THABO MOFUTSANYANA District Municipality

MUNICIPALITY HEALTH SERVICES

WATER MANAGEMENT POLICY

REVISED EDITION 2013

CONTENTS

1. BACKGROUND

WHAT IS A WATER QUALITY MANAGEMENT STRATEGY

Water quality is changed and affected by both natural processes and human activities. Generally natural water quality varies from place to place, depending on seasonal changes, climatic changes and with the types of soils, rocks and surfaces through which it moves. A variety of human activities e.g. agricultural activities, urban and industrial development, mining and recreation, potentially significantly alter the quality of natural waters, and changes the water use potential. The key to sustainable water resources is, therefore to ensure that the quality of water resources are suitable for their intended uses, while at the same allowing them to be used and developed to a certain extent. Effective management is the tool through which this is achieved.

Water quality management, therefore involves the maintenance of the fitness for use of water resources on a sustained basis, by achieving a balance between socio-economic development and environmental protection. From a regulatory point of view the "business" of water quality management entails the ongoing process of planning, development, implementation and administration of water quality management policy, the authorization of water uses that may have, or may potentially have, an impact on water quality, as well as the monitoring and auditing of the aforementioned.

THE NEED FOR A WATER QUALITY MANAGEMENT STRATEGY

The effects of polluted water on human health, on the aquatic ecosystem (aquatic biota, and in-stream and riparian habitats) and on various sectors of the economy, including agriculture, industry and recreation, can be disastrous. Deteriorating water quality leads to increased treatment costs of potable and industrial process water, and decreased agricultural yields due to increased salinity of irrigation water. On the other hand not all health, productivity and ecological problems associated with deteriorating water quality are ascribed to man's activities. Many water qualities related problems are inherent in the geological characteristics of the source area. The occurrence, transport and fate in the aquatic environment of numerous persistent and toxic metals and organic compounds (e.g. pesticides) have given cause for serious concern. Contamination of groundwater resources or of sediments deposited in riverbeds, impoundments and estuaries by toxic and persistent compounds can cause irreversible pollution, sometimes long after the original release to the environment has ceased.

A persistent water quality problem is salination, which has two major causes, natural and anthropogenic. The origin of natural salination of river water is geological. Man-made causes are multiple. A wide variety of man's activities are associated with increased releases of salts, some in the short and others in the long term. Immediate increases in salt concentrations result from point sources of pollution, such as the discharging of water containing waste by industries. Diffuse pollution, resulting inter alia from poorly managed urban settlements, waste disposal on land and mine residue deposits pose even a bigger problem, as it impacts over a larger area on the water resource. The effect of diffuse pollution on groundwater is also often problematic in terms of remediation.

Another major water quality problem is eutrophication which is the enrichment of water with the plant nutrients nitrate and phosphate. This encourages the growth of microscopic green plants termed algae. As nutrients are present in sewage effluent, the problem is accentuated wherever there is a concentration of humans or animals. The algae cause problems in water purification, e.g. undesirable tastes and odours, and the possible production of trihalomethanes or other potentially carcinogenic products in water that is treated with chlorine for potable purposes.

A water quality issue which is receiving increasing attention among industrialized nations, is pollution by metals and man-made organic compounds, such as pesticides. Serious incidents of health impacts to man and animals have occurred at places throughout the world through uncontrolled exposure to these micropollutants. Pollution of this type tends to be highly localized and associated with specific industries or activities. Mining activities often expose pyrite containing rock formations to air and water to produce acid rock drainage. Due to the low pH of acid rock drainage heavy metals are mobilized. Water contamination by faecal matter is the medium for the spread of diseases such as dysentery, cholera and typhoid.

2. POLICY AND LEGISLATIVE REQUIREMENTS/MANDATES

National Health Act (NHA) 61: 2003

The National Health Act (NHA) (No. 61 of 2003), define Water Quality Monitoring as one component of Municipal Health Services, that needs to be executed.

