

# NATIONAL MICROBIAL MONITORING PROGRAMME

2004

IMPLEMENTATION IN  
THE  
BERG RIVER  
WATER MANAGEMENT  
AREA

Linda Rossouw

[lrossouw@mweb.co.za](mailto:lrossouw@mweb.co.za)



# OUTLINE

- BACKGROUND
- METHODOLOGY
- SAMPLING SITES
- STUDY AREA
- RESULTS
- DISCUSSION
- CHALLENGES
- CONCLUSIONS





# BACKGROUND

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- WESTERN CAPE COORDINATOR FROM 2002
- PILOT STUDY – 3 SAMPLING SITES FOR ONE YEAR
- IMPLEMENTATION - ADD 9 MORE SITES
- TASKS:-SAMPLING/REPORTING SCHEDULE;
  - LIAISON WITH LABORATORY, SAMPLERS AND NATIONAL COORDINATOR;
  - RECORD SAMPLES NOT TAKEN & WHY NOT;
  - SEND DATA TO NATIONAL COORDINATOR ON TWO-MONTHLY BASIS;
  - DISTRIBUTE REPORT TO STAKEHOLDERS;
  - REPORT ON PROGRESS AND BUDGET FOR NEXT YEAR.





# METHODOLOGY

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- SITE SELECTION
  - FIRST THREE SITES
  - NINE NEW SITES
- LABORATORY ANALYSIS
  - CITY OF CAPE TOWN: SCIENTIFIC SERVICES
- MEMBRANE FILTRATION METHOD – OCTOBER 2003
- COLILERT – FROM SEPTEMBER 2003





