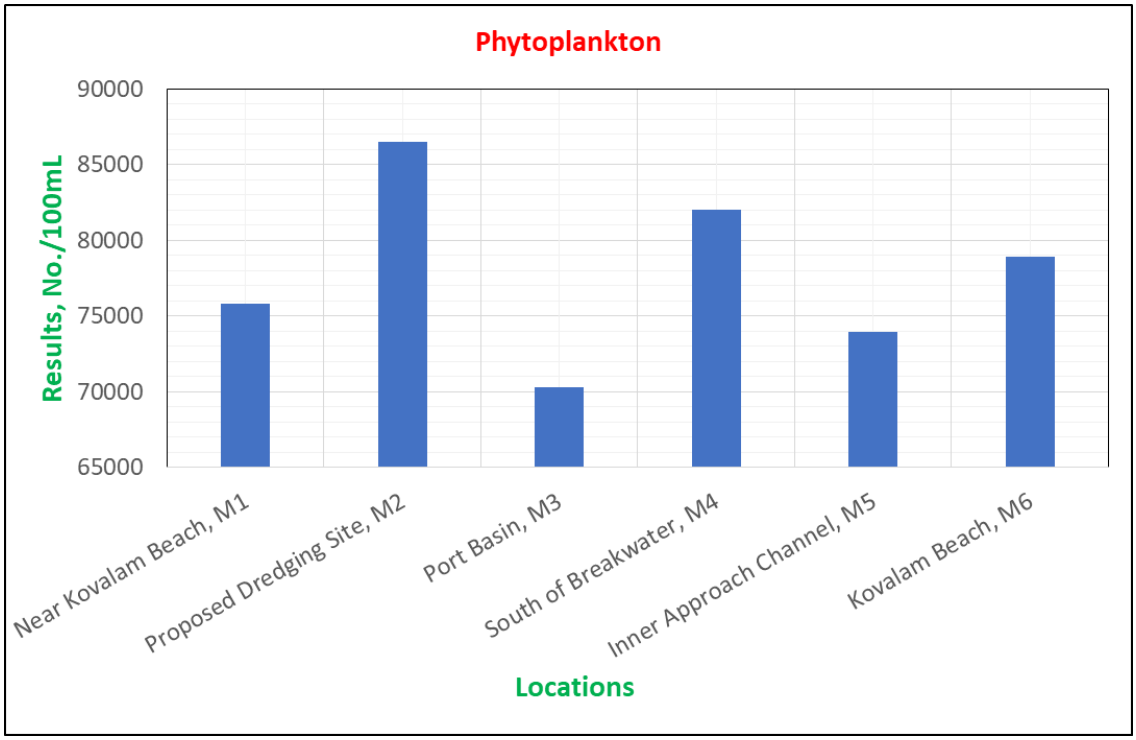

Iron as Fe
Results, mg/kg
12000
10000
8000
6000
4000
2000
0
Near Kovalam Beach, MS1
Proposed Dredging Site, MS2
Port Basin, MS3
South of Breakwater, MS4
Inner Approach Channel, MS5
Kovalam Beach, MS6
Locations


Manganese as Mn
Results, mg/kg
6.00
5.00
4.00
3.00
2.00
Near Kovalam Beach, MS1
Proposed Dredging Site, MS2
Port Basin, MS3
South of Breakwater, MS4
Inner Approach Channel, MS5
Kovalam Beach, MS6
Locations

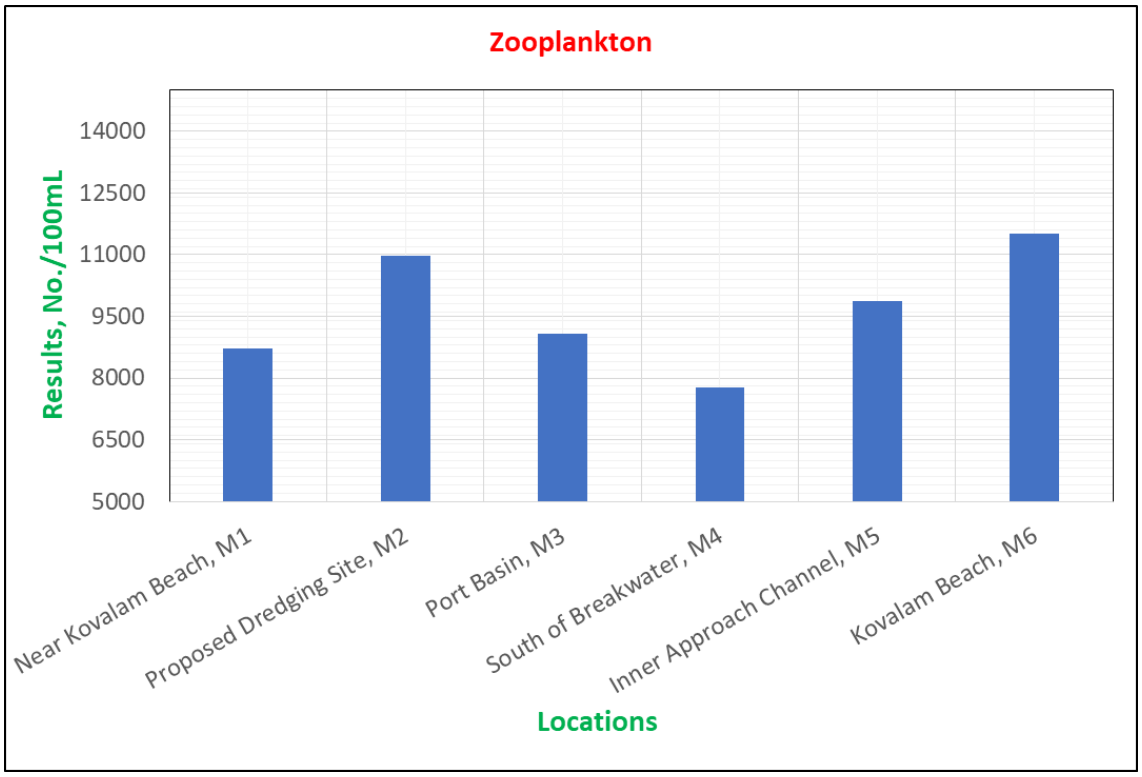

Zinc as Zn
Results, mg/kg
3.6
3.2
2.8
2.4
2.0
1.6
1.2
Near Kovalam Beach, MS1
Proposed Dredging Site, MS2
Port Basin, MS3
South of Breakwater, MS4
Inner Approach Channel, MS5
Kovalam Beach, MS6
Locations


Benthic Organism
Results, No./m²
150000
120000
90000
60000
30000
Near Kovalam Beach, MS1
Proposed Dredging Site, MS2
Port Basin, MS3
South of Breakwater, MS4
Inner Approach Channel, MS5
Kovalam Beach, MS6
Locations
Micro
Macro
Total

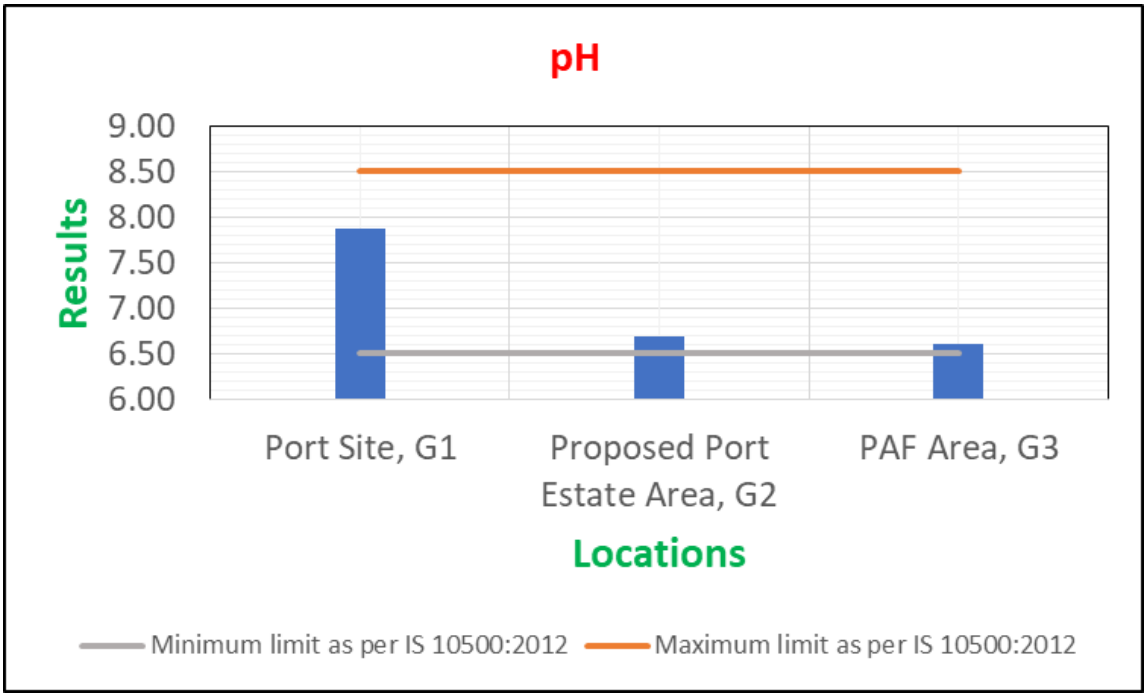
4 c. Phytoplankton Analysis from Marine Samples