Constitution 108:1996

The Constitution of the Republic of South Africa, 1996, Act 108 of 1996, in Chapter 2: Bill of Rights section 24 describes every citizen's rights with respect to the environment as follows:
to an environment that is not harmful to their health or well-being; and
(a) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation; promote conservation; and
(i) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

With respect to the right to have access to water section 27 stipulates that every citizen has the right to sufficient water.

National Environmental Management Act (NEMA) 107:1998

The NEMA provides umbrella legislation making provision for co-operative environmental governance by establishing principles for decision-making on matters affecting the environment, institutions that will promote co-operative governance and procedures for coordinating environmental functions exercised by organs of state; and to provide for matters connected therewith.

National Water Act 36:1998

This Act is guided by principles of sustainability and equity in the protection, use, development, conservation, management and control of water resources. The NWA introduced several new concepts. Some of the important concepts are:

- Water resource is deemed to be a watercourse, surface water, estuary, or aquifer.

- The concept of a reserve was introduced. Reserve refers to the quantity and quality of water required;

  (a) To satisfy basic human needs by securing a basic water supply, as prescribed under the Water Services Act, 1997 (Act No. 108 of 1997), for people who are now or who will in the reasonably near future be relying upon, taking water from, or being supplied from, the relevant water resource; and

  (b) To protect aquatic ecosystems in order to secure ecologically sustainable development and the use of the relevant water resource.

- The management of water should take place in a Water Management Area (WMA), which is the basic management unit in the National Water Resource Strategy (NWRS) within which a Catchment's Management Agency (CMA) will conduct the protection, use, development, conservation, management and control of water resources.

- The NWA contains stringent pollution prevention measures. Part 4: Pollution prevention Section 19 deals with pollution prevention and in particular the situation where pollution of a water resource occurs or might occur as a result of activities on land. The person who owns controls, occupies or uses the land in question is responsible for taking measures to prevent pollution of water resources. If these measures are not taken, the CMA concerned (if a CMA does not yet exist, the DWAF) may itself do whatever is necessary to prevent the pollution or to remedy its effects, and to recover all reasonable costs from the persons responsible for the pollution.

- Use of water is no longer limited to the abstraction of water, but includes activities having relation to water such as storing of water, disposing waste, discharging water containing waste, altering river banks and beds, recreation and so forth (NWA Section 21). All water uses apart from those mentioned under Schedule I of the NWA (page 152) will ultimately require a form of authorization or license under the NWA. Provision is made for public consultation processes in the establishment of strategies.

National Water Resource Strategy

The National Water Resource Strategy (NWRS) provides the framework for the protection, use, development, conservation, management and control of water resources for the country. It also provides the framework within which water will be managed at regional or catchments level, in defined WMA's. The contents of the NWRS are described in Section 6(1) of the Act.

Catchments Management Agencies

The purpose of establishing CMA's is to delegate water resource management functions to the regional or catchments level and to involve local communities, within the framework of the NWRS. Whilst the ultimate aim is to establish CMA's for all WMA's, the DWAF Regional Offices act as the CMA where one has not been established. The establishment and powers of CMA's are fully described in Chapter 7 of the NWA.

3. STRATEGY OBJECTIVES & OUTCOMES

The main objectives are:

- Collection of water samples to get reliable data
- Collection of water samples control and monitor
- Build capacity;
- Provide specialist technical and strategic support;
- Share information on drinking water quality to the community
- Monitor and audit the sample results from local municipalities
- Manage WQM related information;
- Promote transparent decision taking through Co-operative Governance and participative management;
- To educate the community on water conservation
- The inception and development of a water quality database
- The development of an understanding of the water system
- Ability to identify and address issues requiring urgent attention
- Provision of expert guidance with regards to management and upgrading of the water system
- Training of municipal staff to successfully run a suitable water quality management program
- Ensure the continuous improvement of Water Quality Management
- Promote cooperative governance across all spheres of management

