# OLKARIA I UNIT 1, 2 & 3 REHABILITATION PROJECT
## Environment and Social Monitoring Form

Appendix 6

**The latest results of the below monitoring items shall be submitted to JICA as part of attachment to Progress Report on once at Pre-construction phase and on quarterly basis at Construction Phase, and on annually basis at Operation Phase. The items, standards for contract, measurement points, and frequency for each monitoring parameter are established based on the ESIA Report. Should there be any changes to the Original plan, such change shall be reviewed and evaluated by the environmental consultant.**

**(1) General**

**1)Phase of the Project**

**- Please mark the current phase.**

**□Pre-Construction Phase ☑Construction Phase □Operation Phase**

The contract for Olkaria I Unit 1, 2 & 3 Rehabilitation Project awarded to **SEPCO III Electric Power Construction Co. Ltd**. The work commenced with effect from 3rd August 2023.

**2) Obtainment of Environmental Permits**

| Name of permits | Expected issuance date | Actual issuance date | Concerned authority | Remarks (Conditions, etc.) |
|---|---|---|---|---|
| Water abstraction permits for Olkaria | The Permit for commercial/industrial surface water abstraction for Olkaria issued on 24th November 2022. | Water abstraction Permit No. WRMA/20/NSA/2GD/22/S for abstraction of 8,000 $m^3$/day of water for commercial & industrial use issued on 24th November 2022, valid for five (5) years with effect from date of issuance (Attachment 1) | Water Resources Authority (WRA) | Valid permit in place |
| EIA license | Valid EIA license in place prior to commencement of the project. | EIA license no. NEMA/EIA/PSL/1582 issued on 22nd May 2015 for rehabilitation of Olkaria I 45MW Geothermal | National Environment Management Authority | -Compliant. EIA license issued prior to commencement of the project.<br>-Compliance to EIA license conditions and ESMP. |

| Name of permits | Expected issuance date | Actual issuance date | Concerned authority | Remarks (Conditions, etc.) |
|---|---|---|---|---|
| | | power plant and decommissioning of various components of the old power plant (Attachment 2a). EIA license valid prior to commencement of work for an additional 24 months with effect from 1st December 2021 (Attachment 2b). | (NEMA) | |
| Certificate of a Workplace Registration | Issued on 8th August 2023 | Certificate of a workplace registration No. NKR3948/08/23/00 issued on 8th August 2023 for a duration of one year. The certificate will expire on 8th August 2024 (Attachment 3). | Directorate of Occupational Safety & Health Services (DOSHS) | Valid certificate of workplace registration in place. |
| **Attached approval letter:**<br>Attachment 1: Surface water abstraction permit for Olkaria Industrial use<br>Attachment 2a: EIA license for Olkaria I -45MW Geothermal power plant issued on 22nd May 2015<br>Attachment 2b: Extension of EIA license validity period for Olkaria I -45MW Geothermal power plant issued on 1st December 2021<br>Attachment 3: Certificate of Registration of a Workplace for Olkaria I Rehabilitation Project | | | | |

**3) Response/Actions to Comments and Guidance from Government Authorities and the Public**

| Monitoring Item | Monitoring Results during Report Period | Duration of Report Period | Frequency |
|---|---|---|---|
| Number and contents of formal comments made by the public | There were no formal comments received from the public or Government agencies. | 1 Day | Upon receipt of comments/complaints |
| Number and contents of responses from Government agencies | | | |

## (2) Monitoring Results

### 1) Air Quality

#### (A) Hydrogen Sulphide gas

| Location | Item | Unit | Measured Value (Mean) | Measured Value (Max.) | Country's Standard | Standards for Contract | Referred International Standard | Frequency | Method | Note (Reason of excess of the standard) |
|---|---|---|---|---|---|---|---|---|---|---|
| Residential Area (Olomayiana village) | $H_2S$ | ppm | 0.030 | 0.100 | 0.1 | | 0.1*(/24h) | Weekly | Using gas detectors | $H_2S$ gas limit not exceeded. |
| Workers Area (Ejector) | $H_2S$ | ppm | 0.100 | 0.200 | 10 | | 10**(/24h) | Weekly | Using gas detectors | $H_2S$ gas limit not exceeded. |