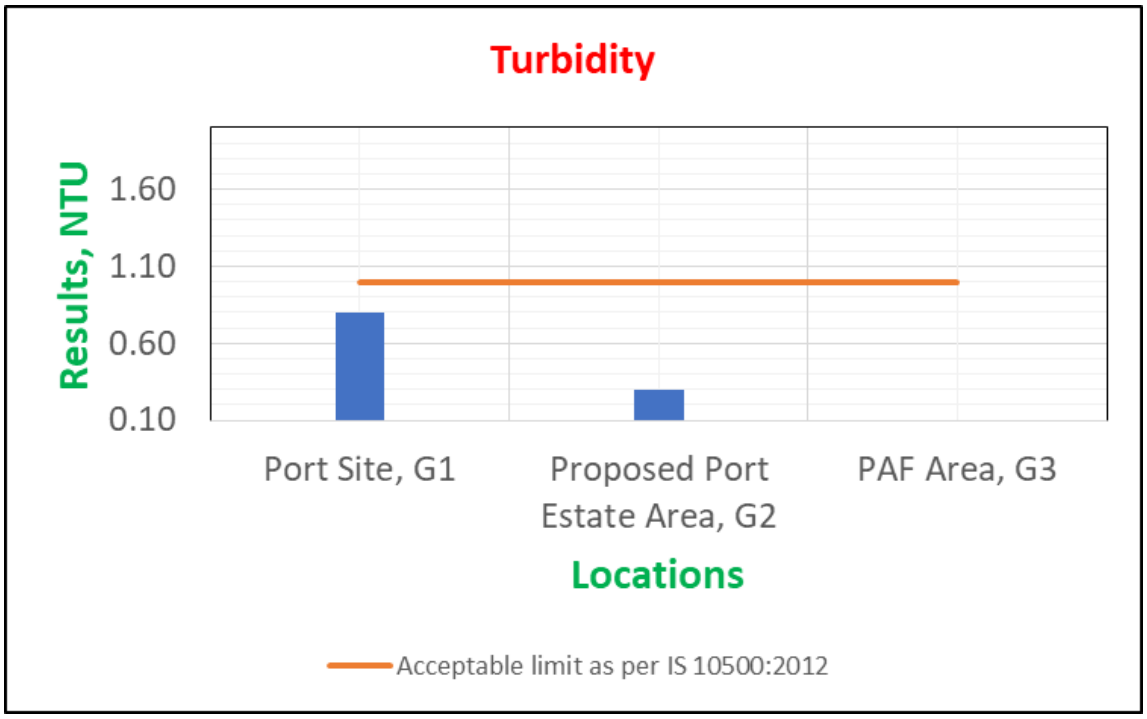


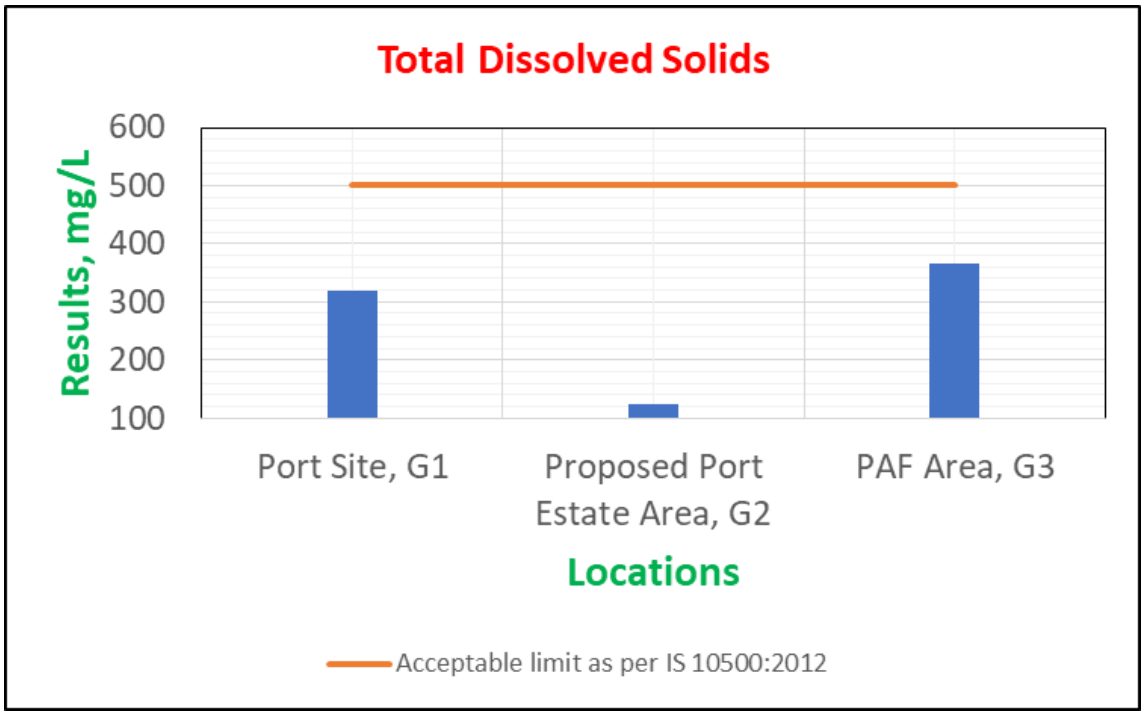
4 d. Zooplankton Analysis from Marine Sample