4. MONITORING PLAN

WHAT WILL BE MONITORED DRINKING WATER & BOREHOLE WATER

With reference to SANS 241:2006(Edition 6.1) Water Quality Grading System Level 1, analyses of the following water quality determinants is considered the minimum requirement for the purpose of indicating ongoing levels of operational efficiency in a water treatment plant and acceptable water quality within the distribution network:

- Conductivity, or dissolved solids
- pH value
- Turbidity
- Ecoli or Faecal coliform bacteria and
- Appropriate residual treatment chemicals and disinfectants, such as chlorine
- Total coliforms to determine treatment efficiency and post contamination

Level 3 of the same Grading System further recommend amongst other determinants, the routine monitoring of:

- fluoride and
- nitrate & nitrite.

RECREATIONAL WATER

Pans and Rivers

- E-coli or Faecal coliforms
- Ammonia
- Chemical oxygen demand

Pools

- E. coli or Faecal coliforms
- Free Chlorine

WASTEWATER FINAL EFFLUENT

- Faecal coliforms
- Chemical oxygen demand
- Ammonia
- Nitrates and/or phosphates
- Suspended solids

MICROBIOLOGICAL PARAMETERS

E.coli

Escherichia coli (E.coli) is used as an indicator of faecal pollution by warm blooded animals (often interpreted as human faecal pollution). The presence of faecal pollution by warm blooded animals may indicate the presence of pathogens responsible for infectious disease such as gastroenteritis, cholera, dysentery and typhoid fever after ingestion of contaminated water.

Effect and possible implications of failure

Health

The risks of being infected correlates with the level of contamination of the water and the amount of contaminated water consumed. Higher concentrations of E.coli in water will indicate a higher risk of contracting waterborne disease, even if small amounts of water are consumed. Any bacteriological failure with regards to E.coli can therefore be considered a direct indication of risk to health.

SANS 241 Standards

- SANS 241 Table 1 (Microbiological safety requirements) column 3 Allowable Compliance Contribution (95% of samples min) Upper Limit: Not detected (count per 100 ml)
- SANS 241 Table 1 (Microbiological safety requirements) column 4 Allowable Compliance Contribution (4% of samples max) Upper Limit: Not detected (count per 100 ml)
- SANS 241 Table 1 (Microbiological safety requirements) column 5 Allowable Compliance Contribution (1% of samples max) Upper Limit: 1 (count per 100 ml)

Faecal Coliforms

Faecal coliform bacteria are found in water wherever the water is contaminated with faecal waste of human or animal origin. Faecal coliforms are primarily used to indicate the presence of bacterial pathogens such as Salmonella spp., Shigella spp., Vibrio cholerae, Campylobacter jejuni, Campylobacter coli, Yersinia enterocolitica and pathogenic E. coli. These organisms can be transmitted via the faecal/oral route by contaminated or poorly treated water and may cause diseases such as gastroenteritis, salmonellosis, dysentery, cholera and typhoid fever.

Effect and possible implications of failure

Health

The risks of being infected correlates with the level of contamination of the water and the amount of contaminated water consumed. Higher concentrations of faecal coliforms in water will indicate a higher risk of contracting waterborne disease, even if small amounts of water are consumed. Any bacteriological failure with regards to faecal coliforms can therefore be considered a direct indication of risk to health.

SANS 241 Standards

- SANS 241 Table 1 (Microbiological safety requirements) column 3 Allowable Compliance Contribution (95% of samples min) Upper Limit: Not detected (count per 100 ml)
- SANS 241 Table 1 (Microbiological safety requirements) column 4 Allowable Compliance Contribution (4% of samples max) Upper Limit: Upper Limit: 1 (count per 100 ml)
- SANS 241 Table 1 (Microbiological safety requirements) column 5 Allowable Compliance Contribution (1% of samples max) Upper Limit: 10 (count per 100 ml)

OPERATIONAL PARAMETERS

Residual Chlorine

Free chlorine residual is an indication of the efficiency of the disinfection process and is thus a rapid indicator of the probable microbiological safety or otherwise of the treated water.

