NEWS

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BREEDE-GOURITZ

Catchment Management Agency
Opvanggebied Bestuursagentskap
I-Arhente yoLawulo lomMandla nokungqongileyo

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WE NEED TO CHANGE WATER CULTURE

By **Malusi Rayi (DWS Communications - Western Cape)**

The Western Cape Water Supply System (WCWSS) level has been drawn down due to drought gripping the region. The Theewaterskloof Dam which is one of the major dams in the WCWSS has dropped to 17%. The fact that the levels in the WCWSS is declining week by week requires all water users to change our water culture.

There are some water practices that are of concern to the Department of Water and Sanitation(DWS) and this amongst other things include the;

- Use of about one third of our water use at home is for drinking, washing cooking and other hygiene or personal cleaning.
- About one third is for flushing away our human waste in our toilets. Can you consider that the drinking water quality used for flushing away our waste should be replaced by grey water?
- About one third is used for gardens. Can you imagine using this drinking water quality? Raw water from our rivers and streams and in our dams etc is purified (removal of all nitrates and phosphates) to drinking water standards and then thrown onto the ground to water our plants. This drinking water is chlorinated and is blue drop certified.

Water recycling has proven to be effective and successful in creating a new and reliable water supply. This was evident when the South Western Cape and Central Karoo was faced by worst drought in 100 years during 2010. Through water recycling interventions in towns such as Beaufort West and George the drought was broken.

There are many benefits associated with water recycling as outlined below;

- Recycling of water can minimize the use of potable water for household activities such as watering gardens and flushing of toilets.
- Water re-use can prevent and reduce and prevent pollution when pollutant discharges to oceans, rivers, and other water bodies are curtailed, the pollutant loadings to these bodies are decreased. Moreover, in some cases, substances that can be pollutants when discharged to a body of water can be beneficially reused for irrigation.
- Communities too, particularly at household level, can make a difference, by also adopting the water recycling approaches to save water and energy e.g.
  - Avoid use of portable water in watering their gardens and make use of grey water instead.
  - Installation of rain water tanks & harvesting of rain water for swimming pools, flushing of toilets & washing of their cars.

As this department we appeal to all water users to change the water culture and make lifestyle changes to adapt to climate change.

"Water is life, Sanitation is Dignity"

INVASIVE ALIEN PLANTS: WATER WEEDS

By **BGCMA**

Alien water (aquatic) weeds are invading our rivers, dams and wetlands. These invasive weeds from other countries, affect our indigenous plant and animal life. Many of these plants came from South America and were used in South Africa as plants for garden ponds and aquariums. Most of these weeds use more water and grow much quicker than our indigenous plants. In some cases it can fill a river or dam which leaves no space for other plants and animals.

Alien water weeds can use up all the oxygen in the water, and cause other plants and animals to die. It can also cause toxic (poisonous) conditions in the water resource, which then kills all other water life. Water weeds can clog up dams and rivers so that it is no longer possible to fish or practice other recreational activities, like boating and water-skiing. It can also block irrigation systems on farms, leading to problems with producing food and watering stock.

MYRIOPHYLLUM AQUATICUM CLOSEUP

SOME OF THE WORST WATER WEEDS ARE:

Water Hyacinth;
Parrot's Feather;
Water Lettuce;
Kariba Weed (Salvinia);
Spiked water-milfoil;
Hydrilla;
Red Water Fern (Azolla); and
Giant Reed (Arundo donax).

WATER HYACINTHS ARE THE WORST INVASIVE WATER WEED:

Water hyacinths are widespread throughout South Africa and have a severe impact on the rivers in the Western Cape as well as those in other provinces. Water hyacinths cause serious problems in water resource management and water use. **These include:**

- Reduced quality of drinking water owing to bad odours, taste and colour;
- An increase in waterborne, water-based and water-related diseases;
- An increase in the silt load of rivers and dams;
- Less area for fishing and water transport;
- Death of indigenous water plants, insects and animals;
- Blockages of irrigation canals and pumps; and
- Increased flood damage.

EISHHORNIA CRASSIPES

HOW CAN YOU HELP?

Water weeds spread very easily and grow very quickly. Just a small piece of stem, root or leaf can grow into a plant.

It is important not to spread these plants:

- Always clean your boat, trailer and motor well before leaving the ramp.
- Remove all pieces of weed from your fishing nets and tackle before leaving the area.
- Check that your dog and your shoes are clean before you leave a water resource.
- Do not enter a water resource if you have any weed on your boat, fishing nets and tackle.
- Do not grow any of these weeds in your garden pond or aquarium, it is against the law.
- Never empty your aquarium or pond into a water resource.
- Leave all pieces of the plant where you find them, or even better, put them into a rubbish bin.

Water weeds can be controlled in a number of ways:

- Chemical control using herbicides that are especially designed for controlling water weeds.
- Mechanical control, where the weeds are physically removed from the water resource.
- Biological control, where insects and fungi are used to control the growth and spread of the water weeds.
- Integrated control where a combination of chemical, biological and mechanical control is used. This is the most effective method of control for most water weeds.

It is very expensive and can take a lot of time to clear water resources of water weeds.