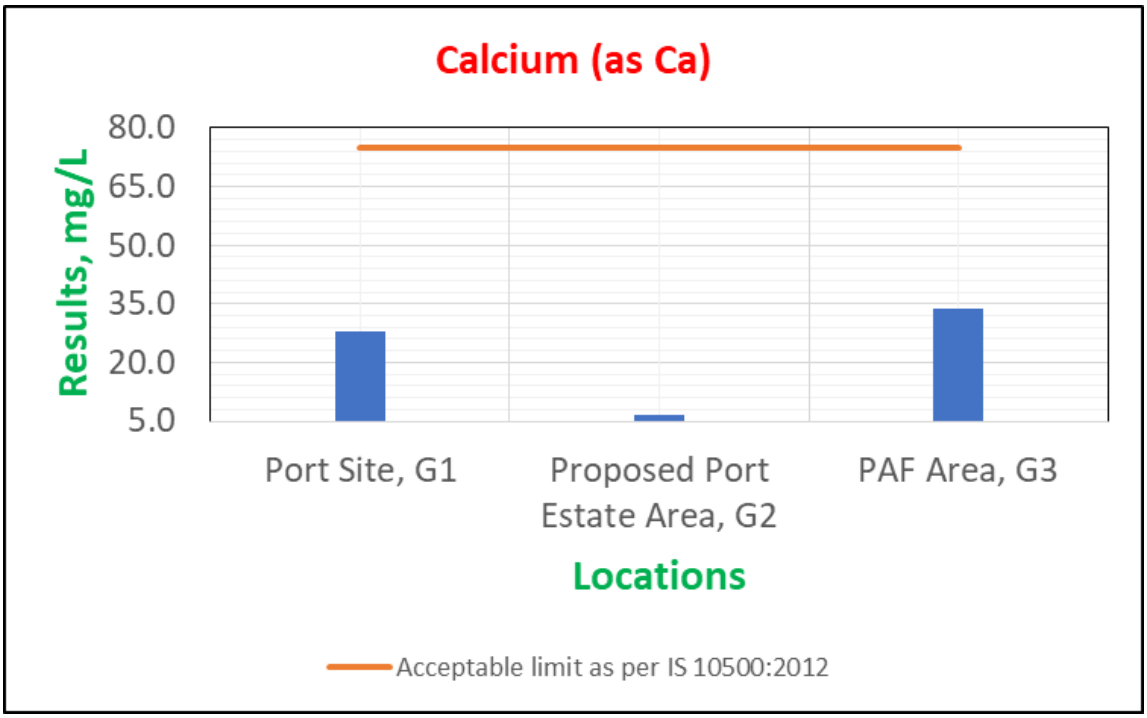


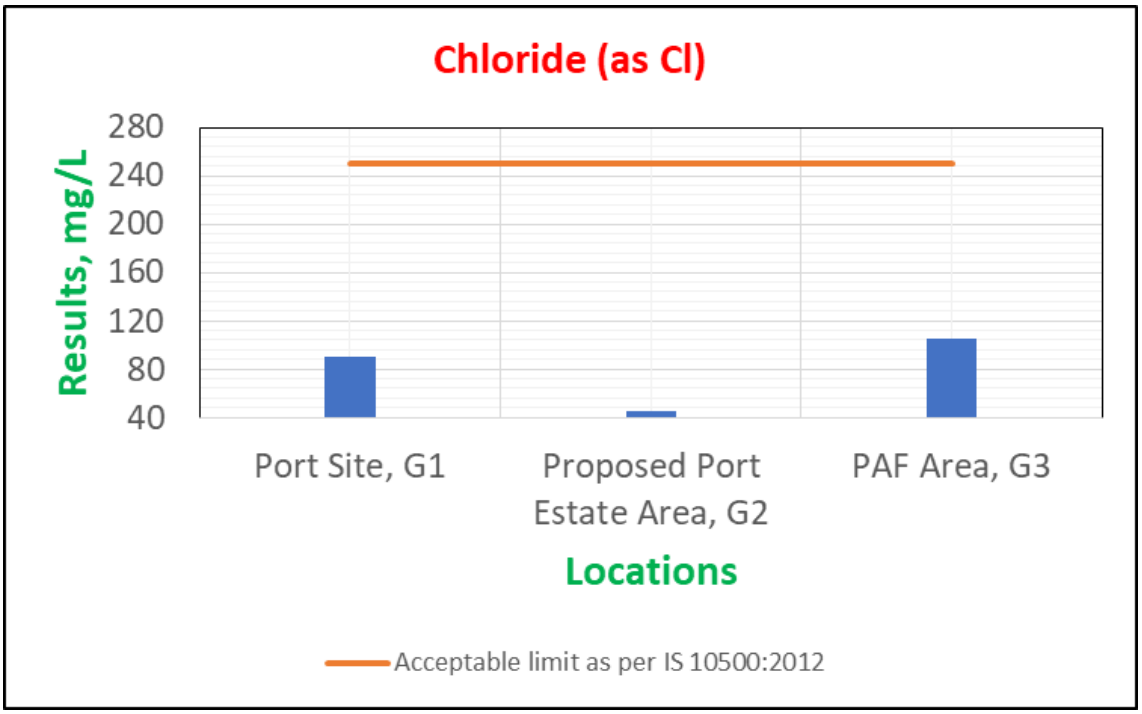
5. Groundwater Analysis

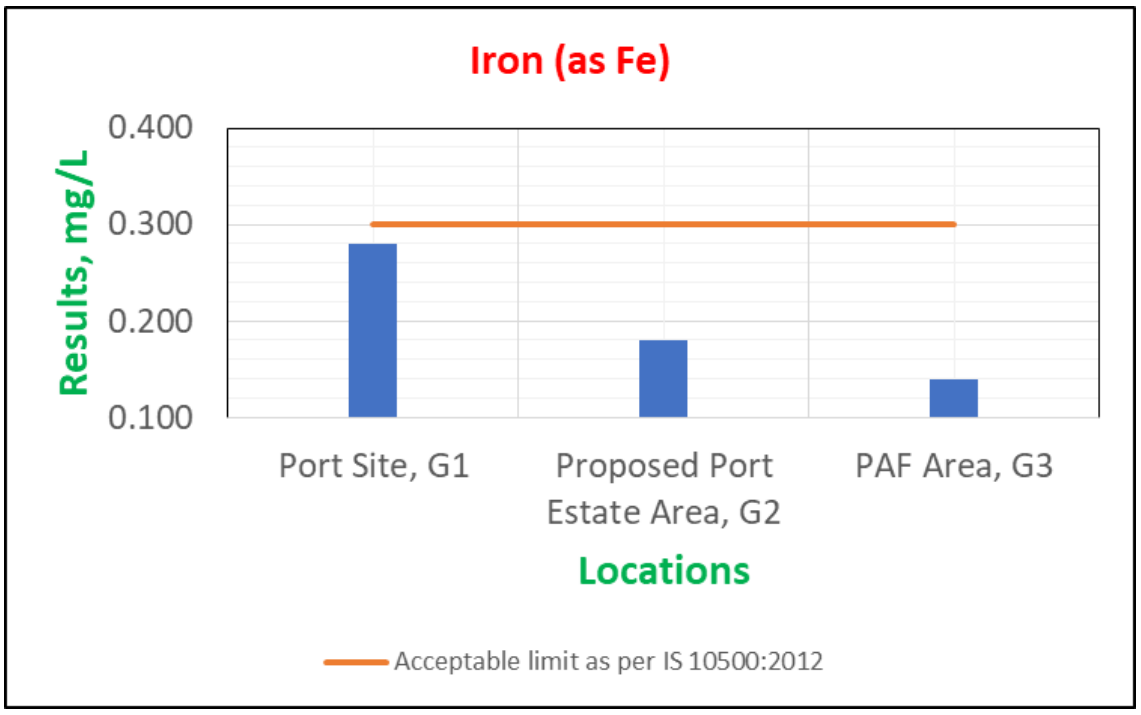


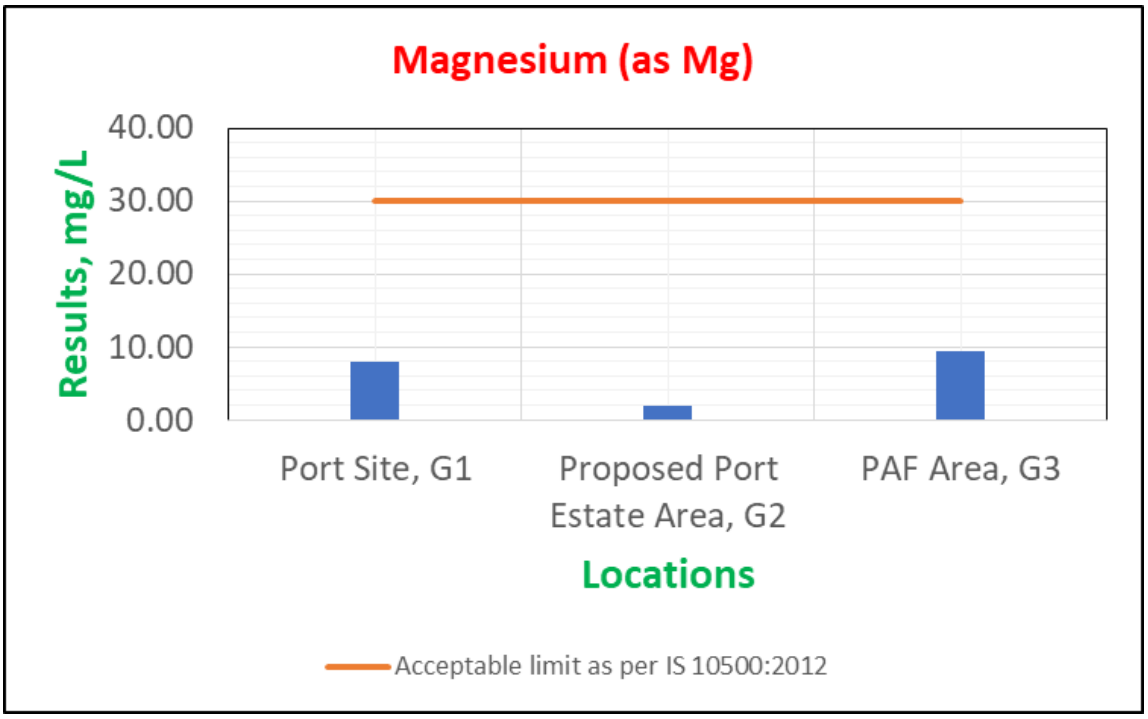


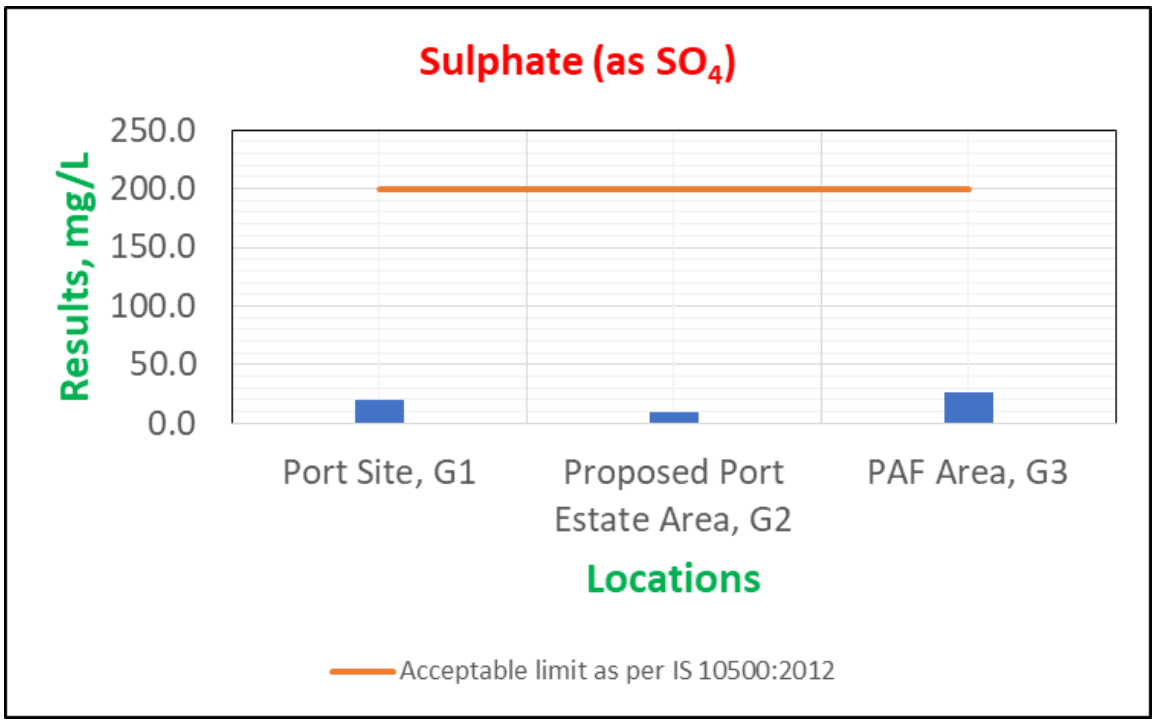

Total Dissolved Solids
Results, mg/L
600
500
400
300
200
100
Port Site, G1
Proposed Port Estate Area, G2
PAF Area, G3
Locations
Acceptable limit as per IS 10500:2012

