



Service Brochure



—2019—



Business & Nature! Our Care

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Why ERC ?



Sustainable Service



Services



Recent Key Projects



Recent Clients



Analytical Parameters

| Why ERC?

Envaserv Research Consult (ERC) Ltd. is a 100% indigenous, integrated multi-disciplinary HSE and Social Performance Consultancy and Laboratory Complex providing innovative services to clients, creating shared value beyond compliance. We service key industrial sectors in Ghana and across West Africa.

Incorporated 26th September 2011 under Ghana Companies Act 179.

Registration No. CS323112013 | Tax Identification No. C0002949571.

Member of Ghana Chamber of Commerce and Industry (No. 11/1802/12).

Registered with Petroleum Commission (Permit No: PC/FIGC/0000832/A/04-19R).

ISO 9001:2015

Continuous improvement of our Quality Management Systems (QMS) and processes.





Meet and exceed expectations of customers' requirements and aspirations.

- Customer focus.
- Leadership oriented.
- Participatory/ process/ system approach.
- Continual Improvement.
- Decision Trail.
- Mutualism.

ISO/IEC 17025:2017

General Requirements for the Competence of Testing and Calibration Laboratories, is the international reference for calibration and testing laboratories around the world. Laboratories that are accredited to this international standard have demonstrated that they are technically competent and able to produce precise and accurate test and/or calibration data. Envaserv Research Consult has embraced risk-based thinking approach to a Quality Management System by planning and implementing actions to address both risks and opportunities.

Implementing ISO/IEC 17025:2017 in our laboratory management system is a means to ensure high-efficiency and technical competency in material/ petroleum/ PVT testing. This ensures our testing results are accurate and reliable for mining, petroleum, and other clients can make very informed decision with the results.

ISO/IEC 17025:2017 accreditation has ensured:

- International recognition.
- Sound Management Systems.
- Defects Prevention.
- Increased Accuracy.
- Increased Cost Savings.
- Wastage Reduction.
- Access to Global Marketplace.



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Sustainable Service For Frontier Markets

SDGs

Sustainable Development Goals (SDGs) aim to foster economic growth, ensure social inclusion and protect the environment, especially in frontier markets. Among frontier markets globally, Ghana, "The Gateway to Africa", offers a peaceful sustainable foundation in West Africa and the Continent. ERC is Ghana's interface with Sustainable Development Goals. This makes ERC provide cutting-edge environmental research and testing services for oil & gas, petrochemical, mining and other key sectors.

Oil and Gas

The oil and gas industry is vital to the global economy and many national economies, including in developing and emerging countries. ERC is Ghana's interface for national and transnational oil and gas industry; providing sustainability consultancy, process advisory services, modern laboratories and research facilities. From environmental permitting to reservoir fluid analysis in our modern PVT facilities, ERC is a one-stop-shop.





Oil and Gas

In addition, over ground movement of natural resources via sea, railway, and road requires regulatory liaison, logistics, and engagement. ERC enables and simplifies this for clients with Community Health, Safety, Environmental, and Social Impact Assessments, petitioning and permitting.



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Key Services

Innovative experts, innovative technology. We're driven by results and powered by only the best tools.

Materials Laboratory

We provide materials analytical services that investigate, isolate, and analyze sources of contamination, causes of defects, composition of inclusions, and more.

Offshore and Onshore Surveys

We are experts in surveys of onshore and offshore oil & gas facility; seabed topographic and geophysical surveys, roads, landslides, landfills. ERC maintains expertise for offshore and coastal ecological studies: macrobenthic, fisheries, coastal fauna and flora; mangrove delineation, biodiversity plans and natural capital assessments.

Environmental and Social Management

ERC assist clients to develop Environmental and Social Management Systems in line with IFC & WB commitments to sustainability, defining procedures for identifying, assessing and managing environmental and social risk of financial transactions, defining the decision-making process, and describing roles and responsibilities.

Occupational Safety and Health (OSH)

ERC's occupational safety and health (OSH) covers issues related to social, mental and physical wellbeing of workers through voluntary integration of social and environmental concerns into our decision making. ERC provides HSES-MS Audits, Gap Assessments, Remediation Action Plans, ISO Implementation, in addition to training support from the boardroom – to – field sites, in a nutshell, "Safety First".

