CLEAN STREAM
BIOLOGICAL SERVICES (PTY) LTD

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COMPANY PROFILE OF CLEAN STREAM BIOLOGICAL SERVICES (PTY) LTD

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BUSINESS SUMMARY

Clean Stream Biological Services specializes in biological monitoring (biomonitoring) of aquatic ecosystems, aquatic biodiversity specialist studies, biodiversity management plans, bioaccumulation studies and various other environmental specialist studies.

MAIN ACTIVITIES

Various industry-accepted and scientifically credible rapid biomonitoring protocols, such as the South African Scoring System (SASS5), fish population studies, diatoms, toxicity testing are applied by Clean Stream Biological Services to assess the condition or health and the overall biological diversity of aquatic ecosystems. These services are especially supplied to the mining sector to ensure compliance to their water use licence (WUL) monitoring requirements. Specialist at Clean Stream Biological Services also provide detailed specialist input for fish and invertebrate specialist components of the Reserve Determination process.

Clean Stream Biological Services furthermore specialises in the compilation of biodiversity assessments and the compilation of biodiversity management plans (BMPs), especially for the mining sector.

COMPANY STRATEGY

Purpose: To be a leading and respected service provider in all biomonitoring and biodiversity monitoring and management techniques.

Vision: To apply existing and develop innovative new or customised environmental measurement technologies, so that anthropogenic impacts can be accurately identified, monitored, mitigated or prevented.

Mission statement: To build long-term relationships with our clients and become experts on the particular risks that their operations may pose to the environment. To assist with the management of these risks through exceptional customer service, innovation, creativity, integrity and ethical behaviour so that our service exceeds all expectations. To build long-term relationships with the regulatory authorities and affected parties so that our scientific findings and recommendations are trustworthy and legally compliant as required from independent environmental practitioners.

Goals: We aim to develop site-specific environmental monitoring technologies with which each client can manage their particular impact on the environment in a manner that withstands national and international scrutiny. We aim to utilise advances in computer technology to optimise the interpretation and processing of large datasets in conjunction with other monitoring technologies and techniques. Scientifically credible findings will then be conveyed to our clients in logical and understandable reports that will satisfy government expectations and also ensure legal compliance.

OUR TEAM

Clean Stream Biological Services is home scientists with an in-depth scientific understanding of each field of specialization with qualifications ranging from Ph.D. to B.Tech. degrees. All scientists responsible for biomonitoring programmes are DWS-accredited SASS5 practitioners while senior scientist and management are also registered professional scientists with the South African Council for Natural Scientific Profession (SACNASP). Our team, with a combined experience of over 40 years in the field of environmental monitoring, has a hands-on and focussed approach for each project.

ECOSYSTEM INDICATOR APPROACH

An understanding of the condition of environmental systems can only be reached if appropriate measurements are made and interpreted correctly. The difficulty is that the various components of the environment cannot be viewed in isolation, as they act together as part of an integrated whole. We can therefore not manage the environment without first understanding this integrated unity and our interactions with it.

Ecosystem condition or health can be understood by investigating the interaction between all of its physical, chemical and biological components. However, due to ecosystem complexity, high costs and incomplete knowledge, it is usually not feasible to investigate all ecosystem components for an understanding of its integrated unity.

Ecosystem indicators, which may include macro-invertebrate, fish and diatom indices, can thus be applied as indicators of overall ecosystem health. A range of additional indicators and specialised survey techniques are also applied to investigate biological diversity.

These indicators, or rapid assessment techniques, can be used in addition to, and in concert with, physical and chemical measurements to gain an understanding of the processes involved in environmental degradation.

BIOMONITORING ASSESSMENTS

The range of biomonitoring assessments applied by Clean Stream Biological Services include the following:

- **Bioassessments** that include ecological surveys of the functional and structural aspects of biological communities.
- **Toxicity bioassays** that involve laboratory-based methodologies to investigate and predict the effect of compounds on test organisms.
- **Behavioural bioassays** to explore in-stream sub-lethal effects on fish and macro-invertebrates, when exposed to contaminants.
- **Fish health studies** to provide an accurate indication of overall ecosystem health.
- **Bioaccumulation studies** that involve investigations into the increase of chemical concentrations in biological organisms over time.

BIODIVERSITY ASSESSMENTS

Clean Stream Biological Services has developed an innovative methodology for the assessment and management of biodiversity within the highly modified landscapes that are frequently associated with large mining operations.

This methodology includes the application of a number of techniques for the repeated observation of the various components of biological diversity.

Various biodiversity management units are then identified and presented on interactive maps, together with management actions specific to each unit.

We specialise in biodiversity assessments and the compilation of biodiversity management plans using a number of associated specialist sub-contractors. These specialist studies may include botanical surveys, alien plant control programs, terrestrial fauna studies (mammals, birds, reptiles, amphibians), aquatic fauna studies (fish and invertebrates) and biodiversity threat audits. The main objective of such a biodiversity management plan is to provide our clients with recommendations for integrated biodiversity management.