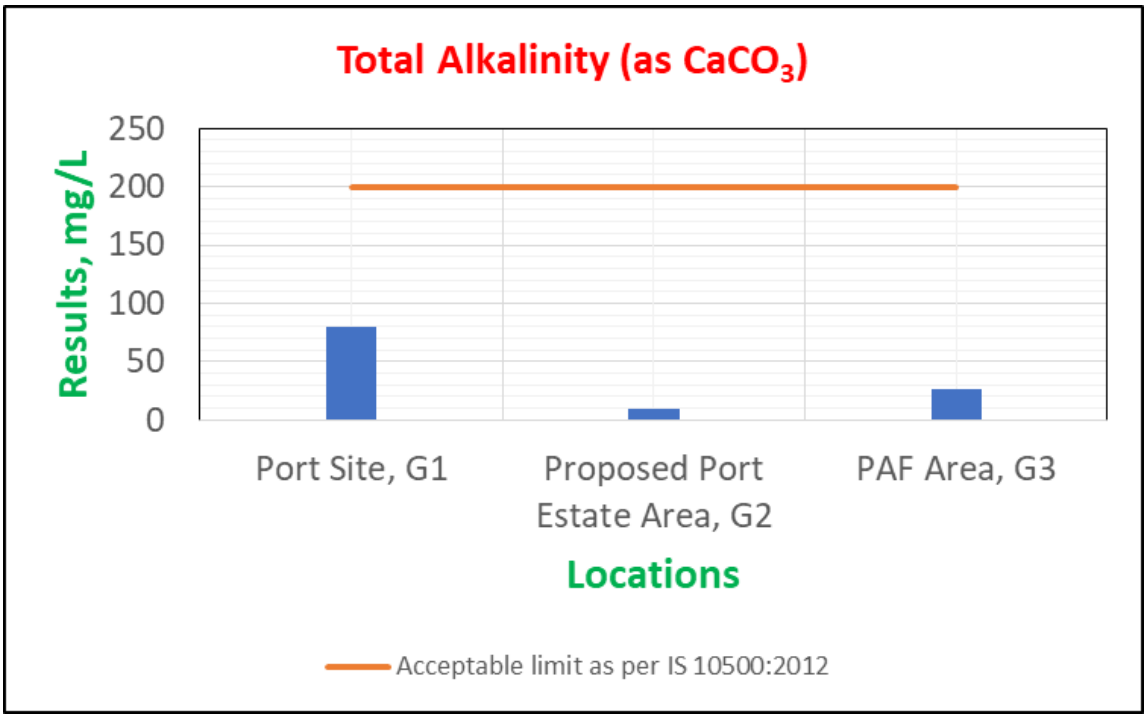

Calcium (as Ca)
Results, mg/L
80.0
65.0
50.0
35.0
20.0
5.0
Port Site, G1
Proposed Port Estate Area, G2
PAF Area, G3
Locations
Acceptable limit as per IS 10500:2012

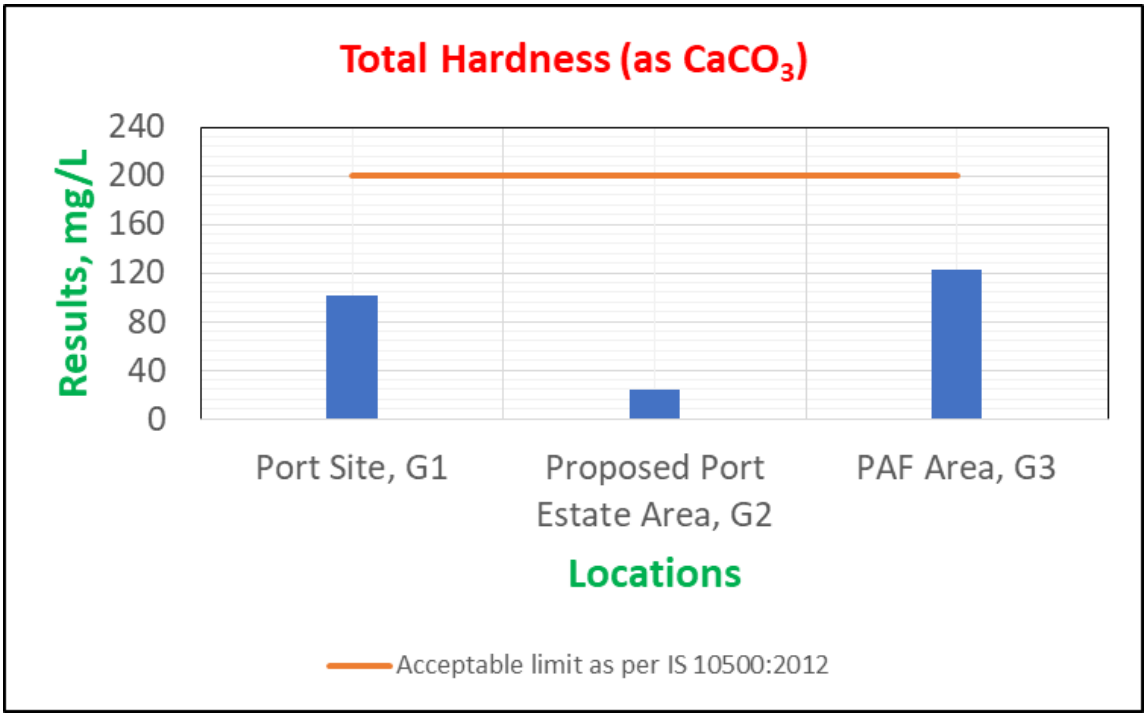

Chloride (as Cl)
Results, mg/L
280
240
200
160
120
80
40
Port Site, G1
Proposed Port Estate Area, G2
PAF Area, G3
Locations
Acceptable limit as per IS 10500:2012


Iron (as Fe)
Results, mg/L
0.400
0.300
0.200
0.100
Port Site, G1
Proposed Port Estate Area, G2
PAF Area, G3
Locations
Acceptable limit as per IS 10500:2012

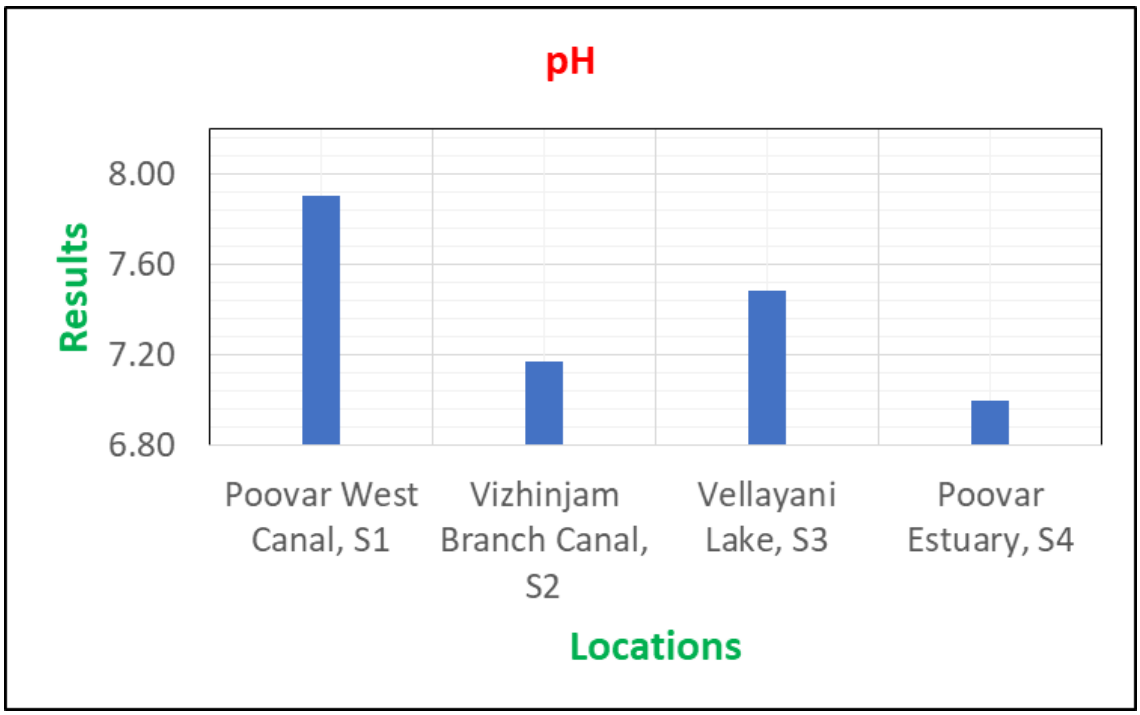

Magnesium (as Mg)
Results, mg/L
40.00
30.00
20.00
10.00
0.00
Port Site, G1
Proposed Port Estate Area, G2
PAF Area, G3
Locations
Acceptable limit as per IS 10500:2012

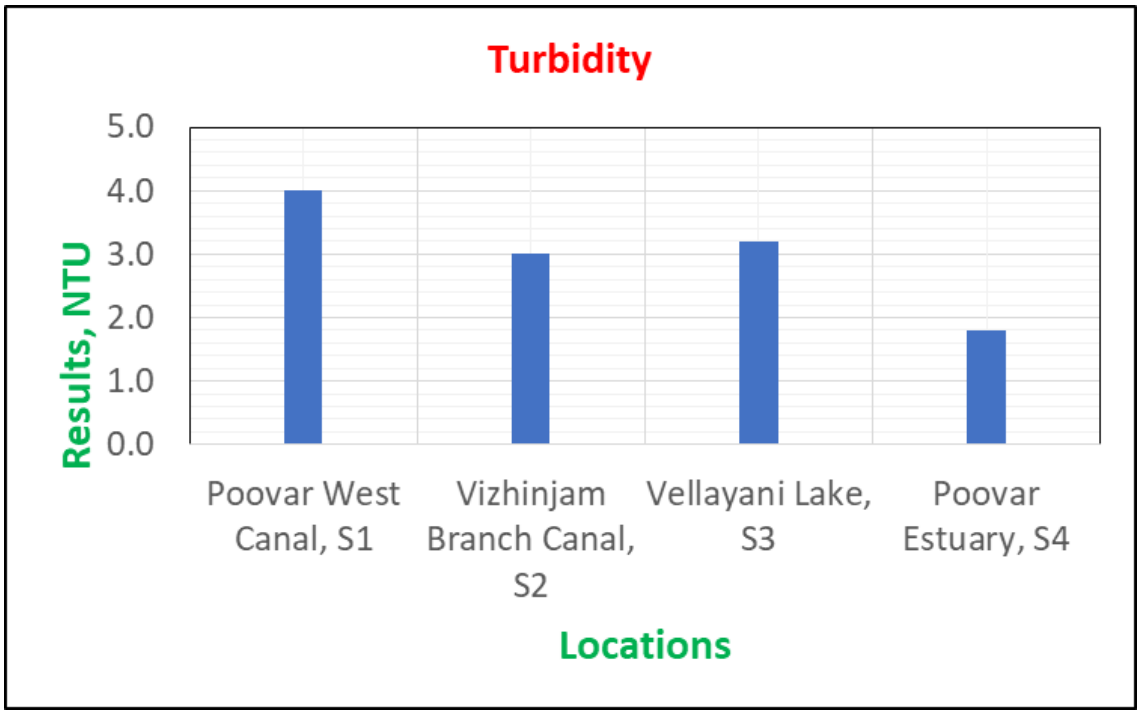

Sulphate (as SO_4)
Results, mg/L
250.0
200.0
150.0
100.0
50.0
0.0
Port Site, G1
Proposed Port Estate Area, G2
PAF Area, G3
Locations
Acceptable limit as per IS 10500:2012