- It is important to remove low infestations as soon as possible.
- Obtain biological control agents as soon as possible from Department of Environmental (DEA) in Bellville.
- Bigger infestations can be sprayed with environmentally friendly, registered Herbicides. (Information at DEA offices)

For more information about water weeds, what they look like and how they can be controlled, please contact: Me Reley Bell, DEA Bellville 021-9416032

SALVINIA MOLESTA CLOSEUP

RIVER HEALTH INDICATORS AND INDICES

By **BGCMA**

SASS was developed specifically to assess the water quality of riverine systems based on the invertebrate composition. The whole idea behind biomonitoring (and SASS) is that the biota reflects the condition of the water body in which they live. This includes the water as well as the habitat quality and quantity.

The river health indices were all developed to give an integrated picture of the ecological condition of a river or reach of river. The biota often gives a more complete picture of the water quality as they integrate water quality over a period of time whereas a water quality sample only gives a snapshot view of the quality at the moment the sample was taken. It is for instance quite easy to miss a plug of poor water quality moving down a river using the chemical water samples collected, whereas the biota will react to the poorer water quality. A variety of invertebrate organisms (e.g. snails, crabs, worms, insect larvae, mussels, beetles) require specific habitat types and conditions for at least part of their life cycles. Changes in the structure of aquatic invertebrate communities are a sign of changes in overall river conditions. As most invertebrate species are fairly short-lived and remain in one area during their aquatic life phase, they are particularly good indicators of localised conditions in a river over the short term. SASS results are expressed both as an index score (SASS score) and the average score per recorded taxon (ASPT value).

FISH

Fish, being relatively long-lived and mobile, are good indicators of long-term influences on a river reach and the general habitat conditions within the reach. The numbers of species of fish that occur in a specific reach, as well as factors such as different size classes and the presence of parasites on the fish can be used as indicators of river health.

The Fish Assemblage Integrity Index (FAII) is based on a categorisation of a fish community according to an intolerance rating which takes into account trophic preference and specialisation, requirement for flowing water during different life-stages, and association with habitats with unmodified water quality. Results of the FAII are expressed as a ratio of observed conditions versus conditions that would have been expected in the absence of human impacts.

RIPARIAN VEGETATION

Healthy riparian zones maintain channel form and serve as filters for light, nutrients and sediment. Changes in the structure and function of riparian vegetation commonly result from changes in the flow regime of a river, exploitation for firewood, or use of the riparian zone for grazing or ploughing.

INDEX OF HABITAT INTEGRITY

Loss of habitats is regarded as the single most important factor that has contributed towards the extinction of species in the last century. The destruction of a particular type of habitat will result in the disappearance of certain species. Examples of river habitat types are pools, rapids, sandbanks, stones on the riverbed, and vegetation fringing the water's edges.

As the availability and diversity of habitat are major determinants of whether a given system is acceptable to a specific suite of biota or not, knowledge of the availability and quality of habitats is very important in an overall assessment of ecosystem health.

CONCLUSION

South Africa has limited water resources, and this poses a big challenge to water resources manages in ensuring that the water is managed in a sustainable manner. The river health programme, if used effectively can come out with solutions that will help the country to improve its water supply. The programme serves as a best monitoring tool in identifying pollution and contamination sources of both surface and ground waters meaning that it can be used in ensuring that the end users are provided with water of good quality and quantity.

GROUNDWATER MANAGEMENT AT BGCMA

By **J Sibanyoni**

The Breede-Gouritz Catchment Management Agency (BGCMA) is celebrating just over a year having established the groundwater unit also called geohydrology unit. The Geohydrologist, Mr John Sibanyoni, was appointed in December 2015 to perform geohydrological support functions including planning. It is with great pleasure that currently BGCMA boast to have the following functions which assist on effective management of the water resources within its jurisdiction area:

GROUNDWATER MONITORING

Groundwater monitoring is performed quarterly for both Breede and Gouritz in conjunction with the Department of Water and Sanitation (DWS) Regional office in Bellville. Most part of the monitoring is for water levels recording while few points are monitored for water quality (national points).

BGCMA has acquired a very sophisticated multiparameter probe (Aquaread AP-2000-D) which is used during the monitoring (Figure 1).

The probe has capability of measuring various parameters not limited to:

- pH
- Total Dissolved Solids (TDS)
- Electrical Conductivity (EC)
- Temperature
- Salinity
- Dissolved Oxygen and
- Depth below water level where sample is recorded.

The data is shared with DWS for both water level and quality (field parameters) records. It must be noted that the data is still in the cleaning process and accessibility is very limited.

Figure 1: Field photo indicating data recording instruments

WATER USE LICENCE APPLICATIONS

The water use licence application is an ongoing process whereby technical comments from geohydrological perspective are provided to the main application process. The good news on this component is that BGCMA does not seek to get inputs from external such as waiting Specialists from DWS but rather have it direct on the process making it efficient in terms of dealing with the licence applications. The Geohydrologist has been also appointed as member of the Water Use Assessment Advisory Committee (WUAAC) which facilitates the licence process.