Geospatial Studies

Our GIS team is experienced in data capture and geo-processing of field survey data, using in-house applications to provide interactive mapping. Our GIS capabilities integrate a powerful set of GIS/ CAD software with automated tools (ESRI ArcGIS, XTools, and AutoCAD) to assist clients in streamlining processes and continually improve operations management.



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Agricultural-Research

ERC assists clients in testing and research; certification and inspection of agriculture and farming research needs including:

- Precision Agriculture
- Agro Bioterrorism Response Service
- Agro Environmental Assessment
- Agriculture laboratory Education
- Soil Assessment & Testing

Capacity building and training

ERC facilitates clients long-term capacity building, increasing their ability to identify and solve their own problems and risks, and to maximize opportunities. We mobilize, strengthen and develop human and institutional capacity on a case-by-case basis.

Corporate Social Responsibility (CSR)

Corporate Social Responsibility (CSR) is a long-standing cultural norm for business entities. ERC understands what it means to improve itself through bringing positive change to others. We stand by our conviction that we will “do well by doing good”.

ERC promotes environmental concerns in everyday business operations, operating in line with Sustainable Development Goals (SDGs).

We actively engage our neighbors, enabling employees to volunteer in the local community with active support and encouragement of the Executive Management.

ERC has built and maintained its Social License to Operate (SLO) since 2011 whilst diversifying and refining business processes to accommodate and add sustainable values to developing markets.



Authorised Distrubutor of Aeroqual Products in W/A. | <https://www.aeroqual.com>

Authorised Distrubutor of Palintest Products in W/A. | <https://www.palintest.com>

Recent Key Projects

Over the years, ERC has delivered hundreds of integrated multi disciplinary environmental, sustainability, materials testing & analysis, and client advisory services across key industrial sectors throughout West Africa and abroad.

Below are examples of recent projects ERC has undertaken.



Why ERC ?



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Recent Key Projects



Recent Clients



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1

Waste to Energy (WtoE) Power Plant Project

Renengenc Limited, an Independent Green Power Producer (IGPP) exploits waste to wealth prospects in Ghana for mutual benefits. Renengenc approached ERC for an Environmental & Social Impact Assessment (ESIA) and Monitoring Report proposed Waste to Energy (WtoE) Power Plant Project in Ablekuma-Joma, a suburb of Accra.

largest in Ghana when completed. The Project will be developed under the existing 330kV Aboadze-Volta-Lome Transmission line at Pokuase. The BSP shall have a total capacity of 580MVA, comprising four 330/34.5kV 145MVA Power transformers.

The Contractor for the Project is Elecnor S.A. of Spain with SMEC International PTY Ltd. as the Project Engineers.

ERC produced HSES documentation in line with IFC Environmental and Social Performance Standards (IFC PS) and Ghanaian legislation to facilitate project commencement.

2

Bulk Supply Point (BSP) in Pokuase

The US\$ 498.2 million Ghana Power Compact, funded by the United States Government through its Agency, the Millennium Challenge Corporation (MCC), is supporting the construction of a Bulk Supply Point (BSP) in Pokuase to improve the quality of power supplied to the northern parts of Accra. The Pokuase BSP will be the first 330kV Bulk Supply Point in Accra and the



3 **Karpower offshore Pipeline Survey.**

The Ghana government intended to improve the power generation capacity utilizing natural gas from the Western corridor offshore Ghana to support industrialization policy. In order to optimize the FEED (Front-end Engineering Design) of the 10-km pipeline from GNGC TRMS to Karpowership's barge at Sekondi, ERC was engaged to carry out bathymetry and geophysical surveys including (i) single-beam echo sounding, (ii) multi-beam echo sounding (high-resolution swath bathymetry), (iii) side-scan sonar (iv) sub-bottom profiling (v) magnetometry and produce engineering factual report that will aid in the selection of final route for the pipeline. ERC carried out the surveys and used the survey data to produce bathymetric drawings, seabed topography, seabed features, seabed soil conditions, isopach charts of sediment thickness and reflectors all to aid in an excellent engineering design for the pipeline.

