



# WISA WASTEWATER MANAGEMENT CONFERENCE 12 JUNE 2007



**water & forestry**

Department:  
Water Affairs and Forestry  
REPUBLIC OF SOUTH AFRICA



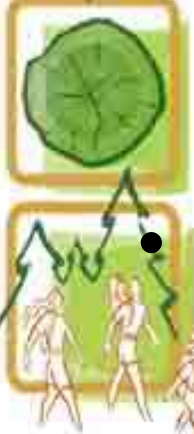


# **IMPACT OF INADEQUATE WASTEWATER MANAGEMENT ON THE BUFFALO CATCHMENT BY PL GASA-LUBELWANA**





# **BUFFALO RIVER CATCHMENT BACKGROUND**

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- **Buffalo River originates from the seeps of the Amatola mountains and is 126 km long. Its major tributaries are the Mgqakwebe, Ngqokweni and Yellowwoods.**
  - **Has four (4) dams, the Maden, Rooikrantz, Laing and Bridledrift.**





# BACKGROUND CONT.

- 
- **The Buffalo River drains the the forested Amathole Mountains and flows eastwards across the coastal plateau before entering the Indian Ocean at the East London Harbour**



# **BACKGROUND CONT.**



**Social Profile :**

**Population density is highest in the middle and lower reaches of the Catchment.**

**The catchment's big towns are King Williams Town and East London.**

**The townships are the Zwelitsha and Mdantsane**





## Continued

- Both townships continue to experience population growth and housing development (formal and informal) but no improvements (increasing capacity) to the sewage treatments works, thus putting a lot of pressure to water and wastewater systems






# WASTEWATER CONTRIBUTORS TO THE BUFFALO SYSTEM



## Major Contributors to Nutrient Load are :

- 
- Sewage Treatment Works
  - Informal Settlements with poor sanitation facilities
  - Leaking sewage pump stations
  - Stormwater
  - Agricultural Activities

## Contributor to Salt Load and Toxins

- Industrial Effluent Pollutants + Agriculture





# MLAKALAKA STREAM/ R2H016

## MAY 2007





The key water quality concern in this catchment is the nutrient enrichment, resulting in algal bloom

The presence of such ions as Magnesium, chlorides and sulphates, significantly changes the water characteristics such as its hardness and salinity





# TOXIN EFFECTS ON FRESHWATER AND MARINE LIFE



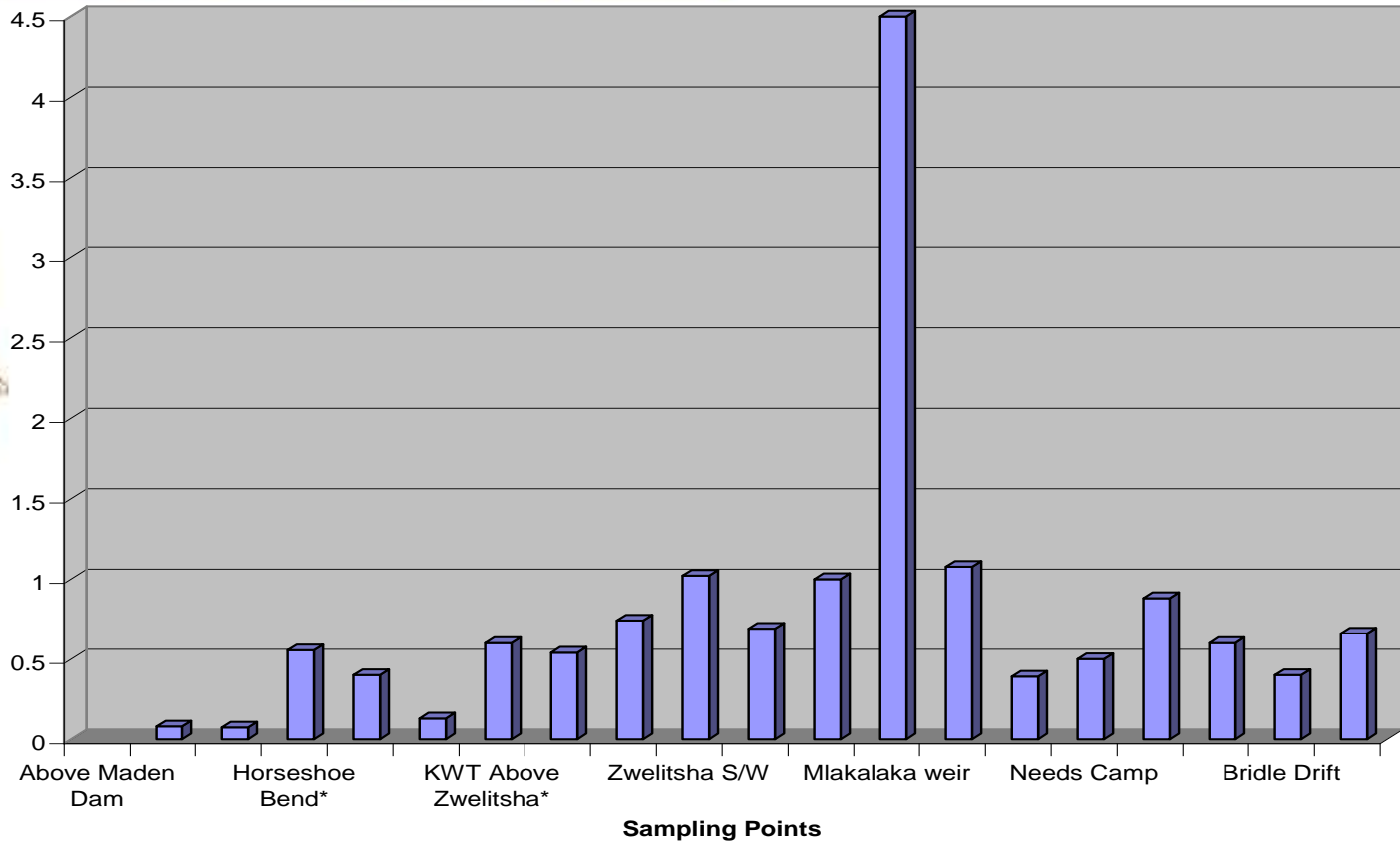
- Presence of industrial wastewater toxins can have an immediate effect of killing fish, invertebrates and even plant life.
- The middle reach of the Buffalo River consistently experiences the fish kills and a loss of biodiversity, in fish, riparian vegetation and invertebrates.