*) WHO Hydrogen Sulphide Guideline for ambient air quality

**) WHO Hydrogen Sulphide Guideline for worker

#### (B) Sulfur Dioxide

| Location | Item | Unit | Measured Value (Mean) | Measured Value (Max.) | Frequency | Method | Remarks |
|---|---|---|---|---|---|---|---|
| Residential Area (Olomayiana village) | $SO_2$ | ppm | 0 | 0 | Quarterly | Using gas detectors | $SO_2$ limits not exceeded |
| Workers Area (Ejector) | $SO_2$ | ppm | 0 | 0 | Quarterly | Using gas detectors | $SO_2$ limits not exceeded |

#### (C) Carbon Monoxide

| Location | Item | Unit | Measured Value (Mean) | Measured Value (Max.) | Frequency | Method | Remarks |
|---|---|---|---|---|---|---|---|
| Residential Area (Olomayiana village) | CO | ppm | 0 | 0 | Quarterly | Using gas detectors | CO limits not exceeded |
| Workers Area (Ejector) | CO | ppm | 0 | 0 | Quarterly | Using gas detectors | CO limits not exceeded |

**(D) Carbon Dioxide**

| Location | Item | Unit | Measured Value (Mean) | Measured Value (Max.) | Frequency | Method | Remarks |
|---|---|---|---|---|---|---|---|
| Residential Area (Olomayiana) | $CO_2$ | % | 11.9 | 11.9 | Quarterly | Using gas detectors | $CO_2$ limits not exceeded |
| Workers Area (Ejector) | $CO_2$ | % | 11.9 | 11.9 | Quarterly | Using gas detectors | $CO_2$ limits not exceeded |

**(E) Methane**

| Location | Item | Unit | Measured Value (Mean) | Measured Value (Max.) | Frequency | Method | Remarks |
|---|---|---|---|---|---|---|---|
| Residential Area (Olomayiana) | $CH_4$ | ppm | 0 | 0 | Quarterly | Using gas detectors | Within national standards |
| Workers Area (Ejector) | $CH_4$ | ppm | 0 | 0 | Quarterly | Using gas detectors | Within national standards |

**(F) Total Suspended Particles**

| Location | Item | Unit | Measured Value (Mean) | Measured Value (Max.) | Frequency | Method | Remarks |
|---|---|---|---|---|---|---|---|
| Residential Area (OloMayiana village) | TSP | $\mu g/m^3$ | 12 | 30 | Weekly | Using particulate matter in air analyzer equipment | -According to Environmental Management and Coordination (Air Quality) Regulations of 2014, the ambient air quality tolerance limit for Total Suspended Particles over a 24-hour time weighted average at residential areas is 200 $\mu g/m^3$. The average level does not exceed the limit. |
| Workers Area (Ejector) | TSP | $\mu g/m^3$ | 4 | 8 | Weekly | Using particulate matter in air analyzer equipment | -According to Environmental Management and Coordination (Air Quality) Regulations of 2014, the ambient air quality tolerance limit for Total Suspended Particles over a 24-hour time weighted average at industrial areas is 500 $\mu g/m^3$. The measured average levels do not exceed this limit. The maximum exceeding the limit was due to dry weather conditions experienced over the period. |

**Complaints from Residents**

**- Are there any complaints from residents regarding air quality in this monitoring period? □Yes, □No**

**If yes, please describe the contents of complains and its countermeasures to fill in below the table.**

| Contents of Complaints from Residents | Countermeasures |
|---|---|
| N/A | N/A |

## 2)Water Quality

**Measurement Point: Important water body**

**- Are there any effluents to water body in this monitoring period? □Yes, □No**

**If yes, please attach "KenGen Analysis Data Form for Effluent Quality Analysis" and fill in the items not to comply with NEMA Guideline (Environmental Management and Coordination (Water Quality) Regulations of 2006.**

**(A) Effluent Water Quality (Outlet)**

| Location | Item | Unit | Measured Value (Mean) | Measured Value (Max.) | Country's Standard | Standards for Contract | Referred International Standard | Frequency | Method | Note (Reason of excess of the standard) |
|---|---|---|---|---|---|---|---|---|---|---|
| | TSS | mg/L | | | 30* | | - | Monthly | Sampling | |
| | COD | mg/L | | | 50* | | - | Monthly | Sampling | |
| | BOD | mg/L | | | 30* | | - | Monthly | Sampling | |
| | DO | mg/L | | | None | | - | Monthly | Sampling | |
| | pH | - | | | 6.5-8.5* | | - | Monthly | Sampling | |
| | Oil | mg/L | | | Nil* | | - | Monthly | Sampling | |