4 **Eni Third Party Laboratory Testing**

Eni Ghana Exploration and Production Limited engages the Development Project in the Offshore Cape Three Points (OCTP) Block. ERC was contracted/engaged to provide first-class third-party laboratory testing services for lube oil, condensate, gas, glycol through sampling the indicated fluids, testing, and accurate reporting for relevant feedback on plant conditions to allow for maximizing plant performance. Additionally, ERC was also required to train Eni's laboratory personnel.

5 **Gold Recovery Ghana Limited**

Gold Recovery Ghana operates a gold mining facility processing tailings for gold ore extraction at Tema Industrial Area in Ghana. The company engaged ERC to carry out perimeter noise monitoring, effluent testing, stack emissions and ambient air quality monitoring for environmental regulatory compliance for the Ghana Environmental Protection Agency (EPA) and International Finance Corporation (IFC) requirements.



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Recent Clients

Oil & Gas

Eni E&P Limited
Baker Hughes/GE Oil & Gas Limited
Ghana Gas Company Limited
Tema Lube Oil Limited
West African Gas Pipeline Limited, Ghana & Togo
Tema Oil Refinery, Ghana
Renergen Limited, Ghana
Sri Emas Ghana Limited
Cassel LHS & Bluefone Limited, Ghana
Viking Offshore Support Service (Ghana) Limited, Ghana
Kpone Marine Services Limited, Ghana
Quantum Oil Terminals Limited, Ghana
Tema Offshore Mooring Limited, Ghana
WSP, United Kingdom
Tema Fuel Trade, Ghana

Manufacturing/Construction

Continental Blue Investments (CBI) Ghana Limited
Acieries de Cote D'Ivoire, Cote D'Ivoire
Mass Industries Limited, Ghana
Niche Cocoa Limited, Ghana
Western Rod and Wire Limited
GHACEM Limited
Danadams Pharmaceuticals Industry Limited
Fan Milk Ghana Limited
Cocoa Touton
HPW Fresh & Dry Limited
N.N. EST Metals Company
Wilmar Africa Limited
Ghana Specialty Fat Industries Limited
Ernest Chemist Ghana Limited
Contracta Limited
Nutrifoods Ghana Limited
Scantogo Limited, Togo

Energy

Elecnor S.A Infraestructuras
Shenzhen Energy Group, China
African Plantation & Sustainable Development
METKA Limited, Greece
Karpower Ghana Limited,
AKSA Energy Ghana Limited, Ghana
All Service Group (ASG)
Saiwest Limited
One Energy Company Limited
Soroma Operations Company Limited
CenPower Generation
CenPower Operations
Amandi Energy Limited
Volta River Authority, Takoradi
Volta River Authority, Kpone
Sunon Asogli (Gh) Power Limited

Mining

AngloGold Ashanti Obuasi Limited, Ghana
AngloGold Ashanti Iduapriem Limited, Ghana
AngloGold Ashanti Siguru Limited
Goldfields Ghana Limited, Ghana
Golden Star Wassa Limited, Ghana
Golden Star Resources, BogosoPrestea Limited
Endeavour Mining Limited, Ghana
Gold Recovery Ghana Limited, Ghana
TE Power Limited, Guinea
Asanko Gold Ghana Limited, Ghana
Great Consolidated Diamond Mine
Endemic Mining