Effect and possible implications of failure

Indirect health

Absence of residual chlorine means either that the water was not treated with chlorine, or that insufficient chlorine was used to successfully disinfect the water. Where the untreated water contains pathogenic micro organisms, the absence of free residual chlorine indicates that there is a risk of microbiological infection. In distribution systems, the free chlorine residual protects against secondary contamination. However, if the concentration of chlorine is too high then irritation of mucous membranes, nausea and vomiting may occur.

SANS 241 Standards

- SANS 241 Table C.3 (Operational water quality alert values) Column 3, Alert level (Upper Limit): <0.5 mg/L for treated water at waterworks and 0.2 mg/L in the distribution network.

Turbidity

The turbidity is a measure of the suspended particles or degree of cloudiness of water.
Effect and possible implications of failure

- Aesthetic
- Operational

Indirect health

Although the consumption of turbid water per se does not have any direct health effects, high turbidities imply a high concentration of suspended particles. These particles can shield bacteria and other micro-organisms from the disinfecting properties of, for example, chlorine resulting in ineffective disinfection.

SANS 241 Standards

- SANS 241 Table C.3 (Operational water quality alert values) Column 3, Alert Level: 5 NTU

pH VALUE

The pH of a solution is given by the expression: pH = -log10[H+], where [H+] is the hydrogen ion concentration. At pH less than 7, water is acidic, while at pH greater than 7 water is alkaline.

Effect and possible implications of failure

- Aesthetic
- Operational

A direct relationship between the pH of drinking water and human health effects is difficult, if not impossible to establish since pH is very closely associated with other aspects of water quality. The taste of water, its corrosivity and the solubility and speciation of metal ions are all influenced by pH. At low pH, water may taste sour, while at high pH water tastes bitter or soapy. At low pH, corrosion of metals and aggression of cement concrete is likely. Likewise at high pH, scale formation is likely. To minimize such effects, it is recommended that optimum pH levels are maintained.

SANS 241 Standards

- SANS 241 Table 2 (Physical, organoleptic and chemical requirements) Column 3, Class I (recommended operational limit): 5.0 - 9.5 pH units

- SANS 241 Table 2 (Physical, organoleptic and chemical requirements) Column 4, Class II (max. allowable for limit duration): 4.0 - 10.0 pH units
- SANS 241 Table 2 (Physical, organoleptic and chemical requirements) Column 5, Class II water consumption period, max: No limit

Fluoride

Fluoride is the most electro-negative element and readily forms complexes with many metals.

Effect and possible implications of failure

Health

The presence of fluoride in drinking water reduces the occurrence of dental caries in adults and children. A small amount of fluoride is necessary for proper hardening of dental enamel and to increase resistance to attack on tooth enamel by bacterial acids. An excess intake of fluoride, however, can damage the skeleton, causing a hardening of the bones and making them brittle.

SANS 241 Standards

- SANS 241 Table 2 (Physical, organoleptic and chemical requirements) Column 3, Class I (recommended operational limit): <1.0 mg/L
- SANS 241 Table 2 (Physical, organoleptic and chemical requirements) Column 4, Class II (max. allowable for limit duration): 1.0 - 1.5 mg/L
- SANS 241 Table 2 (Physical, organoleptic and chemical requirements) Column 5, Class II water consumption period, max: 1 year

Nitrate/Nitrite

Nitrate is a plant nutrient and is the end product of the oxidation of ammonia and nitrite.

Effect and possible implications of failure Health

High concentrations of nitrates/nitrites in drinking-water are generally associated with methemo-globinaemia in infants ("blue-baby syndrome"). In addition, nitrate/nitrite can cause tiredness and fatigue.