*) Environmental Management and Co-ordination (Water Quality) Regulations, 2006

**NB: There was no effluent discharge from the project site.**

**(B) Local Drinking Water Supply Source (Ambient) –** Refer to Attachment 4

| Location | Item | Unit | Measured Value (Mean) | Measured Value (Max.) | Country's Standard | Standards for Contract | Referred International Standard | Frequency | Method | Note (Reason of excess of the standard) |
|---|---|---|---|---|---|---|---|---|---|---|
| Olkaria I Rehabilitation Project (Sepco III) | TSS | mg/L | 6 | | 30* | | - | Quarterly | Sampling | |
| | COD | mg/L | 32 | | None | | - | Quarterly | Sampling | |
| | BOD | mg/L | 12 | | None | | - | Quarterly | Sampling | |
| | DO | mg/L | 7.3 | | None | | - | Quarterly | Sampling | |
| | pH | pH Scale | 8.3 | | 6.5-8.5* | | - | Quarterly | Sampling | |
| | Oil | mg/L | Nil | | None | | - | Quarterly | Sampling | |

*) Environmental Management and Co-ordination (Water Quality) Regulations, 2006

**(C) Important Water Bodies (Ambient) –** Refer to Attachment 4

| Location | Item | Unit | Measured Value (Mean) | Measured Value (Max.) | Country's Standard | Standards for Contract | Referred International Standard | Frequency | Method | Note (Reason of excess of the standard) |
|---|---|---|---|---|---|---|---|---|---|---|
| Lake Naivasha | TSS | mg/L | 12 | | 30* | | - | Quarterly | Sampling | |
| | COD | mg/L | 44 | | None | '' | - | Quarterly | Sampling | |
| | BOD | mg/L | 18 | | None | '' | - | Quarterly | Sampling | |
| | DO | mg/L | 7.6 | | None | | - | Quarterly | Sampling | |
| | pH | - | 8.5 | | 6.5-8.5* | | - | Quarterly | Sampling | |
| | Oil | mg/L | Nil | | None | | - | Quarterly | Sampling | |

*) Environmental Management and Co-ordination (Water Quality) Regulations, 2006

## 3) Water Use

| Usage | Unit | Amount Permitted by WRA | Pumped Amount | Reused Amount | Total Water Usage | Measured Frequency | Measured Method | Note (Reason of excess of the standard) |
|---|---|---|---|---|---|---|---|---|
| Industrial | $m^3$ | 8,000 $m^3$/day (720,000 $m^3$ for 3 months) | 464 $m^3$ | N/A | Total water consumed (Apr-May-June 2024): **464 $m^3$** | Monthly | Installed flow meters | Water used during the period under review was within the limits permitted by Water Resources Authority (WRA) |
| Domestic | $m^3$ | 796 $m^3$/day | | | - | | | Water for domestic use is limited to the staff quarters. |
| Other | $m^3$ | | | | - | | | |

| Item | Monitoring Results during Report Period | Note (issues to be arisen and its measures, if any) |
|---|---|---|
| **Hydrology** (Lake Levels) | The Lake Naivasha water levels readings for the months of April, May and June 2024 were 1889.727, 1891.011 and 1891.161 meters above sea level (masl), respectively. | Water Resources Authority (WRA) in Kenya restricts water abstraction if lake Naivasha levels fall below 1885.3 masl. The recorded values were within the allowable levels that allows for maximum abstraction as per the WRA permit. |

## 4) Noise

**Noise Level**

| Location | Item | Unit | Measured Value (Mean) | Measured Value (Max.) | Country's Standard | Standards for Contract | Referred International Standard | Frequency | Method | Note (Reason of excess of the standard) |
|---|---|---|---|---|---|---|---|---|---|---|
| Residential Area (Olomayiana village) | Leq (day) | dB(A) | 43.6 | 45.6 | 50 (6am-6pm)* | | 55 (6am-10pm)*** | Weekly | Spot measurement using noise meter | Average noise levels do not exceed the limit. |
| Residential Area | Leq (night) | dB(A) | N/A | N/A | 35 (6am-6pm)* | | 45 (10pm-6pm)*** | - | - | - |
| Workers Area (Ejector) | Leq (day) | dB(A) | 51.3 | 57.8 | 85 (8hrs)** | | - | Weekly | Spot measurement using noise meter | Average noise levels do not exceed the limit. |