Telecommunication

Huawei Technologies Ghana Limited

Sur'ine Ghana Limited

Agric

IFDC
Min of Food and Agriculture
Cosmos Sea Foods



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Analytical Parameters

Petroleum Products

Test

Acidity (as asctetic acid)
Aging Characteristics of Lubricating Oil
Aniline Point
API Gravity by Hydrometer Method
Ash (for glycerin)
Ash Content
Bacteria Growth in Oil and Gas System
Base Number
BTU/lb Calculated (Net & Gross Heat of Combustion)
Carbon Residue (Conradson Method)
Cetane Index
Cetane Index of Distillate Fuels Calculated (D86 & D4052)
Cetane Number (including chilling & freezing temperatures of diesel fuel)
Chlorine
Cleanliness & Compatibility of Residual Fuel
Cloud Point
Cold Filter Plug Point
Cold Soak Filterability
Color (Saybolt Chromometer Method)
Color (ASTM Color Scale)
Corrosion-Inhibitory Properties
Corrosiveness of Aviation Turbine on Silver
Demulsibility Characteristics
Density by Digital Density Meter
Density & Relative Density by Hydrometer Method
Density or Relative Density of Engine Coolant by Hydrometer & Digital Methods
Detailed Hydrocarbon Analysis
Dew Point of Hydrocarbon
Distillation at 90% rec., atmospheric
Dropping Point
Electrical Conductivity
Emulsification Properties
FAME (GC)
Flash Point, closed cup
Foaming Characteristics
Foaming Tendencies of Engine Coolant
Free and Total Glycerin
Free Water & Particulate Contamination (Visual Inspection)
Friction and Wear Test
Gum Content (Unwashed)
Gum Content (Solvent washed)
Hydrogen Sulfide in Liquefied Petroeluem Gases
Insoluble (Heptane Insolubles in used Lubricating Oil)
KF Moisture (Coulometric)
KF Moisture (Volumetric)
Kinematic Viscosity cSt@100°C
Kinematic Viscosity cSt@40°C
Kinematic Viscosity cSt@other temperatures
LPG Calculated Properties
LPG Hydrocarbons
Lubricity by HFRR (Digital Camera)
Lubricity by HFRR (Visual)

Method Reference

ASTM D7795-15
In-house
ASTM D611-12
ASTM D1298-12; IP 160
ASTM D482-13
ASTM D482-13
NACE TM0194-2014
IP 400
ASTM D4868-17
ASTM D189-6
ASTM D4737-3; ASTM D613-18
ASTM D976-16
ASTM D613-18
ASTM D5384-14
ASTM D4749-4
ASTM D2500-17a
ASTM D6371-17a
ASTM D7501-18a
ASTM D156-15
ASTM D1500-12 (2017)
ASTM G205-16
IP 227
ASTM D2711-17
ASTM D4052-18
ASTM D1298-12; IP 160
ASTM D1122-16; ASTM D5931-13
ASTM D6729
ASTM D1142-95
ASTM D86-17
ASTM D2265-15
ASTM D4308-13; ASTM D2624-15
ASTM G205-16
EN 14103
ASTM D93; EPA 1020A
ASTM D892-18
ASTM D18810-17; ASTM D4921-95
ASTM D6584-17
ASTM D4176-4
ASTM D5183-5
ASTM D381-12
ASTM D381-12
ASTM D2420-13
IP 316
ASTM D4928-12; ASTM D6304-16e1
ASTM E203-16
ASTM D445-17a; IP 71
ASTM D445-17a; IP 71
ASTM D445-17a; IP 71
ASTM D2598-16
ASTM D2163-14e1
ASTM D6079-18
ASTM D7688-18

Test

Metal including Ca, Mg, Na & K, P
Methanol
Microbial Count (Proc. C)
Octane Number-Motor (MON)
Octane Number-((R+M)/2) (Anti-knock Index +Sensitivity)
Octane Number-Research (RON)
Oil Separation from Lubricating Grease
Organic Chloride
Oxidation Characteristics
Oxidation Stability
Oxidation Stability
pHe
pH of Engine Coolant
Phosphorus (included with EN 14538)
Physical data
Pour Point
Proximate Analysis (Moisture, Ash & Volatile)
Salt in Crude
Sediment by Extraction
Shrinkage factor
Silver Strip Corrosion
Sodium in Residual Fuel Oil
Solidification Point
Specific Gravity
Sulfated Ash
Sulfur
Thermal Conductivity
Total Acid Number
Total Particulate
Total Vapor Pressure calculated
True Vapor Pressure (Reid Method)
Ultimate Analysis (Ash, Sulfur, CHNO)
Vapor Pressure
Viable Bacteria (Plate Count)
Weak and Strong Acid
Water in Crude
Water in Engine Coolant
Water and Sediment
Wetting Behavior
Wear Metals/Contaminants/Additives

Method Reference

ASTM D4951-14
EN14110
ASTM D6974-16
ASTM D2700-18
ASTM D2699-18; ASTM D2700-18
ASTM D2699-18
ASTM D1742-18
ASTM D4929-17
IP 48
ASTM D2274-14
EN 15751
ASTM D6423-14
ASTM D1287-11
ASTM D4951-14
-
ASTM D97-17b; ASTM D5853-17a
-
ASTM D3230-13
ASTM D473-7
-
ASTM D7671-10
ASTM D1318-16
ASTM D3944-12
ASTM D1298-12; ASTM D4053-18
ASTM D874-13a
ASTM D4294-3
ASTM D7896-14
ASTM D664-17a
ASTM D6217-18
STP577 (ASTM Method of D86-67)
ASTM D3223-15a; ASTM 6377-16
ASTM D3176
ASTM D5191-18
ASTM D6974-16
IP 177
IP 386
ASTM D1123-99
ASTM D1796-11; ASTM D2709-16
ASTM G205-16
ASTM D4951-14