SANS 241 Standards

- SANS 241 Table 2 (Physical, organoleptic and chemical requirements) Column 3, Class I (recommended operational limit): <10 mg/L
- SANS 241 Table 2 (Physical, organoleptic and chemical requirements) Column 4, Class II (max. allowable for limit duration): 10 - 20 mg/L
- SANS 241 Table 2 (Physical, organoleptic and chemical requirements) Column 5, Class II water consumption period, max: 7 years

Conductivity/ Dissolved solids

Electrical Conductivity (EC) is the measure of the ease with which water conducts electricity and gives an indication of the total dissolved salt (TDS) content of the water.

Effect and possible implications of failure

• Aesthetic

Adverse health effects may include disturbance of salt and water balance in infants, heart patients, individuals with high blood pressure, and renal disease. Aesthetic effects include a salty taste to the water (if conductivity > 150 mS/m) while water with conductivity > 300 mS/m does not slake thirst.

SANS 241 Standards

- SANS 241 Table 2 (Physical, organoleptic and chemical requirements) Column 3, Class I (recommended operational limit): <150 mS/m
- SANS 241 Table 2 (Physical, organoleptic and chemical requirements) Column 4, Class II (max. allowable for limit duration): 150 - 370 mS/m
- SANS 241 Table 2 (Physical, organoleptic and chemical requirements) Column 5, Class II water consumption period, max: 7 years.

Dissolved Solids

Dissolved solids is a measure of the total dissolved salt (TDS) content of the water and it also provides an indication of the conductivity of the water (the ease with which water conducts electricity).

Effect and possible implications of failure

• Aesthetic

Adverse health effects may include disturbance of salt and water balance in infants, heart patients, individuals with high blood pressure, and renal disease. Aesthetic effects of waters with high dissolved solids include a salty taste to the water and the inability to slake thirst.

SANS 241 Standards

- SANS 241 Table 2 (Physical, organoleptic and chemical requirements) Column 3, Class I (recommended operational limit): <1000 mg/L
- SANS 241 Table 2 (Physical, organoleptic and chemical requirements) Column 4, Class II (max. allowable for limit duration): 1000 - 2400 mg/L
- SANS 241 Table 2 (Physical, organoleptic and chemical requirements) Column 5, Class II water consumption period, max: 7 years

All associated possible reason/s for failure

- Source water has high salt content (e.g. groundwater source has natural high salinity, no source protection, sea water infiltration at coast)
- Source water has high nitrate/nitrite (e.g. groundwater source is naturally high in nitrate/nitrite, no source protection, pollution from pit latrines or animal waste around source)

- Treatment plant cannot reduce salt content (e.g. no reverse osmosis, no electrodialysis, no distillation, no ion exchange)
- Membranes/resins require replacement (e.g. membrane life exhausted, breakthrough achieved)
- Poor process control (e.g. no monitoring and remedial intervention, problem with process control/SCADA system)
- Contamination (e.g. infiltration or seepage from industry, sea water)
- Lack of maintenance (e.g. ineffective cleaning of membranes)
- Poor design (e.g. inappropriate treatment system)
- Sabotage/vandalism
- Unskilled Workers

<u>NITRATE</u>

- No nitrate/nitrite removal process at treatment plant (e.g. no reverse osmosis, no ion exchange, no electro dialysis)
- Membranes/resins require replacement (e.g. membrane life exhausted, breakthrough achieved)
- No chemicals available for membrane cleaning/bed regeneration
- Incorrect/inappropriate chemicals (e.g. chemicals used are harsh and damage membranes)
- Poor process control (e.g. ineffective chemical dosages, inconsistent dosing, no monitoring and remedial intervention, problem with process control/SCADA system)
- Contamination (e.g. infiltration or seepage from other water sources)
- Lack of maintenance (e.g. ineffective regeneration of bed, ineffective cleaning of membranes)
- Poor design (e.g. inappropriate treatment system)