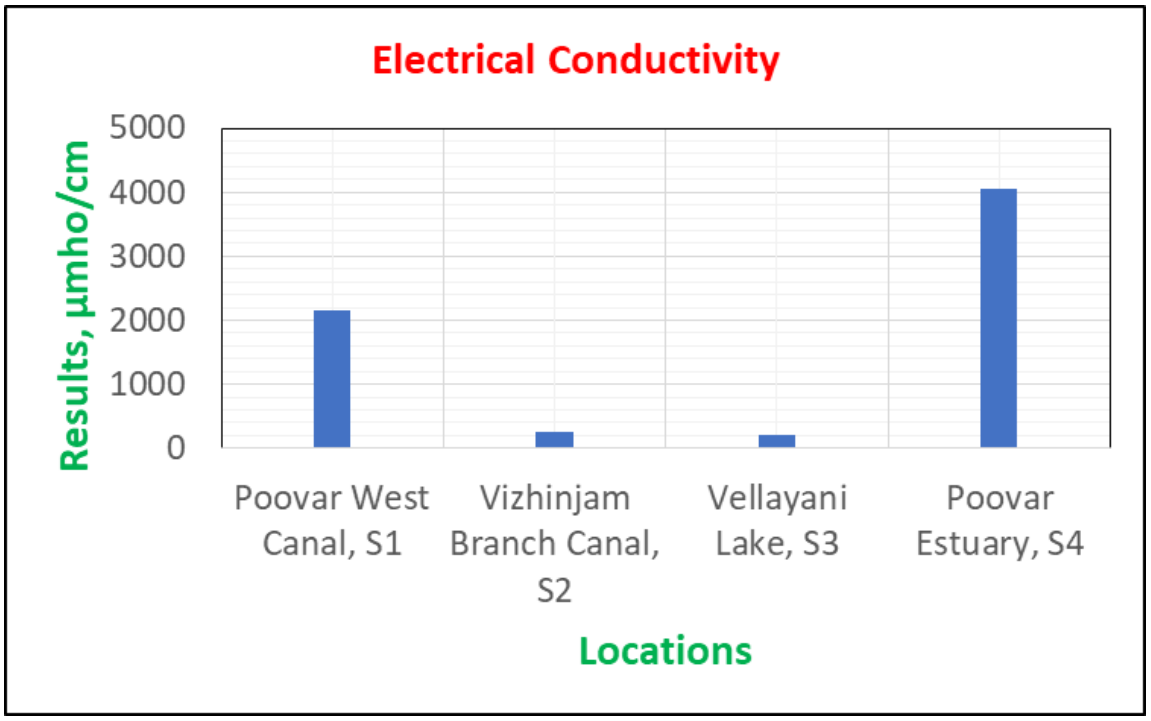

Total Alkalinity (as $CaCO_3$)
Results, mg/L
250
200
150
100
50
0
Port Site, G1
Proposed Port Estate Area, G2
PAF Area, G3
Locations
Acceptable limit as per IS 10500:2012

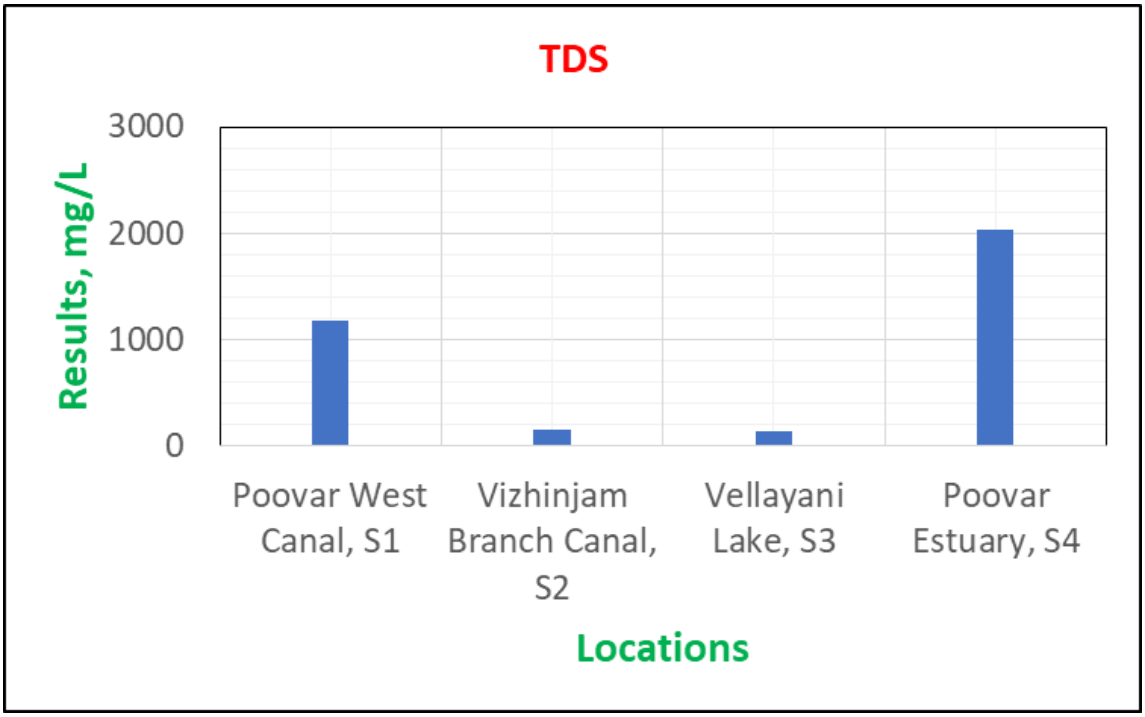

Total Hardness (as $CaCO_3$)
Results, mg/L
240
200
160
120
80
40
0
Port Site, G1
Proposed Port Estate Area, G2
PAF Area, G3
Locations
Acceptable limit as per IS 10500:2012