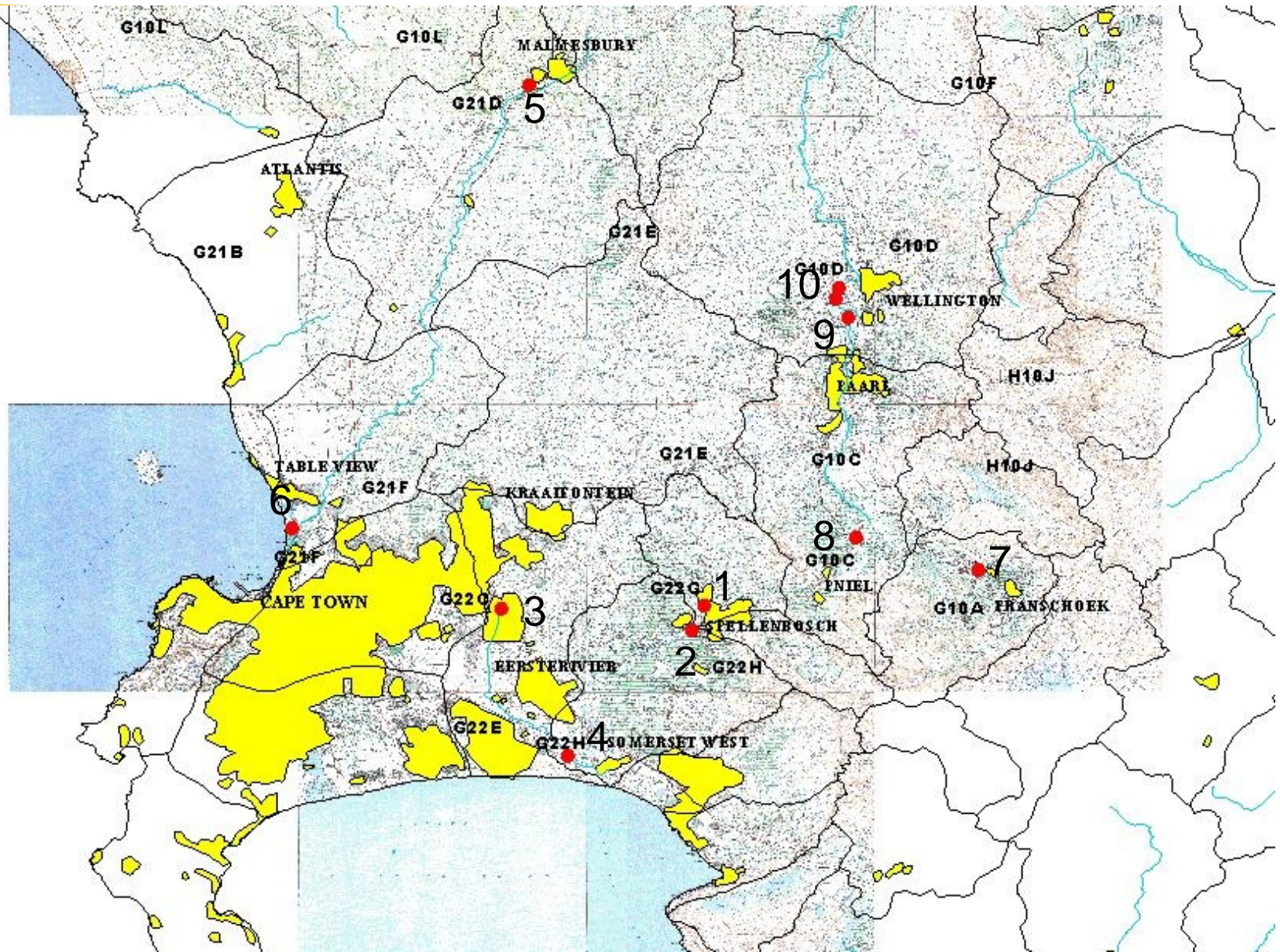
# STUDY AREA

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- TWELVE SAMPLING POINTS:
  - 1. PLANKENBRUG BELOW KAYAMANDI
  - 2. CONFLUENCE OF EERSTE & PLANKENBRUG
  - 3. KUILS RIVER 100M BELOW BELLVILLE WWTW
  - 4. KUILS RIVER BELOW ZANDVLIET BRIDGE
  - 5. DIEP RIVER AT MALMESBURY
  - 6. DIEP RIVER AT OTTO DU PLESSIS BRIDGE
  - 7. BERG RIVER DS OF CONFLUENCE WITH STIEBEUEL RIVER - FRANSCHHOEK
  - 8. DWARS RIVER BETWEEN RAILWAY & ROAD BRIDGE ON R45
  - 9. BERG RIVER AT PAARL DS OF WWTW  
OF WELLINGTON WWTW AT OUDEBRUG PUMPHOUSE  
PHOUSE  
BERG RIVER AT SARON



# MAP OF THE STUDY AREA



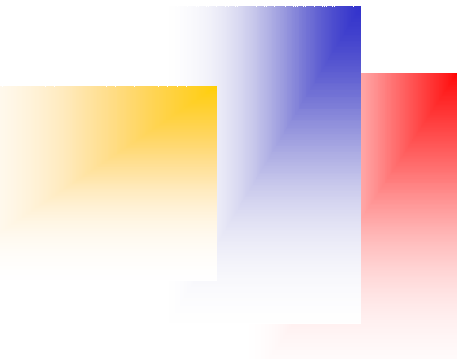


# RESULTS

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- POTENTIAL HUMAN RISK BASED ON GUIDELINE:

- | LOW   | HIGH   | SENSITIVE WATER USE |
|-------|--------|---------------------|
| 1     | 10     | DRINKING UNTREATED  |
| 2 000 | 20 000 | LIMITED TREATMENT   |
| 600   | 2 000  | CONTACT RECREATION  |
| 1 000 | 4 000  | IRRIGATION          |