# Buffalo River RHP May 2007



ms/cm

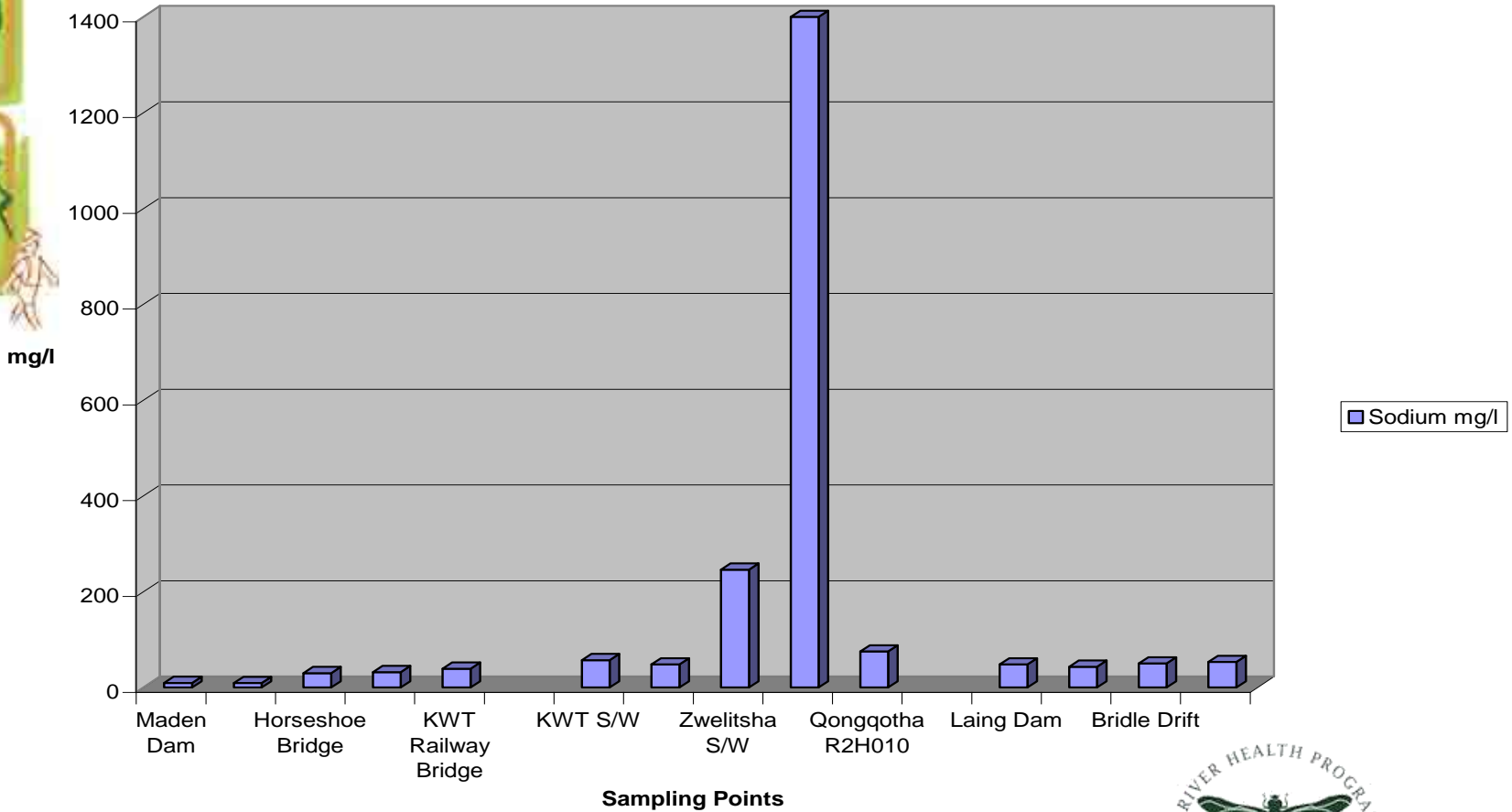


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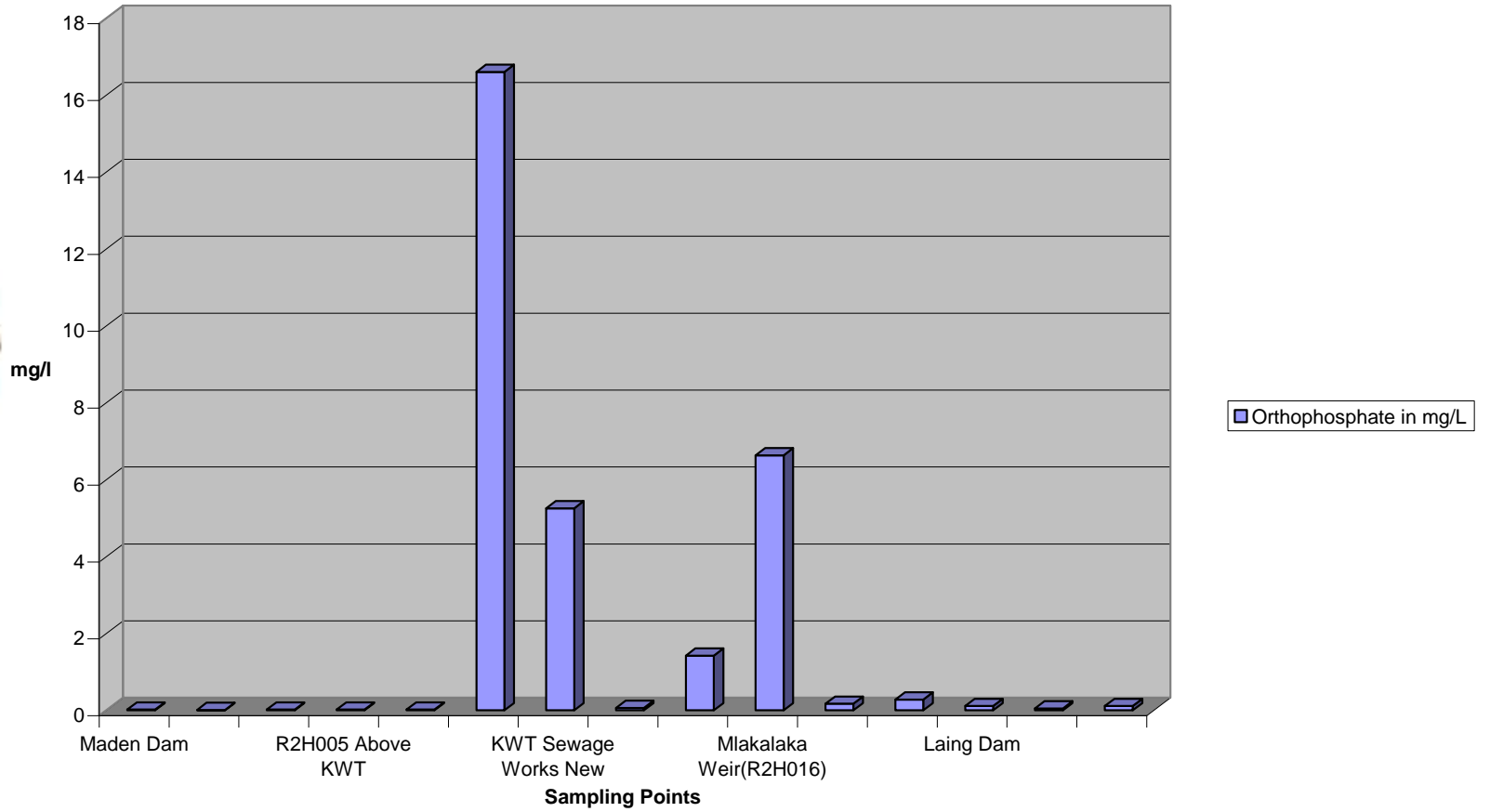