*) Environmental Management and Coordination (Noise and Excessive Vibration Pollution Control) Regulations of 2009 for Residential Area (Outdoor)

**) Occupational Safety and Health Act (OSHA) 2007 for Worker (8 hrs)

***WHO Noise Guideline for Residential Area (Outdoor)

**Complaints from Residents**

**- Are there any complaints from residents regarding noise in this monitoring period? □Yes, □No**

**If yes, please describe the contents of complains and its countermeasures to fill in below the table.**

| Contents of Complaints from Residents | Countermeasures |
|---|---|
| There were no complaints regarding noise during the monitoring period. | N/A |

## 5)Solid Waste

**Measurement Point: Disposal Sites for Sludge (including drilling mud)**

**- Are there any wastes of sludge in this monitoring period? □Yes, □No**

**If yes, please report the amount of sludge and fill in the results of solid waste management Activities.**

| Item | Generated from | Unit | Value | Solid Waste Management Activities |
|---|---|---|---|---|
| Cementitious & Concrete Wastes | Power plant concrete demolitions | kgs | 12,000 | Back Fill @ X2 quarry |
| Used oil | Cooling tower fans gear boxes and vacuum pumps | litres | 300 | Contained in drums at site awaiting final disposal by a licensed used oil handler |
| Calcium Silicate | Cooling tower operation(condensation) | kgs | 7,000 | Contained in waste containment area waiting disposal |
| Rock Wool | Steam line insulation | kgs | 100 | Contained in waste containment area waiting disposal |
| Wooden Debris | From the cooling tower structure demolition | kgs | 1,000 | Contained at laydown for consideration to re-use |
| Timber | From the cooling tower structure demolition | kgs | Nil | Contained at laydown area for re-use |
| Plastic Wastes | Packaging material | kgs | 100 | Kayole Dumpsite |
| Scrap Metals | Power plant structures demolitions | kgs | 120,000 | Contained at laydown area |
| General Solid Wastes | Project operations | kgs | 8,00 | Kayole Dumpsite |
| Bio-hazardous waste | First aid and other medical processes | kgs | 0 | Naivasha Sub-County Hospital Incinerators |

## 6)Soil erosion

| Item | Monitoring Results during Report Period | Note (issues to arise and its measures, if any) |
|---|---|---|
| Soil erosion | -Contractor to ensure proper environmental management to reduce the risk of erosion throughout the project period<br>-Contractor to ensure proper environmental management during canteen and new office construction works<br>-Contractor to ensure proper environmental management during access road construction works | • Dust suppression mechanisms were in place during the works including the provision of water bowser<br>• Stockpiling of excavated soil in an unauthorized site during construction works. The contractor was advised to relocate the soil to a designated site and reuse the soil for rehabilitation.<br>• The contractor has been informed of restoration of affected areas during construction of access roads.<br>• The Contractor has been advised on oil spill containment measures |

## 7)Public Safety

| Item | Unit | Value | Notes |
|---|---|---|---|
| Use of PPEs | No. | All workers | -Use of appropriate by the workers of PPEs (e.g. helmets, hand gloves, safety shoes, goggles, overalls)) depending on the nature of work was implemented at the site. |
| Accidents/Incidents/Near Misses | No. | 0 | During the reporting period, there was no accident/incident recorded at the site.<br>No. of fatal accidents = 0; no. of non-fatal accidents = 0; No. of near misses = 1; No of fire incidents = 0; No. of first aid cases = 2; No. of Medical treatment = 0; Risk assessments = 1; No. of tool box meetings = 118; HSE meetings = 5 |
| Use of work permits | No. | - | -Use of permits to work for working at height, electrical works, confined spaces among others was implemented. |
| Sanitation | No. | 7 | An ablution block was in place with 5 toilets for males and 2 for females at the site. The female toilets had sanitary bins. The contractor had provided a septic tank and a soak pit for the management of toilet waste. In addition, 2 mobile toilets had been provided for the team working in the Steamfield. |