<u>FLUORIDE</u>

- Source water has high fluoride (e.g. groundwater source is naturally high in fluoride)
- No fluoride removal process at treatment plant (e.g. no activated alumina, no reverse osmosis, no ion exchange)
- Membranes/resins require replacement (e.g. membrane life exhausted, breakthrough achieved)
- No chemicals available for membrane cleaning/bed regeneration (e.g. no base and acid available for regeneration)
- Incorrect/inappropriate chemicals (e.g. chemicals used are harsh and damage membranes)
- Poor process control (e.g. ineffective chemical dosages, inconsistent dosing, no monitoring and remedial intervention, problem with process control/SCADA system)
- Lack of maintenance (e.g. ineffective regeneration of bed, ineffective cleaning of membranes)
- Poor design (e.g. inappropriate treatment system)

OTHER

- Source water has low or high pH (e.g. source water is soft and acidic or hard)
- No stabilization/pH adjustment process at water treatment plant (e.g. no lime dosing equipment, no limestone contactors)
- No chemicals for stabilization/pH adjustment (e.g. lime not available)
- Incorrect/inappropriate chemicals for stabilization (e.g. chemicals used not suitable for water type)
- Contamination (e.g. dissolution of calcite from new cement concrete pipes, infiltration or seepage from other water sources)
- Lack of maintenance (e.g. blocked lime dosers/limestone contactors)
- Poor design (e.g. inappropriate treatment system, dead ends in distribution network)
- No filtration at the treatment plant (e.g. no slow sand or rapid filters)
- Poor process control (e.g. inappropriate filter runs, no monitoring and remedial intervention, problem with process control/SCADA system)
- Contamination (e.g. from pipe breaks and bursts, from repairs to network, infiltration or seepage)
- Lack of maintenance (e.g. filters not backwashed, reservoirs and pipes not cleaned/flushed, foreign objects not removed from open reservoirs)
- Poor design (e.g. inappropriate filter for water type and quality, open reservoirs, dead ends in network)
- Financial management constraints
- Failure to collaborate (all the necessary stakeholders)
- Lack of capacity and resource to respond to the community needs
- No disinfection (e.g. no chlorine dosing, no ozone dosing, no UV system)
- No/little residual chlorine or low level of residual chlorine (e.g. chlorine not added at plant, residual chlorine below 0.2 mg/L at point of consumption)
- Contamination (e.g. from pipe breaks and bursts, from repairs to network, infiltration or seepage from a contaminated source, sewage near groundwater sources, contamination from pit latrines/septic tanks, rubbish and faecal matter around standpipes)
- Lack of maintenance (e.g. reservoirs and pipes not cleaned/flushed)
- Poor design (e.g. long retention times in reservoir and distribution network, open reservoirs, large reticulation network with no additional chlorine dosing at reservoirs)
- Lack of maintenance (e.g. reservoirs and pipes not cleaned/flushed)
- No chlorination process at the treatment plant (e.g. no disinfection, use of UV or ozone for disinfection)
- No chemicals for chlorination (e.g. chlorine gas, hypochlorite, etc not available)
- Poor process control (e.g. ineffective chlorine dosages, no monitoring and remedial intervention, problem with process control/SCADA system)
- Long retention times (e.g. in reservoirs, distribution network)

5. SAMPLING PROGRAMME

Milk and water samples will be collected twice monthly.

WATER SAMPLE	FREQUENCY	NUMBER	EST. COST OF ANALYSES	EST. COST OF ANALYSES PER YEAR	SAMPLING POINT
Potable treated water	Monthly	36 x R620.00	R 29 760.00	R 267 840.00	Municipal reticulation
Effluent	Quarterly	16 x R620.00	R 9 920.00	R 39 680.00	Sewerage works
Chemical	Quarterly	16 x R920.00	R 14 720.00	R 58 880.00	Boreholes, municipal reticulation
Water sources	Monthly	16 x R620.00	R 9 920.00	R119 040.00	Fountains, dams. Reservoirs, etc.
Recreational	Seasonal	16 x R620.00	R 9 920.00	R 59 520.00	Swimming pools
			TOTAL	**R 544 960.00**	

6. FINANCIAL IMPLICATIONS

R450 000.00 has been budgeted for sample testing of both food (Including milk samples) and water samples. Challenges in securing accredited laboratories to do the analyses resulted in severe under-spending and therefore that amount has been reduced to R250 000.00 during the budget review in February 2013. The Dairy Standard Agency has meanwhile been secured for milk sample analyses, subject to the signing of a Service Level Agreement by the Municipal Manager and the Groundwater Studies laboratory at the University of the Free State for water sample analysis.