**Buffalo River Water Quality February 2007**



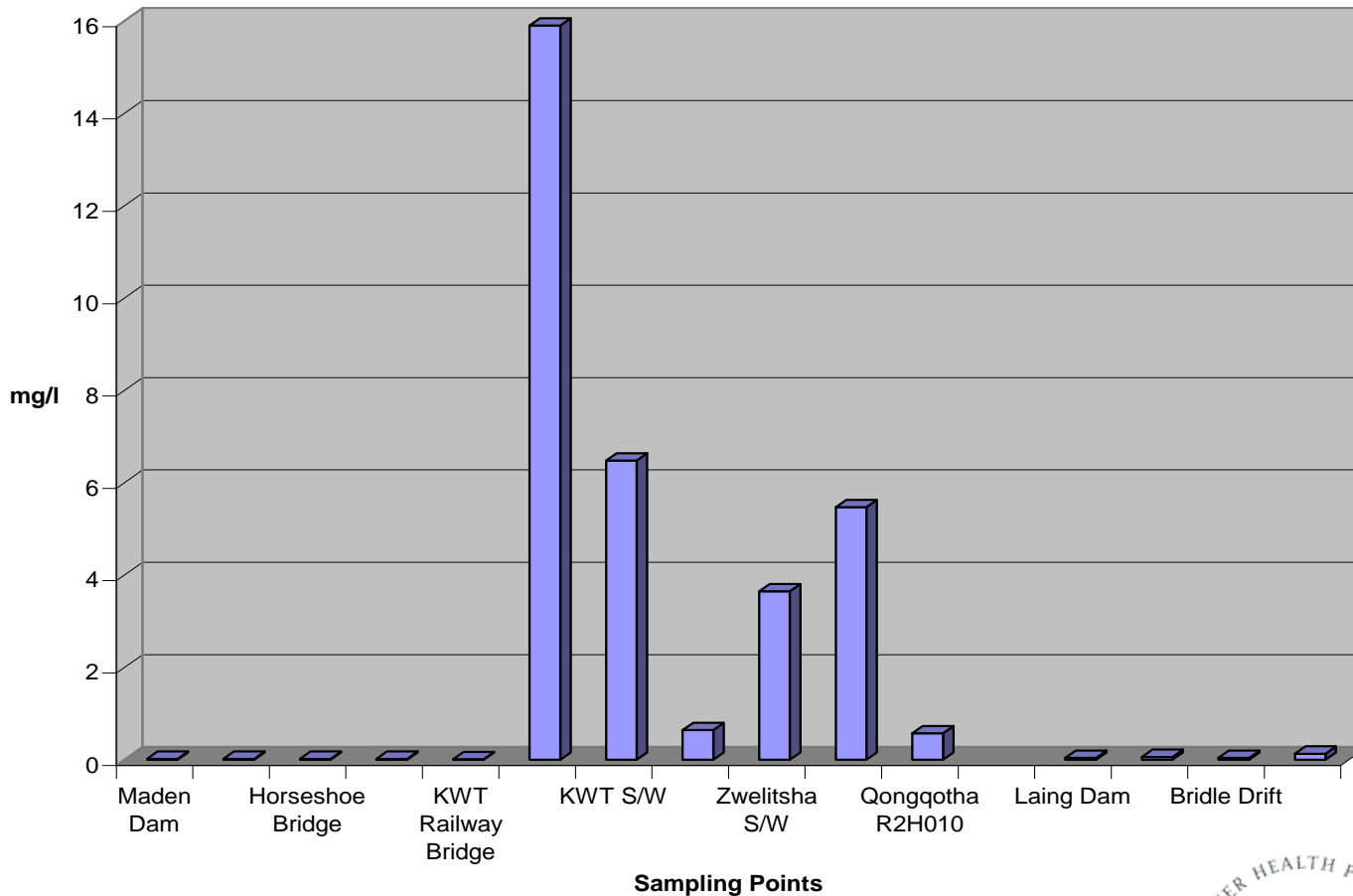
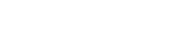
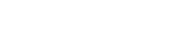