## 8)Protected Areas and Ecosystems

| Item | Monitoring Results during the Report Period | Note (issues to be arisen and its measures, if any) |
|---|---|---|
| Flora (both in and around the HG National Park) | • Controlled clearance of vegetation within and outside Hell's Gate National Park during construction works.<br>• Control of invasive plant species within the project area | • The Contractor complies with conservation measures and has committed to planting four trees for any tree that is affected in the project.<br>• The outstanding sections are a work in progress and the contractor is undertaking the control |
| Fauna (both in and around the Hell's Gate National Park) | • Proper signage and park rules in place<br>• The contractor creates awareness on observation of park rules and regulations as well as the park's ecosystem management plan | • Continuous awareness on speed limit at 40km/hr and observation of the park rules.<br>• A wildlife conservation and environmental awareness session was conducted by KWS to further enhance compliance. |
| Landscape | • Landscaping and rehabilitation to be done along the cross-country pipelines. | • Clearance of vegetation has not taken place |

## 9)Social considerations and others (excluding resettlement and livelihood restoration)

| Item | Monitoring Results during Report Period | Note (issues to be arisen and its measures, if any) |
|---|---|---|
| Working Condition | Work is executed as per the required labour standards | |
| Employment and economic opportunities | • For amicable co-existence with the local communities and other stakeholders, a Stakeholders Coordination Committee (SCC) for Olkaria I Rehabilitation Project has been formed and operationalized, comprising of three sub-committees namely Employment, Economic Opportunities and Environment & Culture.<br>• Within the reporting period, twelve (12) skilled and twenty (20) unskilled workers were engaged through the established SCC mechanism.<br>• The local communities were operating six (6) food kiosks as part of economic opportunity during the reporting period.<br>• The contractor hired from the community through SCC one 40-seater bus for transportation of workers to/fro construction site. | |
| Infectious disease | None | |
| Misdistribution with unfair distribution of benefits and damages | There is fairness in the distribution of benefits such as available economic opportunities and employment through the established Stakeholder Coordination Committee. | - |

**(End)**

## Attachment 1: Surface Water Abstraction Permit for Olkaria Industrial Use

# WATER RESOURCES AUTHORITY

**Lakes Nakuru-Naivasha Sub-Basin Area**
Within the Deputy County Commissioner's Offices
P.O. Box 1577-20117
NAIVASHA

Tel: +254758415711
Email:naivashawra@gmail.com
Website: www.wra.go.ke

**Ref:** WRMA/20/NSA/2GD/22/S **Date:** 7th December, 2022

KENGEN
P. O. Box 785 - 20117,
**NAIVASHA.**

**RE: SURFACE WATER PERMIT NO. *WRMA/20/NSA/2GD/22/S* TO ABSTRACT WATER FROM LAKE NAIVASHA: LR NO. 8399: OLKARIA VILLAGE: HELLSGATE LOCATION: NAIVASHA DIVISION : NAIVASHA DISTRICT.**

This is to inform you that following your application for surface water permit, you have been issued with surface water permit Ref. No. *WRMA/20/NSA/2GD/22/S* of date 24th November , 2022 expiring on 24th November , 2027 to enable you abstract 8000.0 $m^3$/day to meet your domestic uses only.

In this connection, your attention is drawn to all the conditions which are indicated on the permit under reference.

**NOTE:** Delay in renewal of Water Permit after expiry attracts a penalty of Ksh 500.00 per month.

Please take the necessary action.

for

Edward B. Wekesa
Sub Basin Area Coordinator,
**LAKES NAIVASHA NAKURU SUB BASIN AREA.**

WATER RESOURCES AUTHORITY
LAKES NAIVASHA, NAKURU SUB-REGION
P.O.Box 1577-20117
NAIVASHA

*Copy to: -* Basin Area Coordinator,
Rift Valley Basin Area,
P.O. Box 1600-20100,
**NAKURU.**

**Encl.**

*Accounting for every drop!*

WRA IS ISO 9001:2015 Certified

## Attachment 2a: EIA license for Olkaria I -45MW plant issued on 22nd May 2015

nema
mazingira yetu | uhai wetu | wajibu wetu

**NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY(NEMA)**
**THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT**
**ENVIRONMENTAL IMPACT ASSESSMENT LICENSE**

License No: NEMA/EIA/PSL/1582
Application Reference No: NEMA/EIA/PSR/3162

This is to certify that the Environmental Impact Assessment Project Report received from
**Kenya Electricity Generating Company.**
**P.O Box 47936 - 00100, Nairobi.**
submitted to the National Environmental Management Authority in accordance with the Environmental Impact Assessment & Audit Regulations regarding
**Proposed Rehabilitation of Olkaria Geothermal Power Plant.**

whose objective is to carry on
**Rehabilitation of the Olkaria 1- 45MW Geothermal power plant, and decommissioning of various components of the old plant.**
located at
**Olkaria Geothermal Field, Naivasha, Nakuru County.**
has been reviewed and a license is here by issued for the implementation of the project, subject to attached conditions.