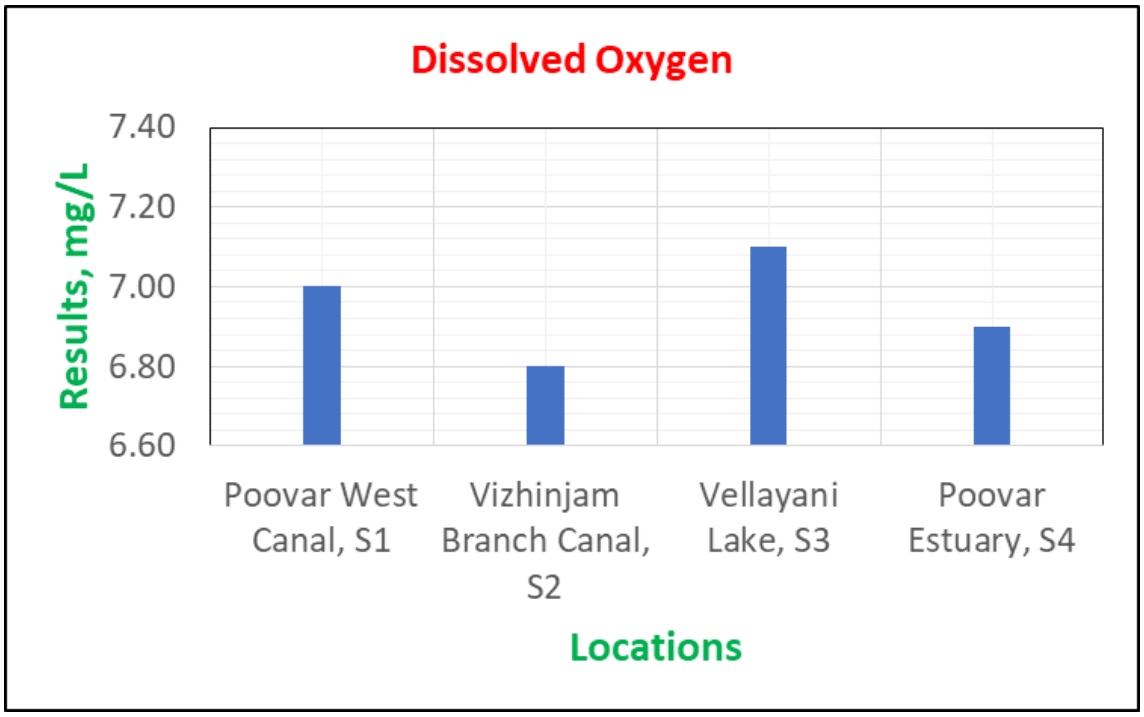
6. Surface Water Analysis

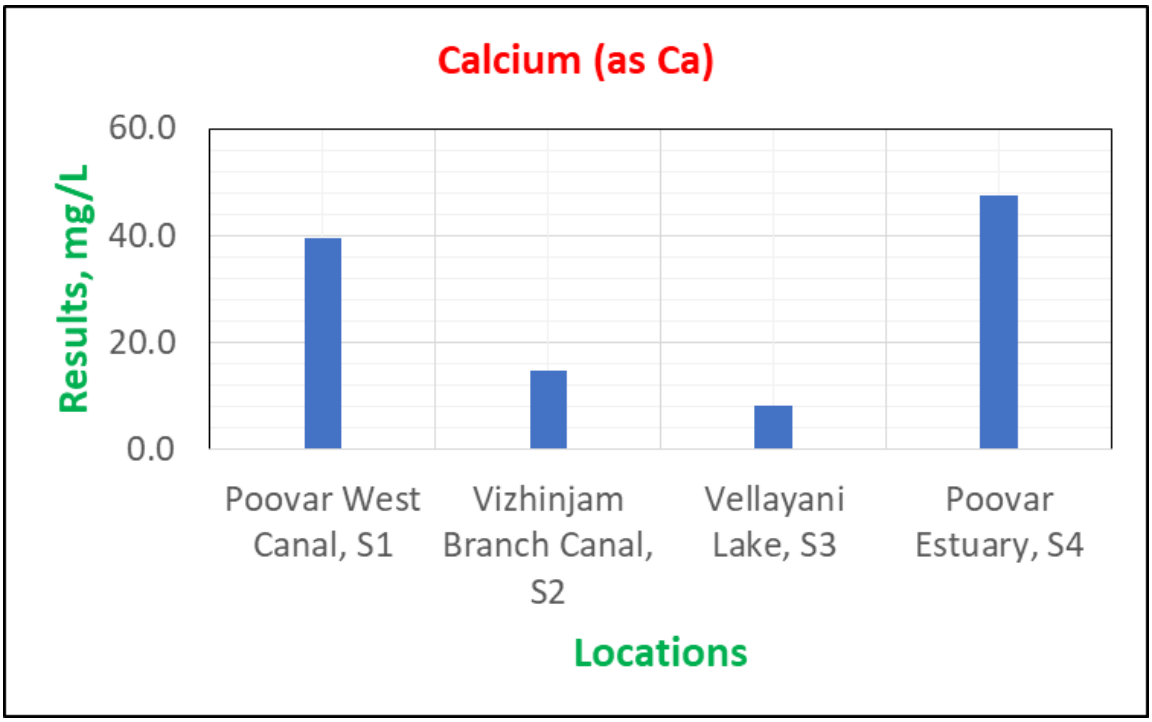


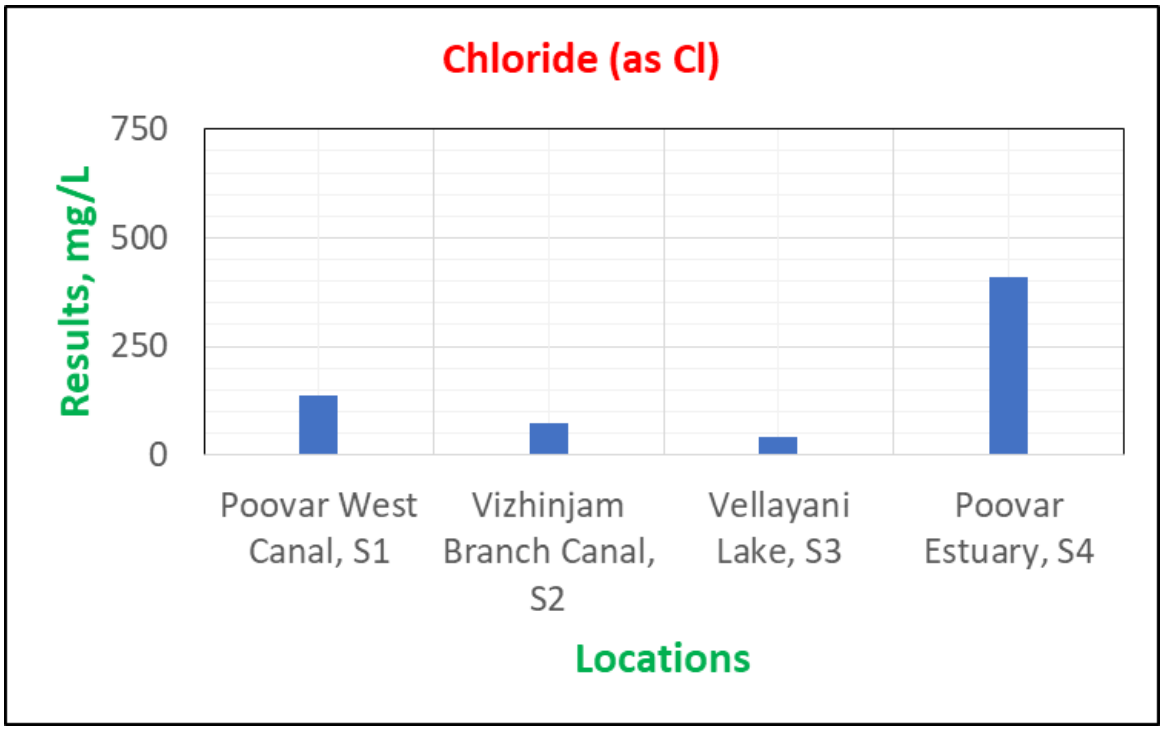


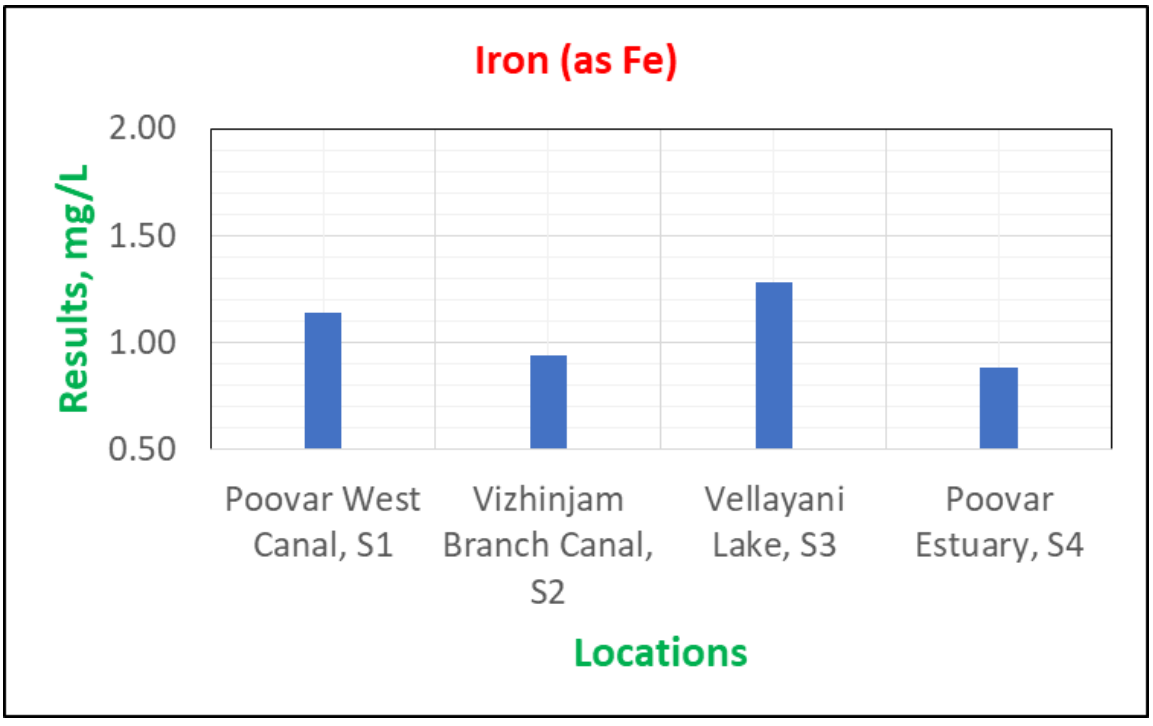

Electrical Conductivity
Results, µmho/cm
5000
4000
3000
2000
1000
0
Poovar West Canal, S1
Vizhinjam Branch Canal, S2
Vellayani Lake, S3
Poovar Estuary, S4
Locations

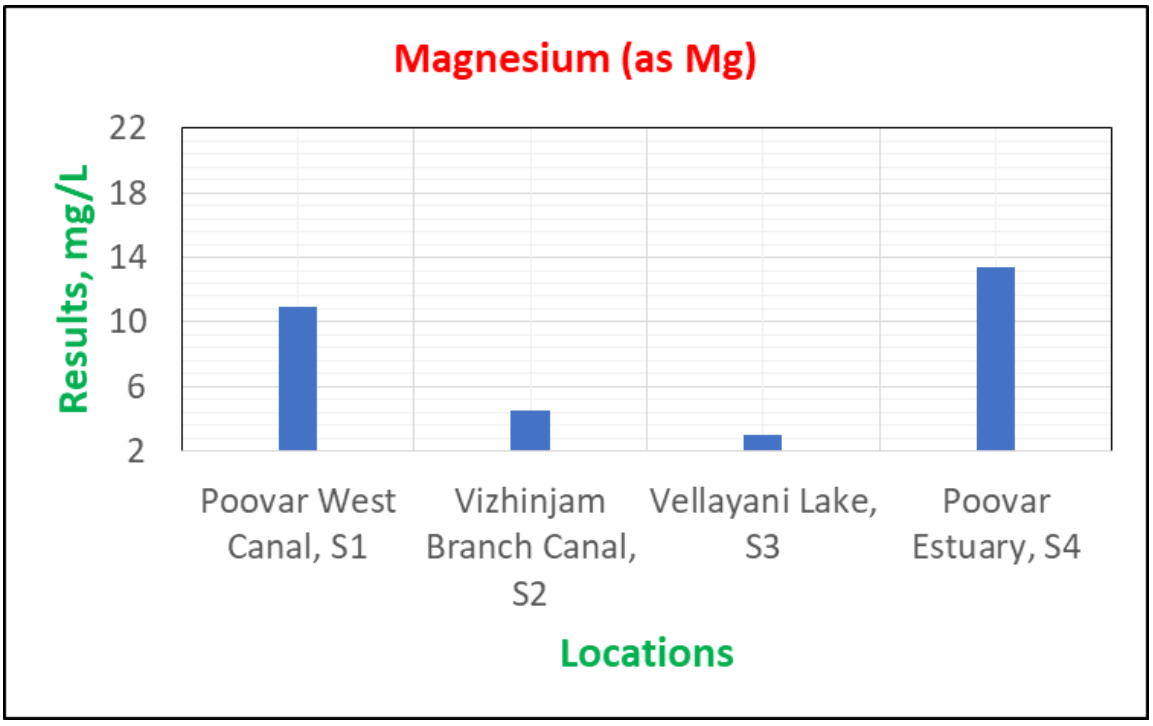

TDS
Results, mg/L
3000
2000
1000
0
Poovar West Canal, S1
Vizhinjam Branch Canal, S2
Vellayani Lake, S3
Poovar Estuary, S4
Locations