### Buffalo River: Water Quality Results January 2007





### Buffalo River Watre Quality February 2007



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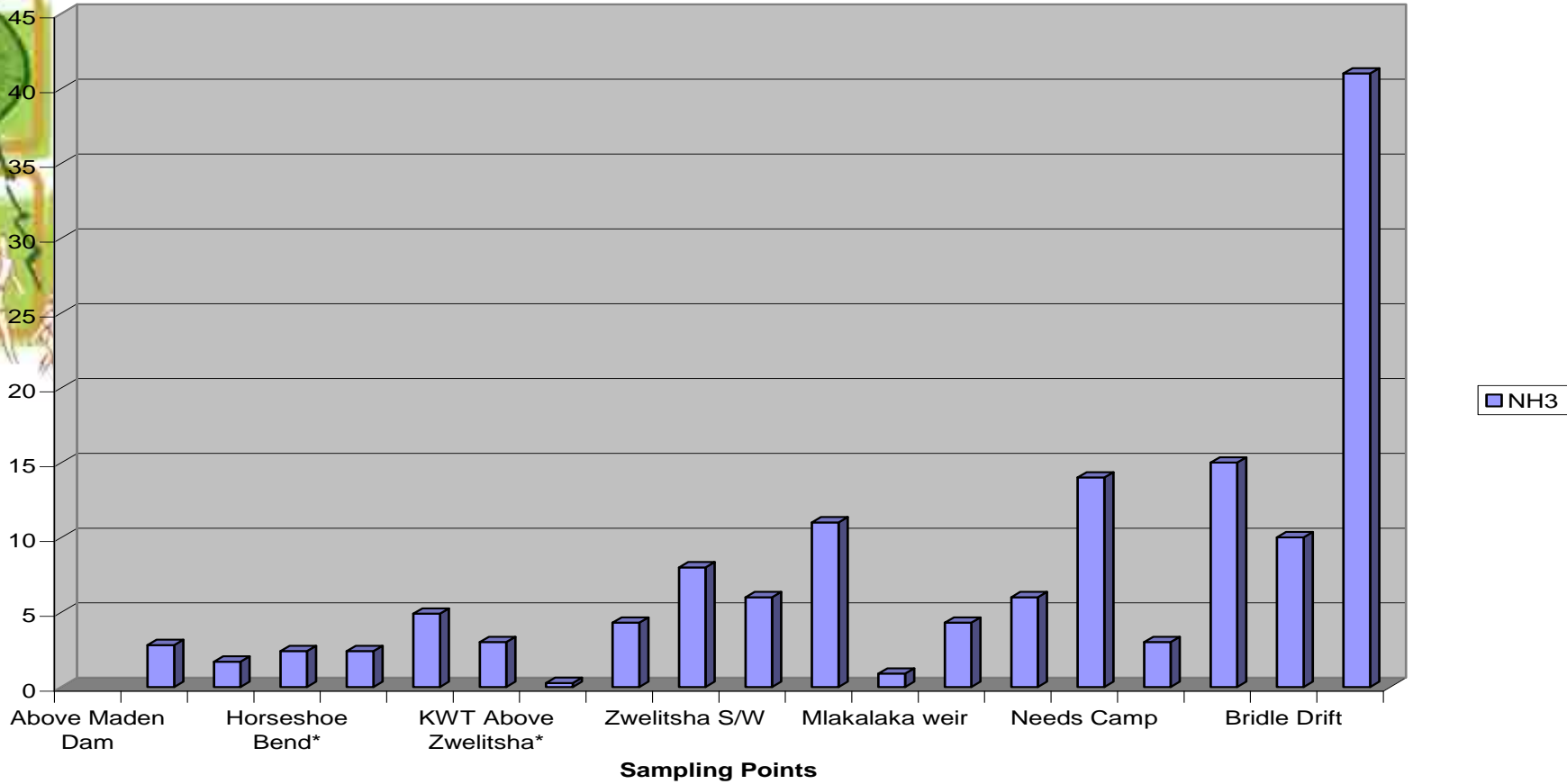




