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UNIMAC ENVIRONMENTAL DIVISION

ISO 9001:2015 SGS
UKAS QUALITY MANAGEMENT
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The world we live in is advancing to an inflexion point of enlightenment and awareness, allowing us to recognize the environmental impact construction has on the world. In full awareness of its responsibilities as a good corporate citizen, identifying the environmental problems as material issues, UNIMAC Environmental Division will make every effort to ensure all our projects are executed with a sense of social responsibility and in an eco-friendly manner. While the reality of a world filled with industrial and construction equipment remains, we can always try to counter any undesirable effects on the environment and even enhance it.

From this belief stemmed the UNIMAC Environmental Division, a division that not only undertakes the supervision of general construction works but also executes renovation works and rehabilitation projects.

ACTIVITIES

Supervision of General Construction Works

- Pre and post-construction/disturbance assessments
- Project management methodology and execution in the area of project planning, budgeting, scheduling, risk management, communication, and quality control

Rehabilitation and Renovation of Sites

The process of overseeing a rehabilitation project includes several stages and processes. These begin with environmental site assessments, including:

- Water analysis
- Sediment analysis
- Tracing and tracking of sewage leakages
- Habitat assessments of animals
- Assessing shorelines and the current blockage caused by structures built (should there be a shoreline involved)

DIFFERENT ANALYSES

Water Analysis

A general description of the significance of water quality tests:
Testing may be categorized into physical, chemical, biological Toxicity and microscopic categories.

Physical/Aesthetic parameters

Physical tests indicate properties detectable by the senses such as colour, turbidity, odour and taste. Total solids, dissolved solids, suspended solids are recorded for evaluation of these parameters. The presence of minerals such as iron or manganese affects the colour of water or substances such as algae and weeds. Colour tests indicate the efficacy of the water treatment system.

Turbidity in water is caused by suspended solids and colloidal matter. Testing is done to determine whether sewage solids are present. It is also relevant to know the size of the suspended solids as they may encase these toxic sewage solids allowing them to escape the disinfection of chlorine.

Odours and taste tend to be the result of the presence of living microscopic organisms, decaying organic matter such as weeds or algae, or industrial wastes containing ammonia, phenols, halogens, hydrocarbons.

Physiochemical analysis

Chemical tests are done to determine the amounts of mineral and organic substances that affect the quality of water. Among these tests are the water pH levels, hardness, toxic chemicals presence, biocides, C.O.D (Chemical Oxygen Demand) and B.O.D (Biological Oxygen Demand).

pH is a measure of the acidity or alkalinity of water. It indicates whether there is a high concentration of hydrogen ions. Values of 9.5 and above indicate high alkalinity while values of 3 and below indicates acidity. Low pH values help in effective chlorination but cause problems with corrosion and do not support life in the marine environment.
C.O.D. measures the amount of oxygen required to oxidize or break down pollutants (organic matter) in water. It gives an assessment of the effect of discharged sewage on the environment

B.O.D. represents the amount or quality of oxygen that is consumed in aerobic processes of decomposable organic materials. High B.O.D. means that there is less oxygen to support life and hence increased pollution.

Biological Toxicity analysis

Bacteriological tests show the presence of bacteria, characteristic of faecal pollution.

Sediment Analysis

Sediment analysis is primarily based on the identification of heavy minerals and clay minerals. It provides information on the mineralogical and chemical composition of the sediments, giving us insight into the trace elements accumulated and absorbed in these urban environments that are derived by human activities.

- Sediment Sampling is conducted to find the number of:
- Total Petroleum Hydrocarbons
- Faecal Coliforms
- Heavy metals, arsenic, mercury, cadmium, copper and lead
- Nutrients
- Polycyclic aromatic Hydrocarbons

Water dye tracing

Water tracer dye tests are performed in a variety of applications. Among these are difficult-to-locate underground leaks in residential sewer & septic systems, municipal sewage & wastewater treatment centres, and industrial liquid waters or sewage discharged into bodies of water. These can be easily identified using these fluorescent dyes and a fluorometric UV ultraviolet measuring device.

Once the source of contamination is known, steps can be taken to remedy and rectify the problem.

TREATMENT

Enzyme Treatment

Bioremediation uses living organisms, like microbes and bacteria, to remove contaminants, pollutants, and toxins from soil, water, and other environments. It employs enzymes to clean up oil spills or contaminated groundwater.

Enzymes serve as an ideal method for water treatment due to their non-toxic, non-corrosive, and environmentally benign properties. They can break down and treat agents, pesticides or other chemical contaminants in drinking water systems, as well as decontaminate pipes and other equipment with contaminant residue.

Technical and Sustainable Treatment

To complement the treatment of water and soil, technical treatment is used to ensure a sustainable solution on site. Such solutions include:

- Dredging and inlets cleaning
- Mechanical water pump and valves – work on pump installation soil works
- Building and installing water waters with pumps for water inflow and outflow for closed bodies of water.

Methods of Sampling and Evaluation

The selection of surface-water sampling and groundwater sampling is taken according to requirements.

Surface water samples will typically be collected either by directly filling the container from the surface water body being sampled or by decanting the water from a collection device such as a stainless-steel scoop or other device.

Methods of groundwater sampling include using a jar to collect groundwater from an excavation or trench made with a backhoe or excavator. Other samples can be collected using a drilling rig.

Methods of evaluation of a body of water include boat surveys & ROV or dropdown video providing recordings with GPS coordinates and topographic bathymetric surveys. Bathymetric surveys allow us to measure the depth of a body of water as well as map the underwater features.

QUALITY CONTROL

Throughout all our processes and analyses, quality assurance and quality control are upheld strictly.

Sampling points are selected such that the samples taken are representative of the different sources from which water is obtained by the public or enters the system.
In a piped distribution, sampling points are uniformly distributed. And they are chosen to fully represent the entire system.

The time factor between sample collection and arrival at the laboratory for analysis is also critical. In general, it should not exceed 6 hours, up to 24 hours maximum. Plus, they should be transported in a lightproof, insulated box with an ice pack to ensure cooling.

PROJECT IMPACT ANALYSES – REPORTS AND RECOMMENDATIONS

After all, analyses are completed, reports with results will be provided along with recommendations of remedies of the site in question. Such recommendations may include enzyme treatment, elimination of algae, dredging, sludge removal, inlet cleaning, and controlled discharge. Other complementary solutions to bodies of water include installing pipes and pumps, aeration diffusers, and mixing systems.

BEAUTIFICATION

Finally, we provide site beautification, to enhance the overall experience and ambience of the site for all residents and visitors. Examples of such beautification include water fountains, improved lighting, and all surrounding landscape.

All such applications will be done with a “Green” impact requiring low maintenance and operational costs.

OUR PROJECTS

CLIENT: SAMF – SAUDI AUTOMOBILE AND MOTORCYCLE FEDERATION
PROJECT: Jeddah Corniche Lagoon 2
DESCRIPTION: Environmental assessment and rehabilitation for the Lagoon and enhancement work.
PROJECT VALUE: SAR 9,085,000


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