# RESULTS continued

SITE	Drinking untreated	Limited treatment	Full contact recreation	Irrigation
1. Plankenburg below Kayamandi	High	High	High	High
2. Confluence of Eerste & Plankenburg rivers	High	Summer – high/med Winter - Low	Summer – high/med Winter - Low	Summer – med/low Winter - Low
3. Kuils river below Bellville WWTW	High	High/Medium	High/Medium	Medium/low
4. Kuils river below Zandvliet bridge	High	High	High	High/Medium
5. Diep river at Malmesbury	High	High/Medium/low	High/Medium/low	Medium/low
6. Diep river at Otto DuPlessis bridge	High	Mostly High	Mostly High	High/Medium

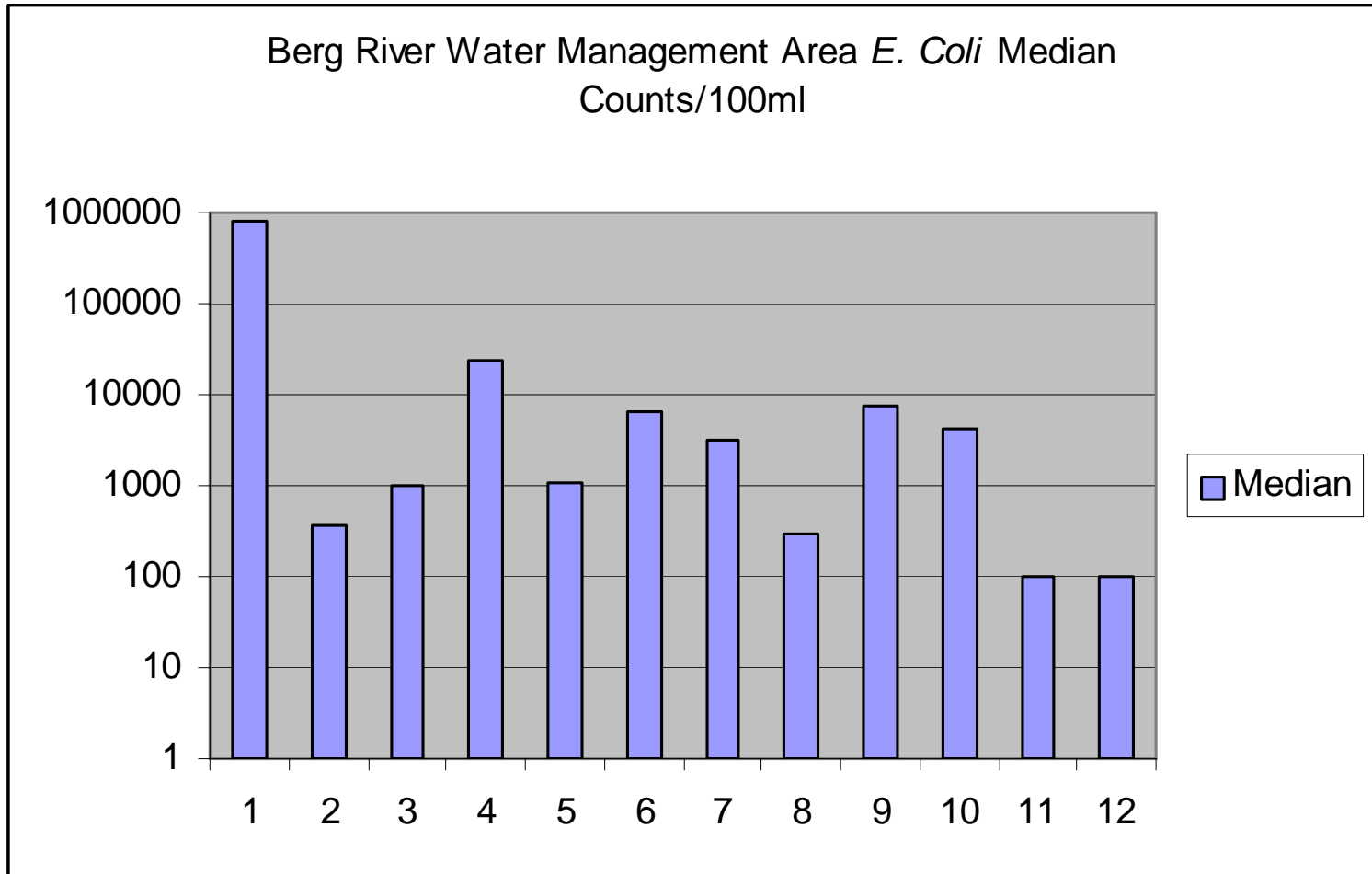




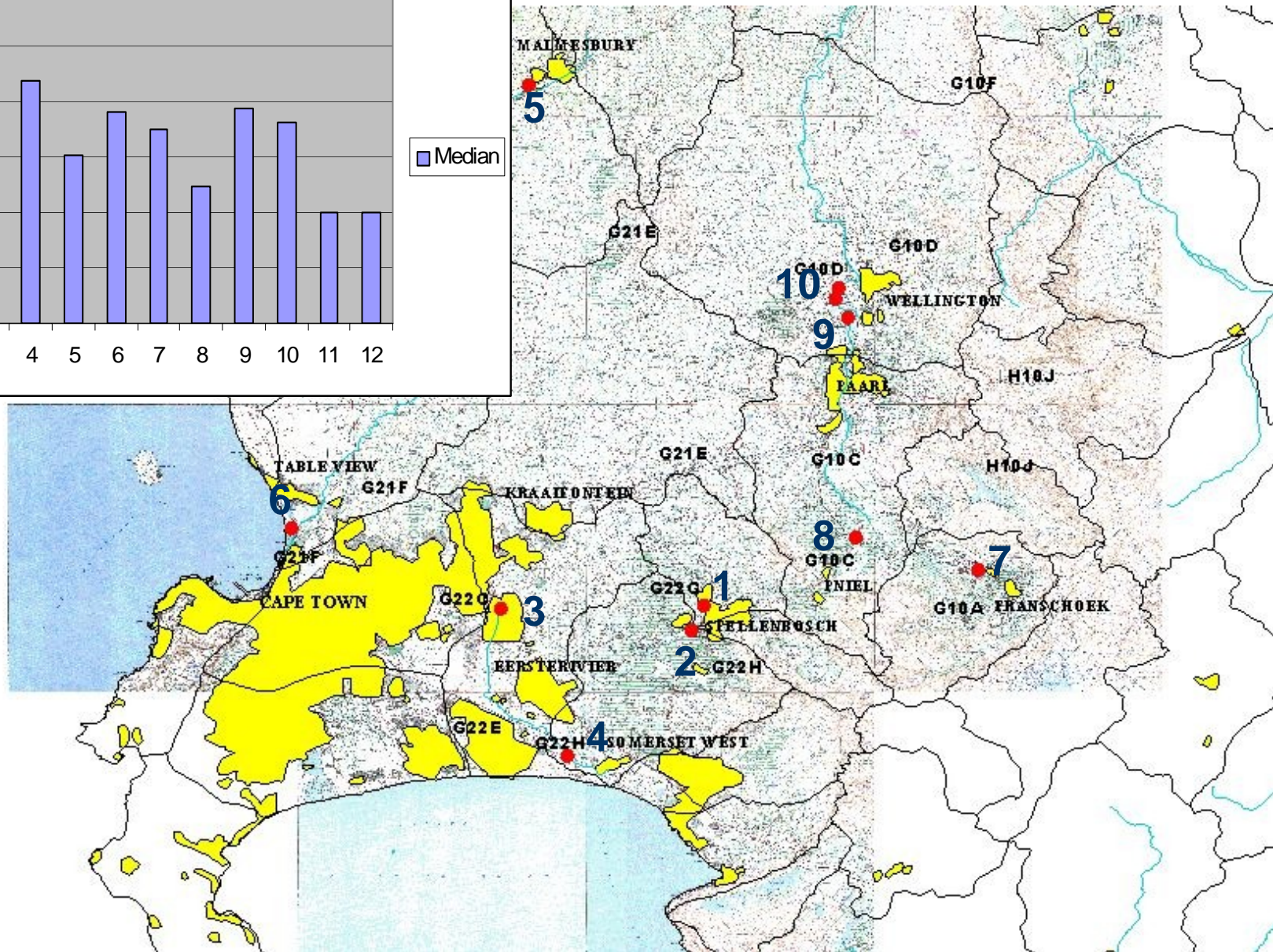
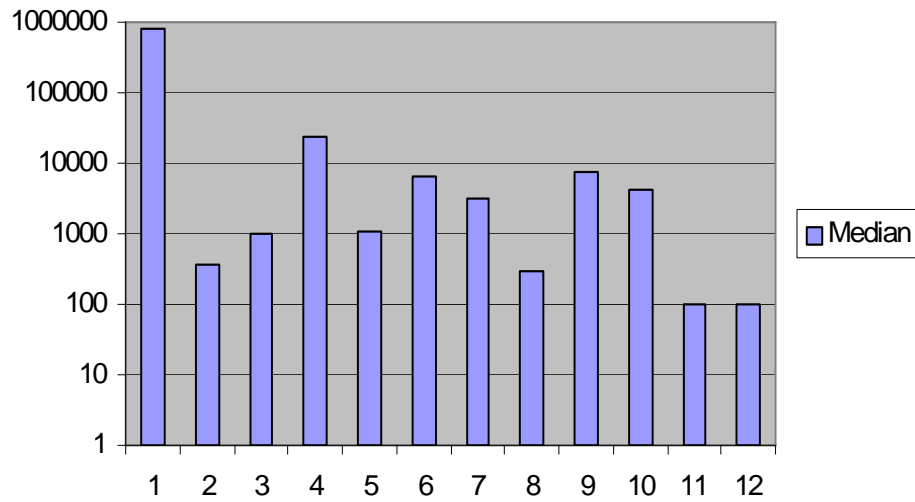
# RESULTS continued