7. REPORTING FRAMEWORK

The Water Information System of the Department of Water Affairs will be used as primary mechanism for the reporting of sampling performances. The Thabo Mofutsanyana District will eventually have its own database developed on the existing DWAF water information system. Marketing of database information system will then take place.

Monthly reports

As requested by the Provincial Health Department and DWAF, feedback on the status of the drinking water quality will be reported on a monthly basis to the Province. The water services authorities such as the municipalities will be requested to submit drinking water quality reports monthly to this Department.

The monthly reports to the Province will include:

- Feedback on status of the drinking water quality in Thabo Mofutsanyana District Municipality.

- Attention will be given to the areas where the quality of the water is unacceptable or unfit for human use.
- Complaints received from municipalities and residents will be reported.
- Plans of action will also be provided.

8. COMMUNICATION STRATEGY

Communication lines are essential in any management and intervention strategy. clarity.

Wilge Forum

Officials from this Department are members of the Wilge Forum which consists of officials from Dept. of Health (DoH), DWAF, Dept. of Environment Affairs and Tourism, Local Municipalities and Water Boards. Municipal managers as well as the technical directors of the municipalities are invited to participate.

9. INTERVENTION

The Department will intervene in the areas that are identified as persistent problematic areas (red areas) by collecting samples to verify the results and provide technical support to the municipalities where necessary. Legal intervention in areas where the reports indicated that no improvements were made in the quality of the drinking water will have to be an alternative after persistence of non-compliance and non-adherence.

Complaints and non-compliance

Handling of complaints by the community

- Complaints needs to be submitted to the municipal manager.
- If the municipal manager does not react, the complaint should be forwarded to the Provincial Department of Health
- If not satisfied, then the regional office of DWAF will intervene.

Non-compliance protocol

In areas where the municipality is not complying with the SANS standards, the following non-compliance protocol is suggested:

- Inform the Municipal Manager of non-compliance with a letter.
- If the municipal manager does not provide feedback within specified timeframe, a letter will be forwarded to the Provincial Department of Health for action and intervention.
- Inform DOH and DWAF immediately of non-compliance and action plans.

10. FUTURE INITIATIVES

1. Extending Frequency of Sampling

With reference to SANS 241:2006, the suggested minimum number of samples is the following as shown in Table 2. (Water works final sample).

POPULATION SERVED	FREQUENCY [a] min
More than 100 000 25 001 – 100 000 10 001 – 25 000 2500 – 10 000 Less than 2500	10 every month per 100 000 of population 10 every month 3 every month 2 every month 1 every month
[a] During rainy season, sampling should be carried out more frequently	

The Thabo Mofutsanyana District Municipality reflects the following population number and thus the required frequency of sampling for drinking water as shown in Table 3.

Area	Population Total in 2011	Number of samples
Thabo Mofutsanyana	721 508	10 per 100 000

(Table 2.1.1 Population distribution in Thabo Mofutsanyana (Source: Statistics South Africa, 2011)

Local municipality	Census 2011	Samples (10/100 000)
Maluti-a-Phofung	329 848	33
Dihlabeng	124 762	13
Setsoto	110 686	12
Phumelela	47 043	5
Nketoana	59 171	6
Mantsopa	49 998	5
TOTAL	**721 508**	**74**

2. Implimentation of GIS

- Mapping of water sources in relation to point of diffused pollution courses need also to be embarked on as a means to improve decision making
- Linking primary health care statistics (diarrhoea) and water sampling results on mapping system to improve decision making.