**Buffalo River RHP May 2007**

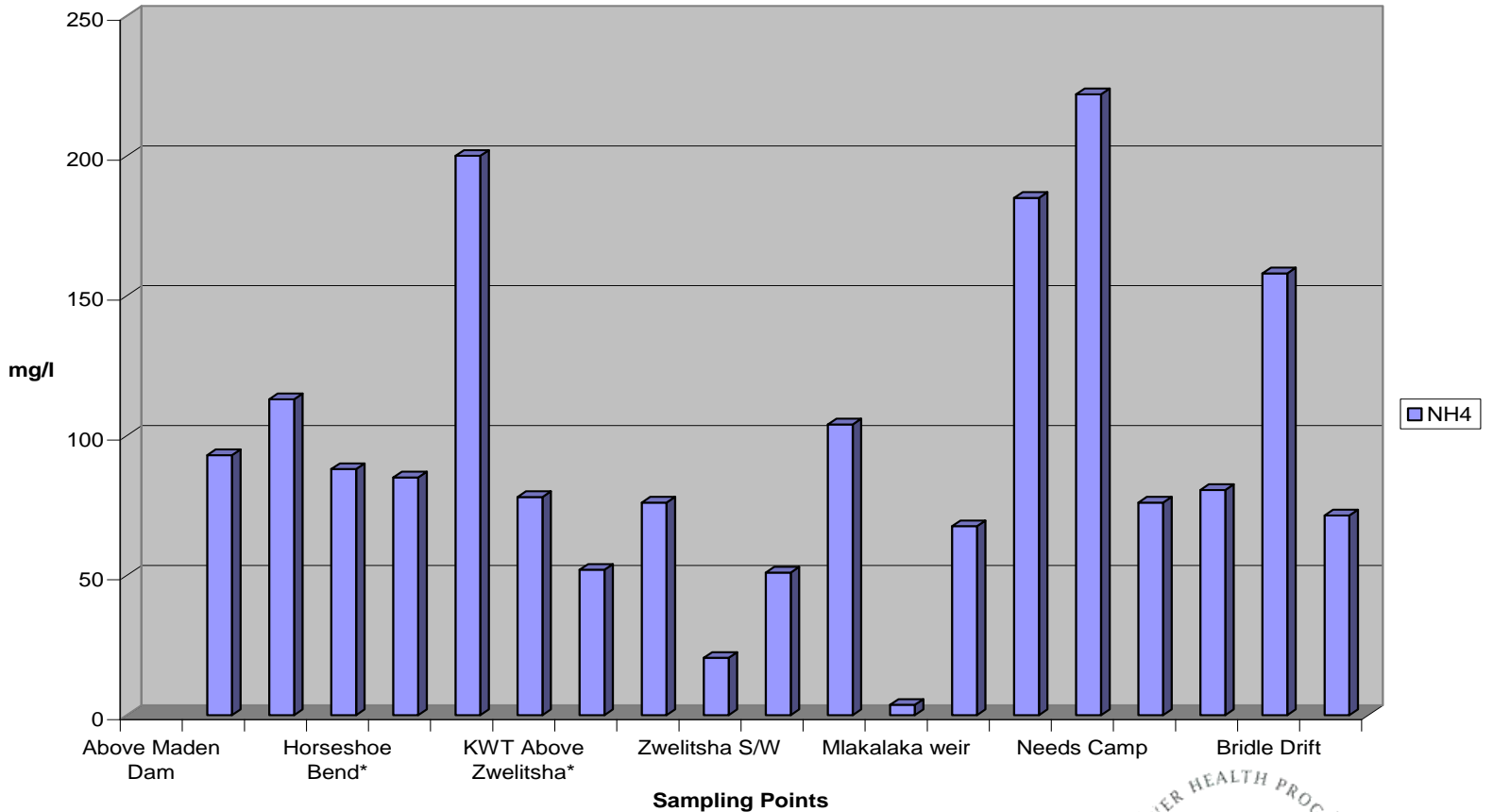


mg/l



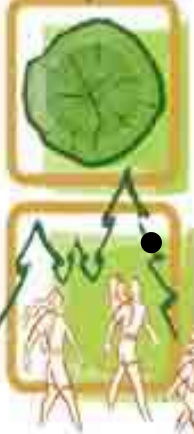


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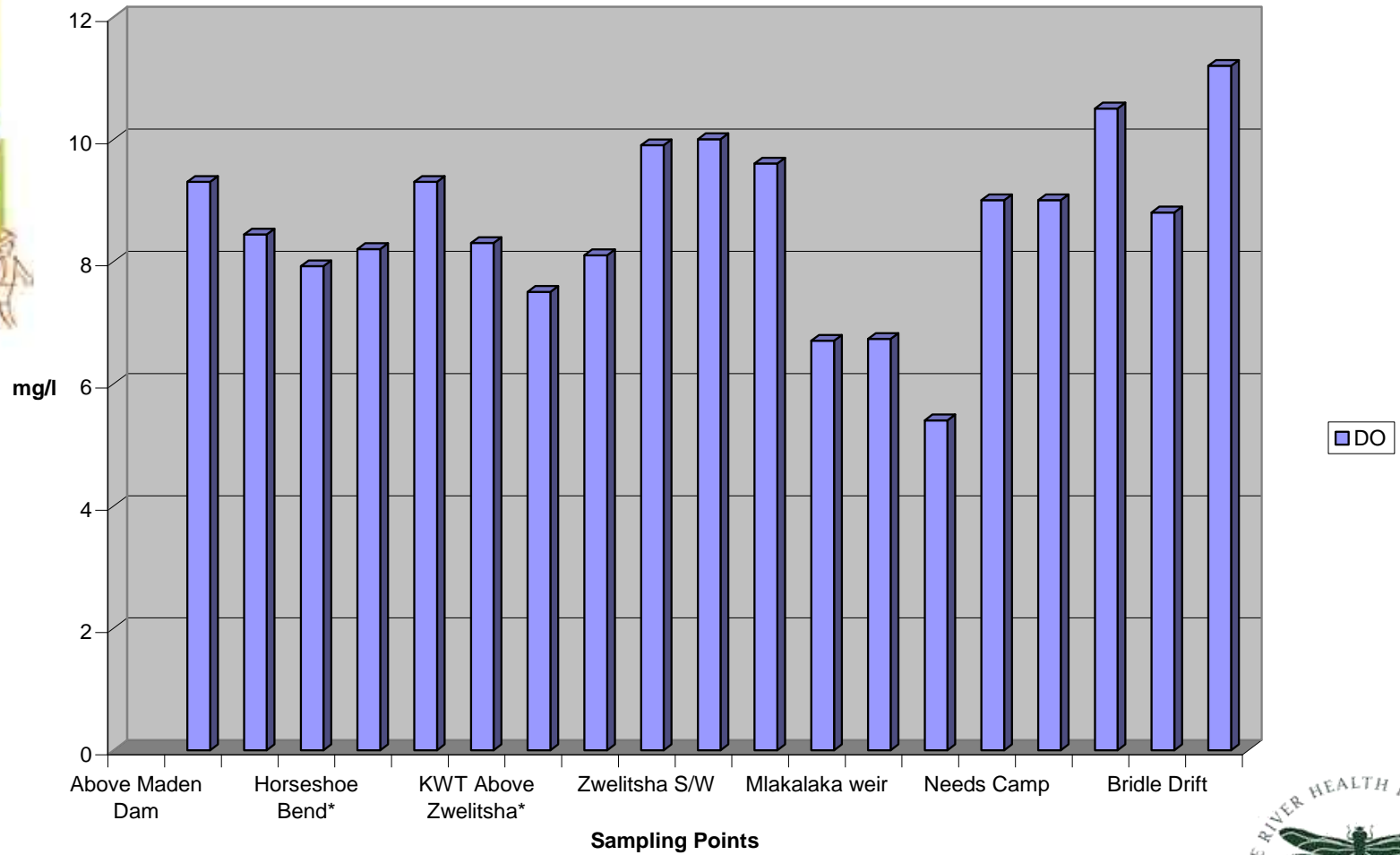


## DISSOLVED SALTS AND THE ECOSYSTEM HEALTH EFFECTS

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- Nitrates and phosphates are essential elements for growth, when discharged into natural water they fertilise the growth of algal suspensions and water weeds. This overgrowth results in their death and decay, and this means further consumption of dissolved oxygen and smothering of aquatic life