SITE	Drinking untreated	Limited treatment	Full contact recreation	Irrigation
7. Berg river d/s of Fransch WWTW	High	High/Medium	High/Medium	Medium/low
8. Dwars river btwn rail and road bridges	High	Mostly low	Mostly low	Mostly low
9. Berg d/s of Paarl WWTW	High	High	High	Medium
10. Berg river d/s of Wellington WWTW	High	High	High/Medium	High/Medium
11. Klein Berg river at Tulbagh	High	Low	Low	Low
12. Berg river after confl with Klein Berg riv	High	Low	Low	Low

# RESULTS continued



Berg River Water Management Area *E. Coli* Median Counts/100ml





# DISCUSSION

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- All sites are **High** risk for drinking untreated water
- Site 1 is the most faecally polluted
- Site 4 is also badly polluted
- Sites 11 & 12 are least polluted
- Median values varies from 779 550 (Site 1) to 98 (Site 11)
- Half of the sites high to medium risk for drinking water after limited treatment
- Eight sites medium to high risk for full or partial contact recreation
- Six sites medium to high risk for irrigation of crops eaten raw.





Low flow interception trench @ Paarl





Solid waste in the Boontjies River



Hugos/Palmiet River just upstream of Berg River inflow







**Paarl WWTW effluent discharge**



# CHALLENGES

- SAMPLING BACK-UP
- SAMPLING METHODOLOGY
- SAMPLING LOG
- TWO-MONTHLY REPORTS USER-FRIENDLY
- STAKEHOLDERS ON DISTRIBUTION LIST
- SITE REGISTRATION
- SAMPLING EQUIPMENT
- EXTEND SAMPLING: PALMIET AND BREEDE RIVERS



# CONCLUSIONS

- SELECTED SITES ALL SHOW FAECAL POLLUTION TO SOME EXTENT
- REVIEW EXISTING SITES ON YEARLY BASIS
- EXTEND SAMPLING TO OTHER HOT SPOTS
- TACKLE CHALLENGES
- HAVE FUN WHILE LEARNING!