Water & Effluent

Test	Method Reference
Physical & Chemical Parameters	
pH	APHA 23rd Edition 4500-H+B
Dissolved oxygen	APHA 23rd Edition 4500-O G
Salinity	YSI Multi Parameter Probe
Oxidation-reduction potential (ORP)	YSI Multi Parameter Probe
Resistivity	YSI Multi Parameter Probe
Turbidity	PALINTEST PHOT 48
Electrical conductivity	APHA 23rd Edition, 2130B;
Total dissolved solids	APHA 23rd Edition 2510B, Eutech Probe CON2700
Total suspended solids	APHA 23rd Edition 2540C, YSI MultiParameter Probe
Colour - True	APHA 2540D/Photometric method
Colour - Apparent	HACH Method 8006
Nitrate-nitrogen	APHA 23rd Edition, 2120B;
Ammonia-nitrogen	PALINTEST PHOT 47
Nitrite	APHA 23rd Edition, 2120B;
Orthophosphate (LR/HR)	PALINTEST PHOT 47
Orthophosphate (HR)	APHA 23rd Edition 4500-NO3 E;
Total phosphorus	PALINTEST PHOT 23
Molybdate/molybdenum (LR)	APHA 23rd Edition 4500-NH3 A;
Molybdate/molybdenum (HR)	PALINTEST PHOT 4
Sulfate	APHA 23rd Edition 4500-NO3 E;
Sulphide	PALINTEST PHOT 43
Sulfur	APHA 23rd Edition 4500-P A; PALINTEST PHOT 28
Potassium	APHA 23rd Edition 4500-P A; PALINTEST PHOT 29
Total hardness	APHA 23rd Edition 4500-P E; PALINTEST PHOT 92
Alkalinity as P	PALINTEST PHOT 42
Alkalinity as M	PALINTEST PHOT 22
Total Alkalinity as CaCO3	APHA 23rd Edition 4500-SO4 2 E;
Alkalinity as HCO3	PALINTEST PHOT 32
Alkalinity as OH	PALINTEST PHOT 33
Alkalinity as CO3	PALINTEST PHOT 33;
Free/Available chlorine	Flame photometer; PALINTEST PHOT 30
Chloride	APHA 23rd Edition 2340;
Silicon (LR)	PALINTEST PHOT 15; EDTA Titration
Silicon (HR)	PALINTEST PHOT 37
Silica (LR)	PALINTEST PHOT 37
Silica (HR)	APHA 23rd Edition 2320B; PALINTEST PHOT 2
Magnesium	APHA 23rd Edition 2320B; PALINTEST PHOT 2
Calcium	APHA 23rd Edition 2320B; PALINTEST PHOT 2
Free Bromine/Combine Bromine	APHA 23rd Edition 4500-Cl G;
Bromide	PALINTEST PHOT 7
Fluoride	APHA 23rd Edition 4500D;
Aluminium	PALINTEST PHOT 46, MOHR Method
Phenol	APHA 23rd Edition 4500-SiO2 C; PALINTEST PHOT 31
BOD5	APHA 23rd Edition 4500-SiO2 C; PALINTEST PHOT 56