CAPACITY BUILDING TO LOCAL AUTHORITIES

It was noted in the first two quarters of monitoring during 2016 that most local municipalities lack skills for water resource management especially on groundwater well-fields. This was also observed on various reports by DWS recommending appointment of Geohydrologist to manage the groundwater which never materialised.

As a result, BGCMA took initiative to conduct capacity building in various municipalities. Kannaland Local Municipality serves as one good example that BGCMA Geohydrologist conducted capacity building. The initiatives seeks to capacitate the municipality technicians to manage and record data properly which can be used by any Specialist or appointed Professional Service Provider (PSP) to generate reports. It also helps the municipalities to meet their water compliance requirements from the licence conditions.

INSTITUTIONAL PROJECT MANAGEMENT

BGCMA has various projects with Tertiary Institutions not limited to those listed below:

- University of the Western Cape (UWC)
- Cape Peninsula University of Technology (CPUT)

Groundwater is one of the projects with the abovementioned institutions.

Figure 2: Danish delegation at Beaufort West Wellfield (27/03/2017)

The project is a win-win basis with the intuitions seeking to create a central data collection point and perform some selected assessments related to groundwater use impact such as wellfield and some contaminated areas. The results from the assessment will be utilised by BGCMA for decision making and future improved groundwater management within the WMA. The students from both institutions also gain field work experience and using some areas as their study areas.

The engagement process involves:

- Planning
- Implementation:
  - Assessment
  - Workshops
- Presentation of the outcome during seminars once a year

OTHER PROJECTS

BGCMA also provides support to DWS on various issues related to water management. However, the current proposed compilation of groundwater management guidelines by the Danish in conjunction with the DWS in the municipalities is seen as the major project in terms of working with stakeholders. The Beaufort West Local Municipality has been selected as one to undertake the pilot project.

The current and future role of BGCMA in the project is as follows:

- Provide support information
- Assist on decision making regarding the reviewed guidelines
- Possible implementation assistance to municipalities in a form of capacity building.

A site visit was done at the Beaufort West municipality on 27 March 2017 (Figure 2 below) as it was selected as very active site and sufficient information to proceed with guideline review and implementations. The success of the project will be rolled out to other municipalities in future.

It should be noted that the above selected activities or functions serve as main drives of the groundwater management whereas other ad hoc projects exist.

DROUGHT IN THE WESTERN CAPE

The current situation in the Western Cape in terms of water has reached a level where dams are very low with more stringent restrictions. As a result the National level has declared the province as disaster and needs assistance for drought relief.

BGCMA plays a very important role of providing support to municipalities and DWS not limited to:

- Provide technical information on:
  - Areas that can be drilled to get water.
  - Assistance to municipalities to review terms of reference (TOR) documents to meet their demands.
  - Maps with relevant information for feasibility studies.

BIRTHDAYS

THE FOLLOWING CELEBRATED THEIR BIRTHDAYS

- Masibulele Makala - 19 January
- Makhosi Mthimkhulu - 01 February
- Nontlahla Luyenge - 11 February
- Phakamani Buthelezi - 14 February
- Thembelani Dassie - 25 February
- Zama Mbunquka - 18 March
- Phumeza Mzazela - 18 March
- Bonita Mdoda - 24 March
- Constance Makubalo - 28 March

MS THEMBELA BUSHULA
JOINED BGCMA ON 01 APRIL 2017

WORD SEARCH

WATER WOES

U A C A V I T I E S E K L A T A E R G D
E Q X T Q I I C E N T U R I E S P W T K
M U U A O Q R G N I B M U L P P I D B M
Y I O D A B L X L A T E L E K S S Z X X
C F T C Z Z J G S M N O D I S C O L O R
R E T A W D N U O R G Y X I V V D O T L
O R B N E A I Y K E E T Q I R T E J D J
C T V X A T D E J T S I M O N O C E F P
Y I E S E T A N G A T S C R F Z U T I B
S L F D Z D U G L W P N O A X A S L C D
T I G Y M U R L I O Z E L A L C U A F C
I Z D B C O E J L R N T M F D G T C O Y
N E V M X N S H N O R N M Z O W B I E W
S R R T O L E D O B P I A F O B A M W T
M H J I I M R U F J B R S A L G A E J C
R U G D S O V F Q N S Q Z A F U R H J B
M E P N U Q O K G E U W D F K Z D C Y T
L H G G G N I K N I R D Y M L R G A B I
L E H B U I R I T K E F Y V N I R E N R
T T R R V J C U W R N F H B E P I L J Y

ALGAE
AQUIFER
ARSENIC
BLADDER
CAVITIES
CENTURIES
CHEMICAL
DISCOLOR
DRINKING
DROUGHT
ECONOMIST
EPISODE
FAUCET
FERTILIZER
FLOOD
FLUORIDE
FREQUENCY
GLACIERS
GREAT LAKES
GROUNDWATER
INTENSITY
IRRIGATE
LEACH
LEGIONELLA
MYCROCYSTIN
PLUMBING
POLLUTANT
RESERVOIR
RUNOFF
SKELETAL
STAGNATES
TOLEDO
TOXIN
WATER MAINS