DATASHEET*

*Lake citizen science health monitoring was developed based on the principles of Integrated Lake Basin Management (ILBM) and GEC's 20 years of experience in community-based monitoring of water body health, particularly water quality. The LAKE Ranger monitoring approach is also applicable to other static (lentic) water bodies, such as ponds and similar ecosystems.

Name:

Contact Number:

Email:

Monitoring by: (e.g. community A)

Number of People: **Date and Time:** *(data collection)* DD/MM/YYYY @ 00:00 AM/PM

State:

Location (site area):

Name of Static Water Body:

GPS Coordinate (if possible):

River Basin's Name:

Weather: Cloudy / sunny, etc.

Has it rained in the past 24 hours? ☐ Yes ☐ No

If yes, was it heavy? ☐ Yes ☐ No

Carry out task A, B and C when undertaking the lake assessment for the **FIRST TIME ONLY.** *(updates not needed unless land use/significant alterations or changes made)*

For any follow-up assessments, go straight to Task D.

A. Lake Address

If the first assessment is completed, tick ☐

1. Where does your lake gets it water from?

Knowing the source of lake water will help you to understand any possible pollution sources and steps that can be undertaken to mitigate identified issue.

ANSWER

2. Where does your lake water discharges into?

Knowing the lake water discharge will help you to understand the impact of lake health deterioration especially on water quality of the receiving waterbody, mainly river and steps that can be undertaken to mitigate identified issue.

ANSWER

3. What is your River Basin (Lake-River Connectivity)?

Using a map, locate the lake to river nearby. Identify the flow of the lake water (direct or indirect) into the nearest drain/monsoon drain/river to finally the sea.

ANSWER
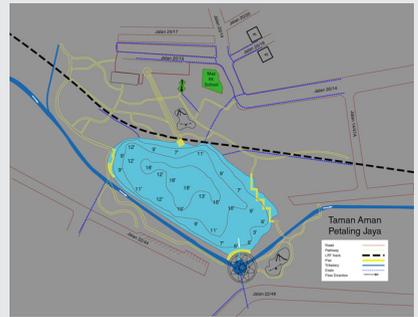
4. List down lake's key stakeholders/beneficiaries

E.g. people staying nearby, lake users, those involved in lake rehabilitation activities etc.

ANSWER

B. Lake Map

If the first assessment is completed, tick

Draw your lake map here. Highlight inlets, outlets, drains, monsoon drain, rivers, immediate surrounding building/schools/housing area/ flora and key landmarks.

C. Lake Beneficial Usage*   *If the first assessment is completed, tick* ☐

Determine the intended lake beneficial usage*. Please check government management plan/directive of lake usage before finalise. Designated beneficial usage is important to determine associated monitoring parameters and the target as well as to plan appreciate lake rehabilitation measures (if needed).

CATEGORY	DESCRIPTION	TICK (√)* ONE BOX ONLY (CHOOSE THE BEST)
A	Lakes that are managed in which the water to be used for recreational purposes — primary body contact such as swimming, diving and kayaking.	
B	Lakes used for recreational purposes — secondary body contact such as boating and cruising. *Swimming is not allowed in this category of lakes*	
C	The lakes are meant for the preservation of aquatic life and biodiversity.	
D	Lakes managed for the minimum preservation of good aquatic life in the lakes. It applies good management practices of lakes**.	

Source: National Lake Water Quality Criteria and Standards (NLWQCS), NAHRIM, 2015)

* *Always cross check with related agencies like Local Authorities (LA), Department of Irrigation and Drainage (DID) and State Water Resource Authority etc.*

**Multiple uses such as flood retention pond, hydroelectric, fishing etc.*

D. Lake Health Monitoring
(Lake Health Report Card)

Overall, there are three main components in Lake Health Report Card: Physical monitoring, Chemical and Biological Monitoring.

A) Physical Monitoring

Use your four senses ONLY (sight, hear, smell, touch) for this exercise.

Category 1: Status of beneficial usage

C1 SCORE

Public Perception: Is the lake water suitable for intended lake beneficial usage? Refer to lake beneficial usage as mentioned in (C).

0-2 Not yet or no near yet

3-5 Yes, but need major rehabilitation work to achieve

6-8 Yes, but need minor rehabilitation work to achieve

9-10 Nearly/fully meet the beneficial usage

Category 2: Land use

C2 SCORE

Land Use: Are there any land use (residential, construction, commercial, industrial, agricultural, etc.) contributing to the lake pollution.

0-2 Extensive land use activities (construction, commercial, industrial discharge, agriculture) and direct discharge to lake with major impact to lake health

3-5 Scalable activities (small industry, food court) that directly discharge to pollute the lake

6-8 Small scale land use (small scale farming, residential) with occasional potential runoff/ surface runoff into the lake

9-10 Minimum or no human activities

Category 3: Rubbish

C3 SCORE

Observe and record types of waste present in the water and surrounding area (both human-made waste and natural waste).