Test	Method Reference
COD	APHA 23rd Edition 5220D; ASTM D1252 B; PALINTEST PHOT 80-83
Free cyanide	APHA 23rd Edition 4500CN-E
WAD Cyanide	PICRIC ACID METHOD (In-house)
Total Cyanide	APHA 23rd Edition 4500CN-C+E
Total Arsenic	PALINTEST ARSENIC TEST KIT (GUTZEIT Test)
Arsenic (III)	PALINTEST ARSENIC TEST KIT (GUTZEIT Test)
Mercury	APHA 23rd Edition 3130 ASV (PDV 6000plus)
Cadmium	APHA 23rd Edition 3130 ASV (PDV 6000plus)
Lead	APHA 23rd Edition 3130 ASV (PDV 6000plus)
Zinc	APHA 23rd Edition 3130 ASV (PDV 6000plus)
Free copper	PALINTEST PHOT 35
Total copper	APHA 23rd Edition 3130 ASV (PDV 6000plus)
Total Iron	PALINTEST PHOT 10
Total Selenium	APHA 23rd Edition 3130 ASV (PDV 6000plus)
Selenium IV	PALINTEST PHOT 18-19
Selenium II	APHA 23rd Edition 3130 ASV (PDV 6000plus)
Silver	APHA 23rd Edition 3130 ASV (PDV 6000plus)
Nickel	APHA 23rd Edition 3130 ASV (PDV 6000plus)
Chromium (VI)	PALINTEST PHOT 53
Gold	APHA 23rd Edition 3130 ASV (PDV 6000plus)
Manganese	APHA 23rd Edition 3130 ASV (PDV 6000plus)
Cobalt	PALINTEST PHOT 20
Tin	APHA 23rd Edition 3130 ASV (PDV 6000plus)
Antimony	APHA 23rd Edition 3130 ASV (PDV 6000plus)
Total Chromium	PALINTEST PHOT 78
Dissolved I Nickel	APHA 23rd Edition 3130 ASV (PDV 6000plus)
Dissolved Iron	PALINTEST PHOT 18-19, UV Spectrophotometer
Dissolved Zinc	APHA 23rd Edition 3130 ASV (PDV 6000plus)
Dissolved Chromium	PALINTEST PHOT 78
Total Oil & Grease	APHA 23rd Edition 5520C; ASTM D7066-4; EPA 413.2; EPA 418.1
Total Petroleum Hydrocarbon	EPA METHOD 3510C; ASTM D7066-044;
Total Volatile Organic Compound	GC with FID
Benzene	GC with FID
Toluene	GC with FID
Ethylbenzene	GC with FID
Xylene	GC with FID
Microbiological Parameter	
THB/AC/TPC	APHA 23rd Edition 9215B
Staphylococcus aureus	APHA 23rd Edition 9213B
Salmonella spp	APHA 23rd Edition 9260D
Escherichia coli	APHA 23rd Edition 9222D
Total coliforms	APHA 23rd Edition 9222B
Fecal coliforms	APHA 23rd Edition 9222D

Soil & Fertilizer

Test	Method Reference
pH	APHA 23rd Edition 4500-H+B
Conductivity	YSI Muti Parameter Probe
Chloride	Mohr method
Org. Matter	Walk ley and Black Method
Org. Carbon	Walk ley and Black Method
Grain size fraction	Hydrometer method; Wentworth Sieving Method
Total nitrogen	Kjeldahl distillation/GFAM-N1
Cation Exchange Capacity	Ammonium acetate/Sodium chloride; Calculated
Sulfate	EPA METHODS 3050 plus PALINTEST PHOT 32
Total Cadmium	EPA METHODS 3050 plus APHA 23rd Edition 3130 ASV (PDV 6000plus)
Silicon	EPA METHODS 3050 plus PALINTEST PHOT 56
Silicate	EPA METHODS 3050 plus PALINTEST PHOT 56
Total Lead	EPA METHODS 3050 plus APHA 23rd Edition 3130 ASV (PDV 6000plus)
Total Copper	EPA METHODS 3050 plus APHA 23rd Edition 3130 ASV (PDV 6000plus)
Total Arsenic	EPA METHODS 3050 plus APHA 23rd Edition 3130 ASV (PDV 6000plus)
Total Iron	EPA METHODS 3050 plus APHA 23rd Edition 3130 ASV (PDV 6000plus)
Total Zinc	EPA METHODS 3050 plus APHA 23rd Edition 3130 ASV (PDV 6000plus)
Total Chromium	EPA METHODS 3050 plus PALINTEST PHOT 55
Total Mercury	EPA METHODS 3050 plus APHA 23rd Edition 3130 ASV (PDV 6000plus)
Total Aluminium	EPA METHODS 3050 plus PALINTEST PHOT 3
	EPA METHODS 3050 plus APHA 23rd Edition 3130 ASV (PDV 6000plus)
	EPA METHODS 3050 plus PALINTEST PHOT 20
Total Manganese	Bray and Kurtz P (In-house)
Total Phosphorus	EPA METHOD 3050 plus EDTA Titration
Total Magnesium	EPA METHOD 3050 plus Flame Photometer
Total Potassium	EPA METHOD 3050 plus Flame Photometer
Calcium	
Sodium	
Boron	EPA METHOD 3050 plus PALINTEST PHOT 40
Exchangeable Aluminium	Mehlich 3 extraction plus Flame Photometer
Exchangeable Magnesium	Mehlich 3 extraction plus Flame Photometer
Exchangeable Potassium	Mehlich 3 extraction plus Flame Photometer
Exchangeable Calcium	Mehlich 3 extraction plus Flame Photometer
Exchangeable Sodium	Mehlich 3 extraction plus Flame Photometer
Exchangeable copper	Mehlich 3 extraction plus PALINTEST PHOT 40
Exchangeable iron	Mehlich 3 extraction plus UV Spectrophotometer
Exchangeable manganese	Mehlich 3 extraction plus PALINTEST PHOT 20
Total Oil & Grease	EPA 9071A plus Infracal TPH/TOG analyzer
Total Petroleum Hydrocarbons	EPA 9071A plus Infracal TPH/TOG analyzer
Total Volatile Organic Compound	GC with FID
Fertilizer	
Nitrogen	GFAM-N1
Potassium	GFAM-K3
Phosphorus	GFAM-P8