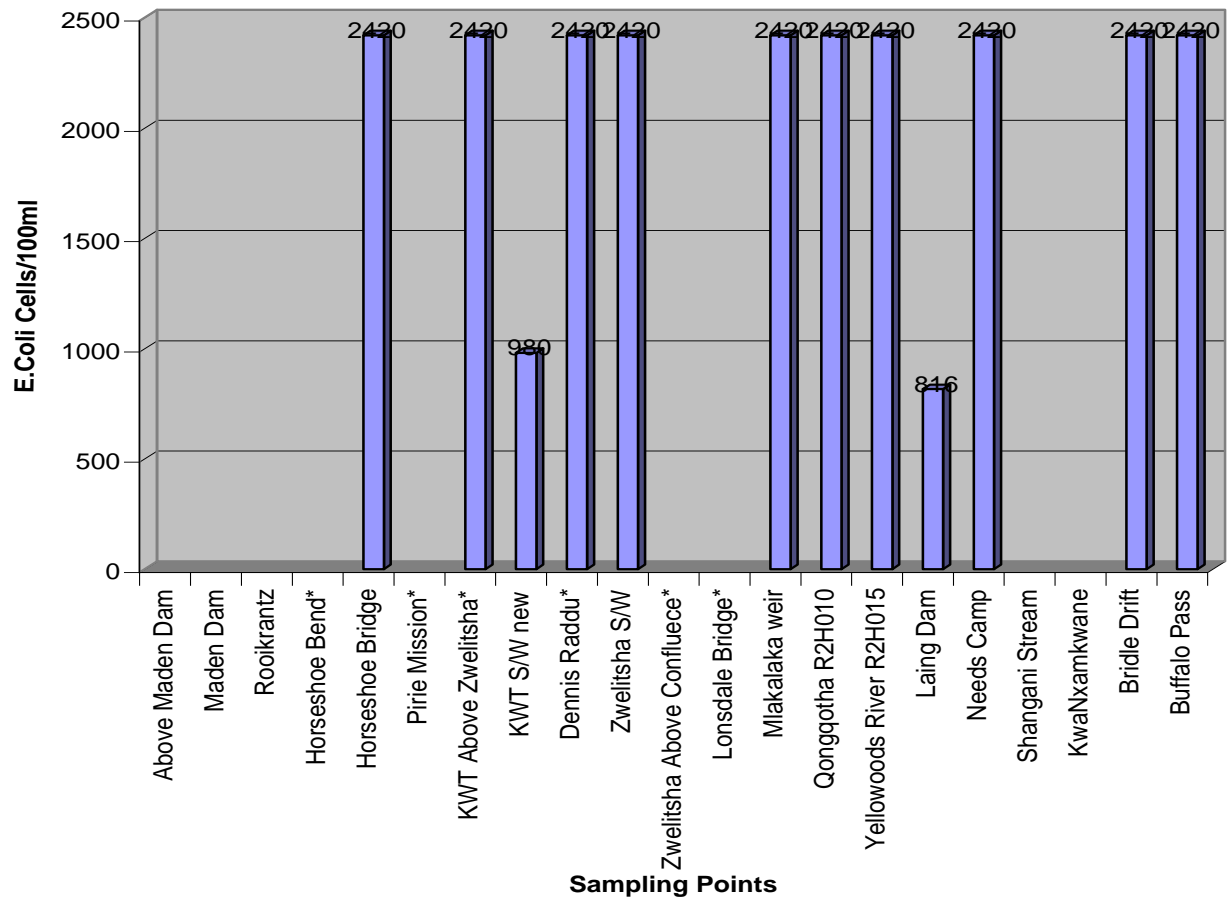


**Buffalo River RHP May 2007**



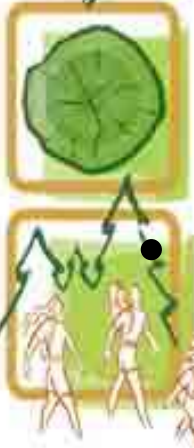


### Buffalo River REport 2007



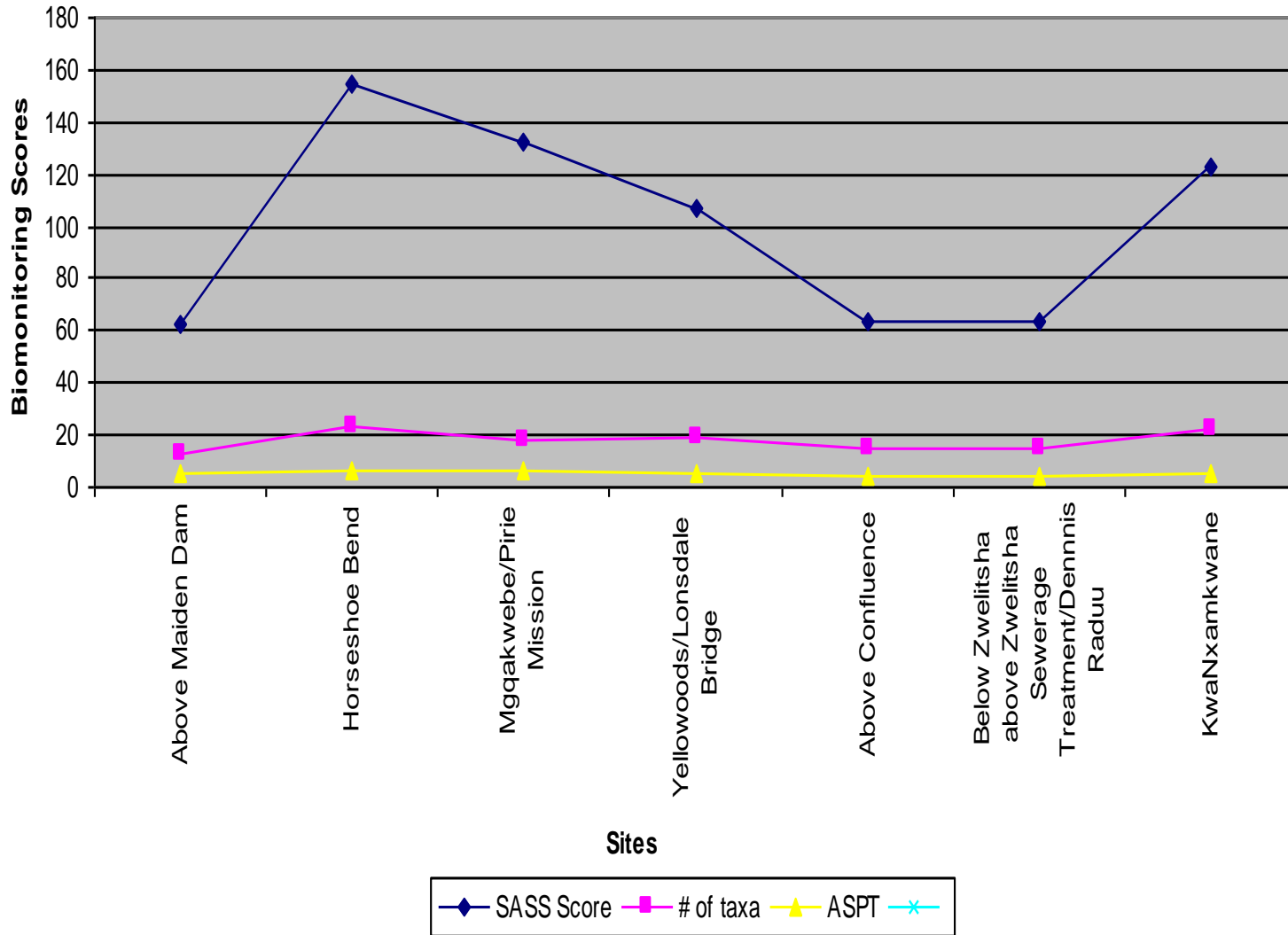


# HUMAN HEALTH EFFECTS

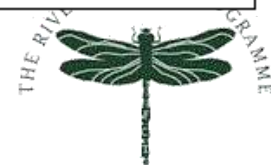
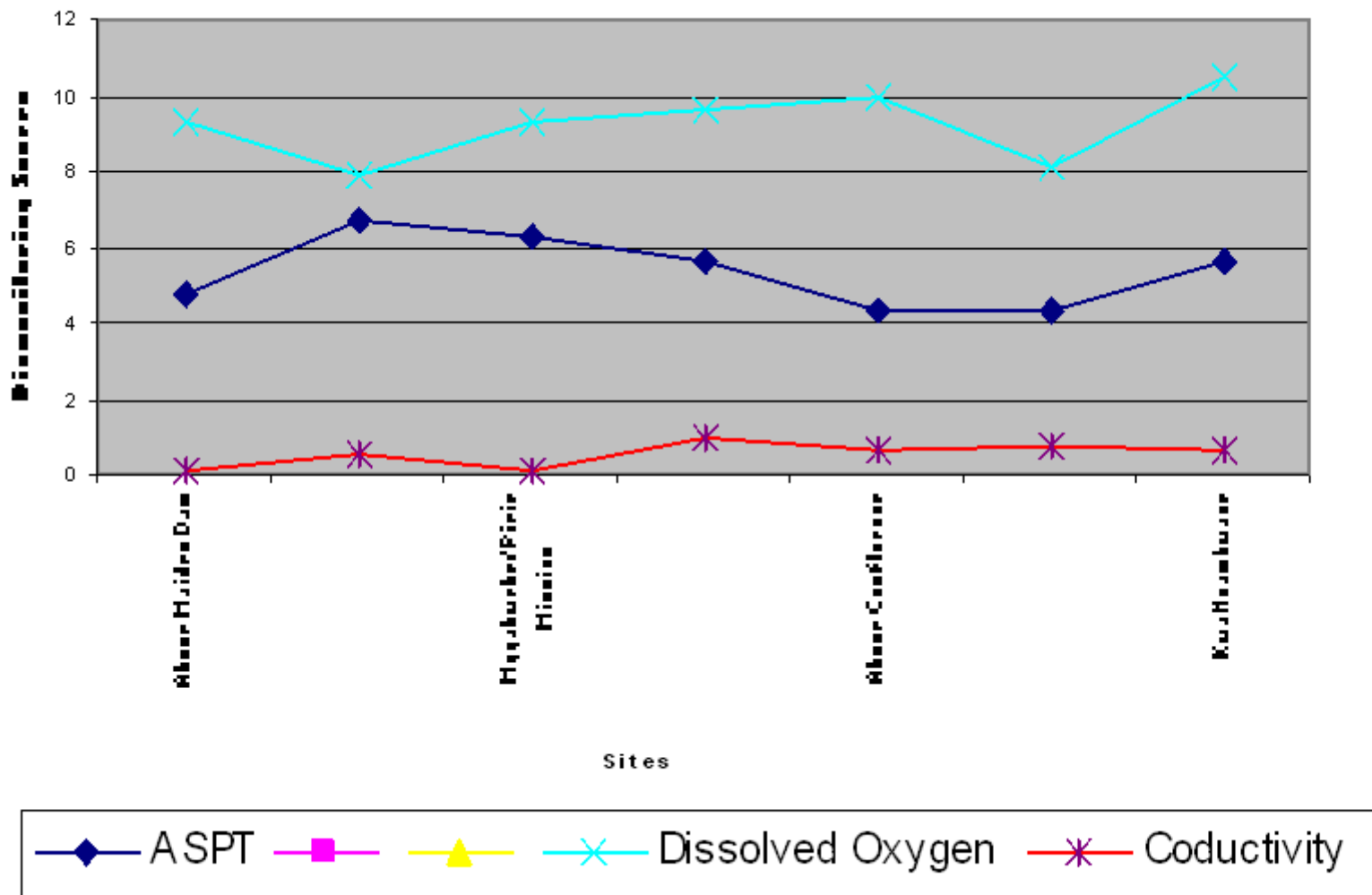
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- Many of the faecal coliform bacteria in human waste are harmless, however, there are disease organisms or pathogens that can cause harm, e.g. typhoid and hepatitis B. Direct contact with these pathogens or pollution of the water supply can cause infections



Buffalo River Biomonitoring in May 2007



Buffalo River Biomonitoring in May 2007





# Management Actions



- Take action to control river pollution by introduction of the Waste discharge charge system principle.
- The Waste Discharge Charge System is a system based on the “Polluter pays Principle” that promotes sustainable development and efficient use of water resource







# THANK YOU/ DANKIE/ NDIYABULELA



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