0-2 Lake significantly covered with floatable rubbish (plastics, bottles, cans, food package etc.) (More than 50%)

3-5 Noticeable rubbish on both lake and lake bank

6-8 More of natural waste (leaves, twigs and branches) compared to human made rubbish on both lake and lake bank

9-10 No visible waste, pristine area

Category 4: Inlets

C4 SCORE

Inspect the waterflow for any inlets (pipes, drains, monsoon drain or trenches) discharging directly into lake. Describe the discharge (clear, oily, sewage, etc).

0-2 Inlets coming from nearby industries/sewage treatment/ urban storm water discharge (dark colour)

3-5 Some inlets discharge (murky, oily)

6-8 Only visible urban storm water drainage or surface runoff discharge

9-10 Only rainwater/ground water

Category 5: Smell

C5 SCORE

Take a water sample via pail and record the smell.

0-2 Very strong pungent, unnatural smell (sewage, chemical etc.)

3-5 Bad smell

6-8 Unpleasant/unnatural smell

9-10 No smell, natural condition smell

Category 6: Water Colour

C6 SCORE

Record the colour of the lake water (mainly green colour). Observe and estimate the algae coverage on the lake water surface.

0-2 Severely high algae level or / with foam on the surface & water surface covered by plants (>70%)

3-5 Noticeable green/yellow/patches on water surface due to algae (>20%)

6-8 Slightly clear with some noticeable light green colour & small patches of algae on water surface

9-10 Relatively clear water

Category 7: Vegetation

C7 SCORE

Are there any vegetation/wetland plants within lake (except water hyacinth)/ along the banks (10 m)?

0-2 No wetland plants within lake/ vegetation on banks, bare ground, fully concrete

3-5 Slight wetland plants within lake and/or vegetation on banks

6-8 A lot of wetland plants within lake and/or vegetation on banks (minimum 3 different types)

9-10 More than 5 different types of wetland plants within lake and/or vegetation on banks

Category 8: Animal life

C8 SCORE

Record any animal life naturally within sampling location in lake (10m).

0-2 No animal life visible at all

3-5 At least two types of animals found

6-8 At least three types of animal found

9-10 More than three types of animal found

Category 9: Community Participation

C9 SCORE

Please record status of community participation for lake care* in this site. (*Lake care means positive as well as proactive approach such as clean up, monitoring, having local lake care group etc.)

0-2 No community participation for lake care

3-5 Minimum community participation for lake care

6-8 Significant community participation for lake care (having community group or actively monitoring lake)

9-10 Excellent community participation for lake care (having LAKE Ranger/ Friends of Lake and actively monitoring lake)
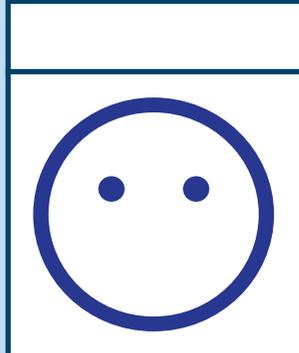
Physical Monitoring Overall Rating

What do you think of this site?
(Draw a mouth for the face according to the total score)

SCORES	WATER QUALITY	MOUTH GUIDE
81-90	Excellent	😀
61-80	Good	🙂
41-60	Average	😐
21-40	Poor	☹️
0-20	Very poor	😞

TOTAL SCORE

B) Chemical monitoring

Record your results from the Water Quality Test Kit.

Parameter	SAMPLING SPOT 1	2	3	AVERAGE READING
pH				
Dissolved Oxygen (ppm)				
Phosphate (ppm)				
Nitrate (ppm)				
Turbidity (JTU)				
Temperature (˚C)				
Blue Green Algae (Yes or No)				*

For 3 sampling spots: choose the majority reading.
(If more than one 'Yes', then the majority reading is 'Yes' too)

For 2 sampling spots: choose "Yes" if "Yes" is indicated at either spot.
(as it indicates the presence of blue green algae in the water body)

C) Biological monitoring*

Observe the flora around you (within this lake boundary). Take picture, record the first five (5) species of flora and indicate nativeness. Flora here refers to plants in both lake and lake bank (10 m). You can use Inaturalist app and MyBIS for this exercise. (*Note: Fauna will be included in near future)

NO (X)	SPECIES	TICK (√) WHERE APPLICABLE	
		NATIVE	NON NATIVE/INVASIVE/ INTRODUCED
1			
2			
3			
4			
5			

Total number of species (X): _____

Total number of native species (Y): _____

Total percentage of native species: (Y/X) x 100% = _____ %