Issue date : **22 May, 2015**

Signature

(seal)

Director-General
The National Environment Management Authority.

P. T. O.

ISO 9001 : 2008 Certified

**Attachment 2b: Extension of EIA license validity period for Olkaria I -45MW Geothermal power plant issued on 1st December 2021**

nema
mazingira yetu | uhai wetu | wajibu wetu

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY(NEMA)
THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT
CERTIFICATE OF VARIATION OF ENVIRONMENTAL IMPACT ASSESSMENT LICENSE

Certificate No: NEMA/EIA/VC/1681
Application Reference No: NEMA/EIA/VEIA/2506

This is to certify that the Environmental Impact Assessment License No
NEMA/EIA/PSL/1582 issued on 5/22/2015
to Kenya Electricity Generating Company (KenGen) PLC.
of
P.O Box 47936 - 00100, Nairobi.
regarding
Proposed Rehabilitation of Olkaria Geothermal Power Plant.
whose objective is
Proposed rehabilitation of Olkaria I - 45MW Geothermal Power Plant and decommissioning of various components of the old Plant.
located at
Olkaria Geothermal Field in Naivasha Sub-County, Nakuru County.
has been varied to
Extension of EIA License validity period by an additional twenty four (24) months subject to the conditions on EIA License No.NEMA/EIA/PSL/1582.
with effect from 01 December, 2021 in accordance with the provisions of the Act.
Date: 01 December, 2021

Signature
(Seal)
Director-General
The National Environment Management Authority.

P.T.O.

ISO 9001: 2015 Certified

## Attachment 3: Certificate of Registration of a Workplace

DOSH 5

S. No. 3948

Certificate No. NKR3948/08/23/00
Date of Issue 08-Aug-23
Date Of Expiry 08-Aug-24

REPUBLIC OF KENYA

THE OCCUPATIONAL SAFETY AND HEALTH ACT, 2007

# CERTIFICATE OF REGISTRATION OF A BUILDING OR A CONSTRUCTION SITE

I hereby certify that the construction site named below has been duly registered in pursuance of sections 44/45(6) of the Occupational Safety and Health Act, No. 15 of 2007 and Rule 6(3) of the Factories and Other Places of Work (Building Operations and Works of Engineering Construction) Rules, 1984.

Name of Contractor: SEPCOIII ELECTRIC POWER CONSTRUCTION CO. LTD

Address: P. O. Box 40076 - 00100 NAIROBI

Name of Site: OLKARI I

Plot No.: UNSURVEYED Street/Road: OLKARI

Town: NAIVASHA County Name: NAKURU

Nature of Work: DEMOLITION OF THE POWER PLAN, CONSTRUCTION & COMMSSIONING

**REG. FEE: KShs. 2000** **OSH FUND: KShs. 3000**

**NOTES**

1. This Certificate is valid only in respect of Contractor and Construction Site named above for the indicated period and should be renewed upon expiry for the remaining duration of the construction works.

2. This Certificate is issued under, and solely for the purposes of the Occupational Safety and Health Act and is without prejudice to the requirements of any other legislation relating to the construction sites.