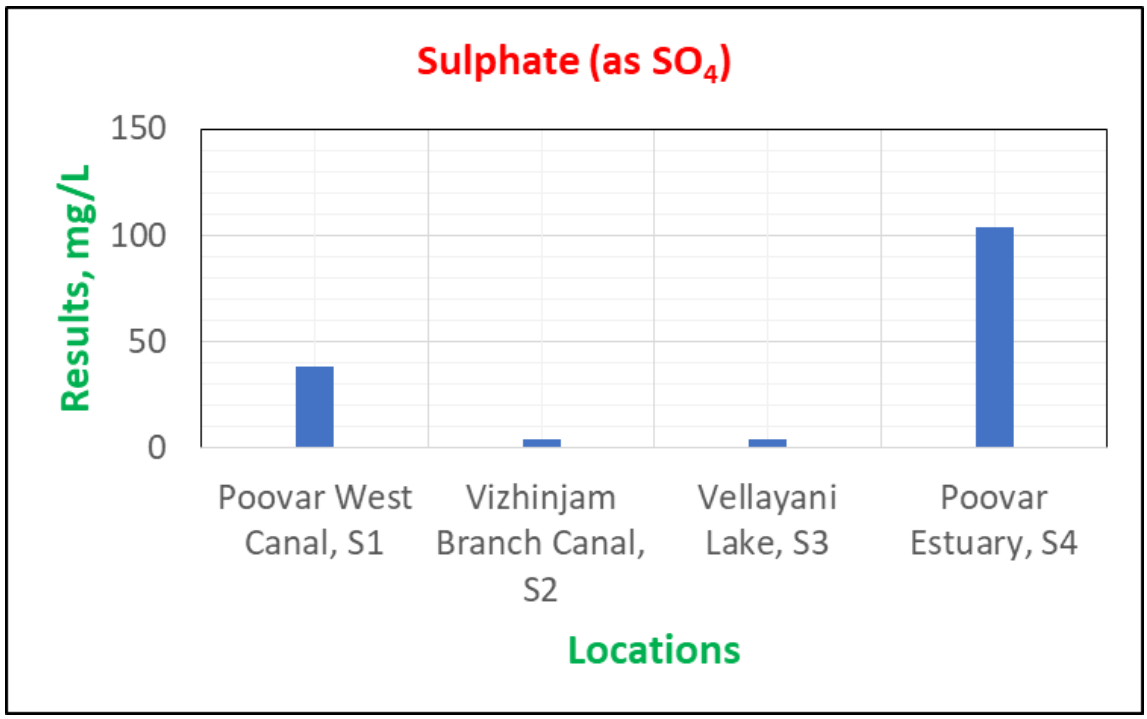

Dissolved Oxygen
Results, mg/L
7.40
7.20
7.00
6.80
6.60
Poovar West Canal, S1
Vizhinjam Branch Canal, S2
Vellayani Lake, S3
Poovar Estuary, S4
Locations

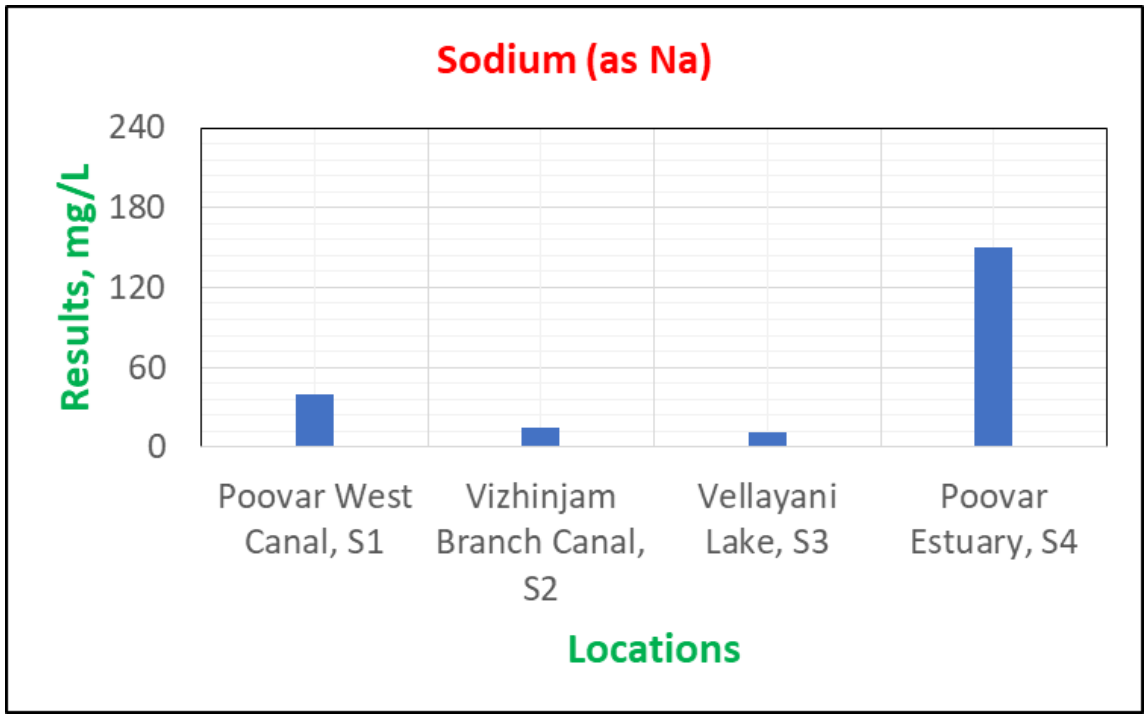

Calcium (as Ca)
Results, mg/L
60.0
40.0
20.0
0.0
Poovar West Canal, S1
Vizhinjam Branch Canal, S2
Vellayani Lake, S3
Poovar Estuary, S4
Locations

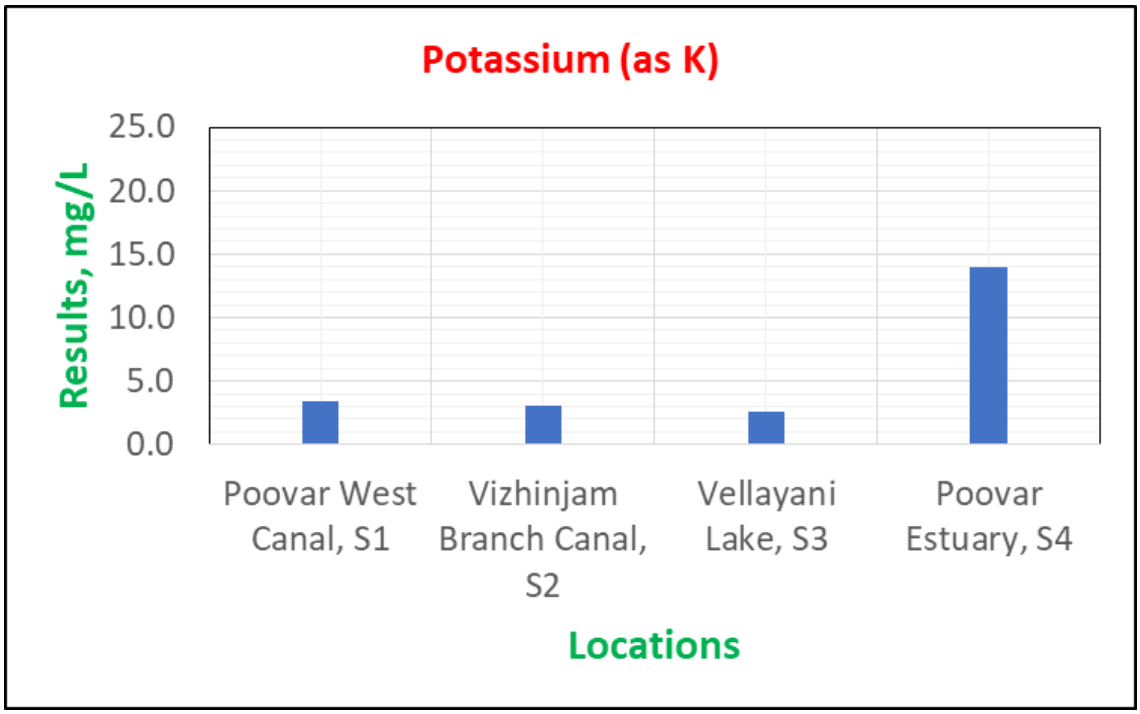

Chloride (as Cl)
Results, mg/L
750
500
250
0
Poovar West Canal, S1
Vizhinjam Branch Canal, S2
Vellayani Lake, S3
Poovar Estuary, S4
Locations