Ambient Air, Emissions, Weather & Noise

Test	Method Reference
Ambient Air	
Ozone	AEROQUAL AQM65 GSS
Carbon Monoxide	AS 3580.7.1-1992
Carbon Dioxide	GPA 2286
Nitrogen Dioxide	AS 3580.5.1-1993
Sulfur Dioxide	AS 3580.4.1-2008
Hydrogen Sulfide	AS3580.4.1-2008
Ammonia	EN 50082-1:1997 GSE
Total Suspended Particle	AEROQUAL AQM65 LASER COUNTER METHOD
Particulate Matter 10	AEROQUAL AQM65 LASER COUNTER METHOD
Particulate Matter 2.5	AEROQUAL AQM65 LASER COUNTER METHOD
Particulate Matter 1	AEROQUAL AQM65 LASER COUNTER METHOD
Volatile Organic Compound	Aeroqual Series 500 Photo Ionization Detection
Petroleum Hydrocarbon	Aeroqual Series 500 GSS
Methane	Aeroqual Series 500 GSS
Benzene	GC with FID/AEROQUAL SERIES 500 Photo Ionization Detection
Toluene	GC with FID/AEROQUAL SERIES 500 Photo Ionization Detection
Ethylbenzene	GC with FID/AEROQUAL SERIES 500 Photo Ionization Detection
Ethylene Oxide	GC with FID/AEROQUAL SERIES 500 Photo Ionization Detection
Xylene	GC with FID/AEROQUAL SERIES 500 Photo Ionization Detection
Formaldehyde	AEROQUAL SERIES 500 GSE
Perchlorate	AEROQUAL SERIES 500 GSS
Styrene	GC with FID
Hydrocyanic Acid	Spectrophotometer
Asbestos in Bulk Building Materials	EPA/600/R-93/116
Weather	
Wind Speed	Vaisala Weather Transmitter
Wind Direction	Vaisala Weather Transmitter
Relative Humidity	Vaisala Weather Transmitter
Air Temperature	Vaisala Weather Transmitter
Hydrocarbon dew point	ISO 11150; ISO 23874
Water Dew Point	ASTM D1142; ISO 6327; ASTM D5454
Flue Gas/Stack Emissions	
Carbon Monoxide	BS EN 15058/EPA Method 10/Electrochemical sensor
Carbon Dioxide	EPA Method 3A/ NDIR sensor
Oxides of Nitrogen	BS EN14792/ISO 10849/Electrochemical sensor
Sulfur Dioxide	TGN M21
Hydrogen Sulfide	Electrochemical sensor
Oxygen	EPA Method 3A
Particulate Matter	BS EN 13284-1/ISO 9096
CxHy	NDIR sensor/
Metals	
Flue gas Temperature	
Excess Air	
Barometric Pressure	
Noise	
Noise Level	ISO 5130:2007, ASTM E1014-12



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