3. The Contractor must inform the Director after completion of construction works.

## Attachment 4 (a): Water Quality Analysis Results– SEPCO III Drinking Water

NAKURU WATER AND SANITATION SERVICES CO. LTD

Nakuru Water & Sanitation Services Co. Ltd. Government Rd, Nawassco Plaza
Tel: 051- 2212269
Nakuru Water and Sanitation Services Company Ltd
P.O. Box 16314-20100 Nakuru.
Toll Free Line 0800-720036
@Nakuru Water
infor@nakuruwater.co.ke
custcare@nakuruwater.co.ke
www.nakuruwater.co.ke

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### Laboratory Test Report

**Report No: NAWASSCO/TES/187/24** Page...1...of....1

Report date: **July 12, 2024**

1. Description of Sample: **Water (OLKARIA GEOTHERMAL)**
2. Sample Submitted by: **Mr.Kerina**
3. Contact Person: **Mr.Kerina**
4. Customer's Ref. No: **Private**
5. NAWASSCO Sample Ref. No: **301/24**
6. Date of Receipt: **July 08, 2024**
7. Date Analysis Started: **July 08, 2024**
8. Sample Analysis Request Form No: _
9. Customer Address: **P.O Box 785, Naivasha**
10. Parameters tested and method of test as listed below.

| PARAMETER | *TSS(mg/l) | *BOD (mg/l) | *COD (mg/l) | *DO (mg $O_2$ /l) | pH (pH scale) | *Oil and Grease (mg/l) |
|---|---|---|---|---|---|---|
| TEST METHOD | NLTM02_TSS | NLTM08_BOD | NLTM09_COD | DO Meter | pH scale | APHA_5220B |
| LLD | 1.0 | 0.5 | 0.5 | 0.5 | 1-13 | 0.03 |

| RESULTS | | | | | | |
|---|---|---|---|---|---|---|
| SAMPLE NAME | *TSS (mg/l) | *BOD (mg/l) | *COD (mg/l) | *DO (mg $O_2$ /l) | pH (pH scale) | *Oil and Grease (mg/l) |
| OLK 1SEPCO III | 6 | 12 | 32 | 7.3 | 8.3 | Nil |

KEY: LLD=Lowest Limit of Detection; *parameters not accredited

**COMMENTS/REMARKS**
Results are as shown above

WATER QUALITY TESTING LABORATORY
12 JUL 2024

**Ag. Technical Manager – Gilbert Mutai**

**Eliud K. Rotich – Technical Signatory**

## Attachment 4 (b): Water Quality Analysis Results– Lake Naivasha Raw Water

# NAKURU WATER AND SANITATION SERVICES CO. LTD

Nakuru Water & Sanitation Services Co. Ltd.
Government Rd, Nawassco Plaza
Tel: 051- 2212269
Nakuru Water and Sanitation Services Company Ltd
P.O. Box 16314-20100 Nakuru
Toll Free Line 0800-720036
@Nakuru Water
infor@nakuruwater.co.ke
custcare@nakuruwater.co.ke
www.nakuruwater.co.ke

Enriching Life

## Laboratory Test Report

**Report No: NAWASSCO/TES/188/24** Page...1...of....1

Report date: **July 12, 2024**

1. Description of Sample: **Water (OLKARIA GEOTHERMAL)**
2. Sample Submitted by: **Mr.Kerina**
3. Contact Person: **Mr.Kerina**
4. Customer's Ref. No: **Private**
5. NAWASSCO Sample Ref. No: **302/24**
6. Date of Receipt: **July 08, 2024**
7. Date Analysis Started: **July 08, 2024**
8. Sample Analysis Request Form No: _
9. Customer Address: **P.O Box 785, Naivasha**
10. Parameters tested and method of test as listed below.

| PARAMETER | *TSS(mg/l) | *BOD (mg/l) | *COD (mg/l) | *DO (mg $O_2$ /l) | pH (pH scale) | *Oil and Grease (mg/l) |
|---|---|---|---|---|---|---|
| TEST METHOD | NLTM02_TSS | NLTM08_BOD | NLTM09_COD | DO Meter | pH scale | APHA_5220B |
| LLD | 1.0 | 0.5 | 0.5 | 0.5 | 1-13 | 0.03 |

| RESULTS | | | | | | |
|---|---|---|---|---|---|---|
| SAMPLE NAME | *TSS (mg/l) | *BOD (mg/l) | *COD (mg/l) | *DO (mg $O_2$ /l) | pH (pH scale) | *Oil and Grease (mg/l) |
| LAKE NAIVASHA OSERIAN JETTY | 12 | 18 | 44 | 7.6 | 8.5 | Nil |

KEY: LLD=Lowest Limit of Detection; *parameters not accredited

**COMMENTS/REMARKS**
Results are as shown above

12 JUL 2024

**Ag.Technical Manager – Gilbert Mutai**

**Eliud K.Rotich – Technical Signatory**