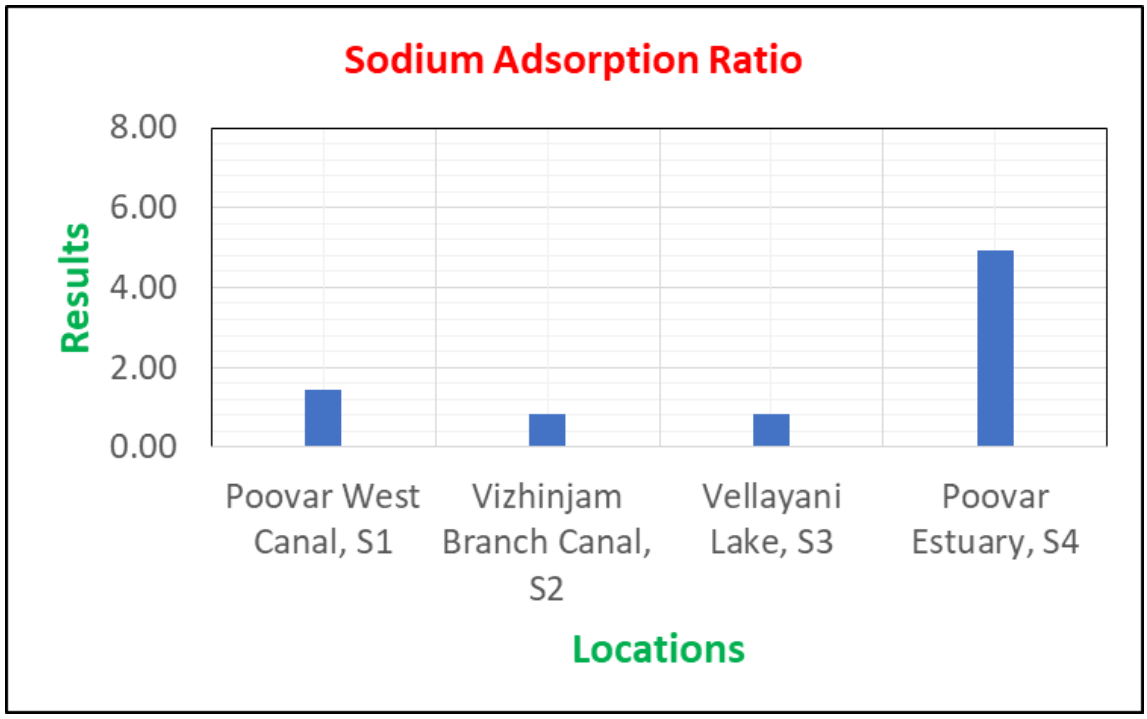

Iron (as Fe)
Results, mg/L
2.00
1.50
1.00
0.50
Poovar West Canal, S1
Vizhinjam Branch Canal, S2
Vellayani Lake, S3
Poovar Estuary, S4
Locations

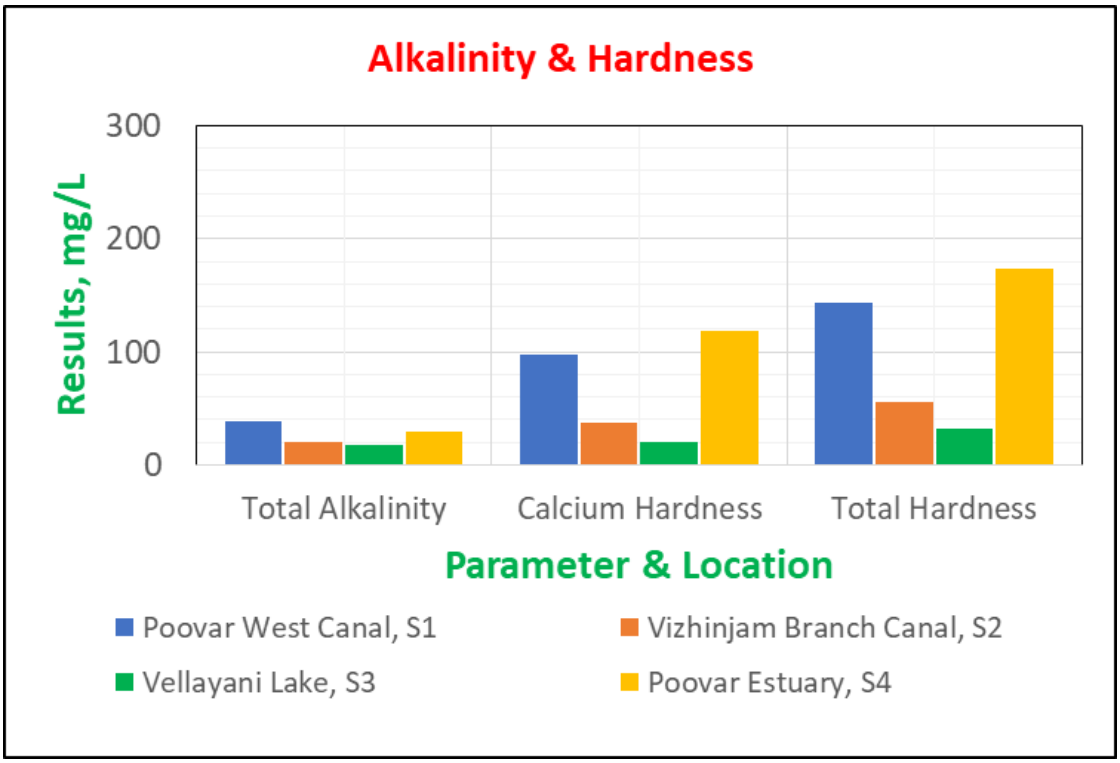

Magnesium (as Mg)
Results, mg/L
22
18
14
10
6
2
Poovar West Canal, S1
Vizhinjam Branch Canal, S2
Vellayani Lake, S3
Poovar Estuary, S4
Locations

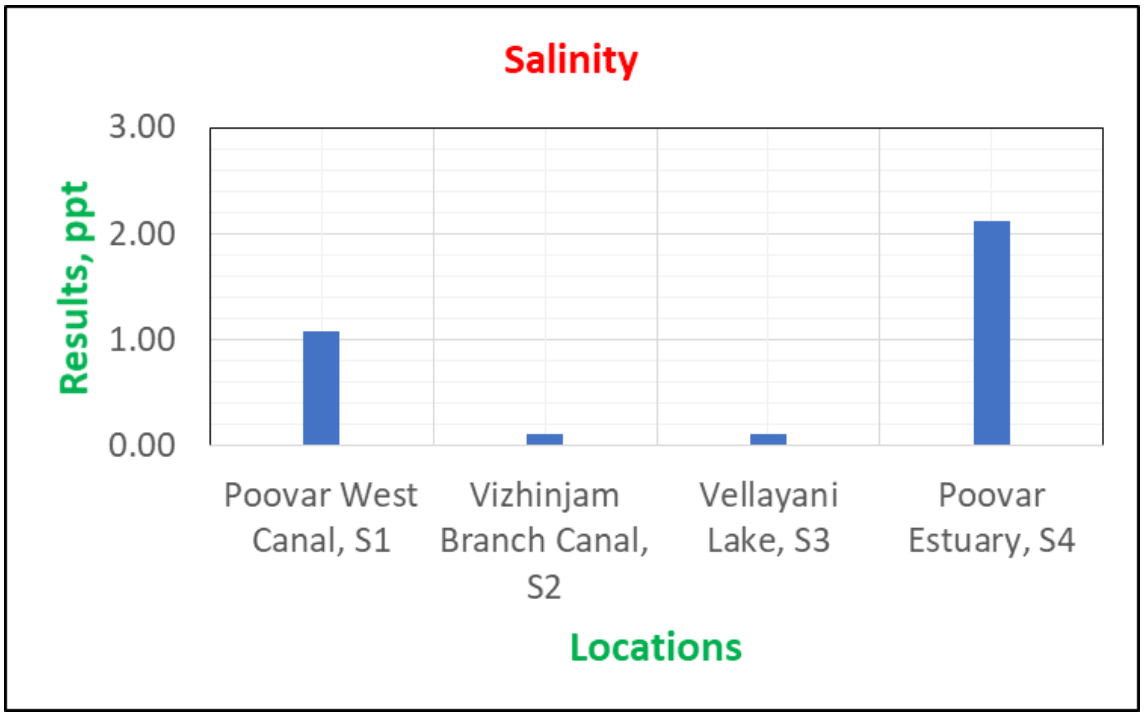

Sulphate (as SO_4)
Results, mg/L
150
100
50
0
Poovar West Canal, S1
Vizhinjam Branch Canal, S2
Vellayani Lake, S3
Poovar Estuary, S4
Locations


Sodium (as Na)
Results, mg/L
240
180
120
60
0
Poovar West Canal, S1
Vizhinjam Branch Canal, S2
Vellayani Lake, S3
Poovar Estuary, S4
Locations


Potassium (as K)
Results, mg/L
25.0
20.0
15.0
10.0
5.0
0.0
Poovar West Canal, S1
Vizhinjam Branch Canal, S2
Vellayani Lake, S3
Poovar Estuary, S4
Locations


Sodium Adsorption Ratio
8.00
6.00
4.00
2.00
0.00
Results
Poovar West Canal, S1
Vizhinjam Branch Canal, S2
Vellayani Lake, S3
Poovar Estuary, S4
Locations


Alkalinity & Hardness
300
200
100
0
Results, mg/L
Total Alkalinity
Calcium Hardness
Total Hardness
Parameter & Location
Poovar West Canal, S1
Vizhinjam Branch Canal, S2
Vellayani Lake, S3
Poovar Estuary, S4


Salinity
Results, ppt
3.00
2.00
1.00
0.00
Poovar West Canal, S1
Vizhinjam Branch Canal, S2
Vellayani Lake, S3
Poovar Estuary, S4
Locations