

The SAGE – An Embodiment of SRA’s Concern for the Environment

The processing of sugar is one of the industries that employs vast amounts of energy and produces large volumes of pollutants, in both water and air. In the local scene, particularly on Negros Island where about sixty percent (60%) of the factories are located, sugar mills had been found to cause the most pollution in a study conducted in the '80s. Along with the growing worldwide movement towards environmental conservation and protection, the sugar mills have realized the inseparability of efficient industrial operation with sound environmental management.

The Philippine sugar mills had formed themselves into a concerned group through the efforts of the Phil. Sugar Millers Association (PSMA) and named itself as the **Sugar Industry Environment Committee (SIEC)**. It then crafted the **Code of Environmental Practices in the Sugar Mills**, focused on self-regulation as a priority undertaking. Concurrently, the government’s environmental guardian agency, the DENR, has come up with a Department Order (***DENR DAO No. 03, Series 2006***) requiring all manufacturing plants to have a Third-Party Monitoring Body to keep track of their environmental management programs in compliance with the government’s laws and policies on pollution standards (***R.A. 8749 or the Clean Air Act of 1999***). DENR accordingly, needed to accredit third-party entities to help them monitor industries to decongest its offices of companies to attend to in as far as standards compliance is concerned.

By a resolution in a regular meeting (**SIEC Resolution dated 11 April 2003**), the SIEC (which membership is comprised of all Pollution Control Officers (PCOs) of PSMA-member mills plus some invited non-members, **the SRA was unanimously appointed as the sugar industry’s third-party environmental monitoring body**, upholding trust, and confidence by the mills thereto as a capable and reliable technical group. All succeeding efforts and activities related hereto led to the formation of the group now known as **SAGE or the (Special Action Group for the Environment)**.

The SAGE was formed in deference to the sugar industry’s clamor for such a body; it is a response to a call, a compliance to a beckon based on trust and confidence. The sugar industry needed a group to make periodic assessment of the effectiveness of its environmental management programs, to guide future plans and directions for a sustainable industrial operation. When SRA signed a **Memorandum of Agreement (MOA dated 13 July 2006)** with PSMA for the Environmental Self-Monitoring Program in compliance with the **Environmental Consent Agreement (ECONA dated 19 December 2003)** signed by PSMA and its member-mills, under the **Philippine Environmental Partnership Program of the DENR**, it has in fact committed the SAGE to perform the dedicated role which the industry wanted it to perform.

Twenty (20) years hence as a government representative to the SIEC, and four (15) years of monitoring environmental compliance, the SAGE remained as a dependable environmental partner to the sugar industry. The time, effort, and people it has dedicated to the common industry cause make it a champion in the sugar industry’s environmental management thrust and resolve.

Being a part and parcel of the SRA’s RD&E unit, it has evolved as a banner program of the Agency’s department handling industrial’s environmental concerns.

FY 2023 Annual Narrative of Accomplishments

Department/Division/Unit: Soils Laboratory – LGAREC, Agricultural Research Division, RD&E Department

I. Highlights and Impact of Accomplishment

SOIL AND JUICE ANALYSES

Brief Description

Soil and Juice Analyses is one of SRA's corporate-funded continuing programs that provides a direct impact to the sugarcane farming industry. This is a service extended to the sugarcane farmers in Visayas (Negros Occidental, Negros Oriental, Iloilo, Cebu) through the conduct of physico-chemical analysis of soil samples, cane juice samples, fertilizer products and other agro-based materials.

Program Objectives

- A. The laboratory results for soil analysis provide the basis of N-P-K fertilizer recommendations to assist the sugarcane farmers in attaining maximum yields through proper fertilization.
- B. The results of cane juice analysis are used in research studies to measure the effectiveness of interventions made in sugarcane research. The results indicate the potential yield it can obtain using applied experimental treatments. The sugarcane juice analysis results can also indicate the maturity of sugarcane which helps both the researchers and planters in distinguishing whether the sugarcane crop is ready for milling or profitable enough to be milled.

Beneficiaries

For FY 2023, a total of 2,876 samples were received from private planters and SRA experimental units. These samples, summarized below, consisted of soil, sugarcane stalks, and special samples that include beneficial micro-organism (BMO), water, and soil samples from collaborative projects with the Japan International Research Center for Agricultural Sciences (JIRCAS).

No. of soil samples:	1,675
No. of sugarcane stalks:	945
No. of special samples:	256

(Refer to Tables 1 and 2 for the summary of samples submitted and clients served.

The laboratory was able to serve a total of seven hundred-thirty-three (733) clients comprising of the following:

For soil fertility status analysis and fertilizer recommendations

No. of private planters served:	636
No. of researchers:	34

For sugarcane maturity testing and possible rendement

No. of private planters served:	13
No. of researchers served:	26

OPSI PARTICIPATION

Brief Description

The Soils Laboratory-LGAREC is actively involved in the transfer and dissemination of information specifically through the conduct of lectures on soil sampling, soil fertility, fertilizer management and liming of sugarcane crop via SRA's Outreach Program for the Sugar Industry (OPSI).

Program Objective

The OPSI (Outreach Program for the Sugar Industry), conducted on-site, is a series of lectures including field activities and exercises that aim to provide sugar industry participants with adequate start-up knowledge on sugarcane farm management to strengthen their skills in sugarcane production.

Beneficiaries

A total of 165 OPSI participants composed of planters, farm managers, overseers, workers, millers, teachers, students and members of cooperatives benefited from lectures conducted on July 18-20, 2023; August 1-3, 2023; and August 29-31, 2023.

Other industry stakeholders, listed below, were provided with lectures upon request.

BISCOM Planters – 95
Gokongwei Brothers Foundation (GBF) Scholars and Parents - 45
CPSU Sugar Tech Students (Sponsored by GBF) - 46
Office of the Provincial Agriculture-Iloilo (LGU technician/ farmer leaders) - 27

LTO/CATO LICENSES/PERMITS

The Soils Laboratory – LGAREC is in the process of finalizing the applications for the following licenses:

- 1) CATO or Certificate to Operate - Chemical Laboratory with the Professional Regulation Commission – Board of Chemistry
 - Other permits prerequisite to the CATO such as the Discharge Permit, PTO, Hazardous Waste Generation I.D. are being processed with the DENR

2) License to Operate (LTO) with the Bureau of Soil and Water Management.

- Finalization of QA Manual and Quality Control Charting

UPGRADING OF FACILITIES

Acquisition of one (1) unit NIR Analyzer

The NIR Analyzer is used in the determination of % polarization of sugarcane juice. Its acquisition was proposed to replace the conventional method of analysis that involves the use of lead subacetate, a hazardous chemical used as a clarifying agent, harmful to both the environment and the analysts. The NIR requires minimal sample preparation sans the use of any clarifying agent. It is one way of complying with environmental regulatory requirements.

II. Collaborations/Attendance to Conferences

PHILIPPINE SOIL PARTNERSHIP

Organizational Meeting

The Soils Laboratory – LGAREC is a registered laboratory in the Global Soil Network (Glosolan), an international organization that endeavors *to build and strengthen the capacity of laboratories in soil analysis and to respond to the need for harmonizing soil analytical data.* Phil NASOLAN, a regional arm of GLOSOLAN, through the Philippine Soil Partnership (PSP) conducted its Organizational Meeting and Workshop last March 29, 2023 at the Bureau of Soil and Water Management (BSWM) in Quezon City. This was conducted to formally organize the partnership and to serve as a platform for the participants to signify their pledge of commitment as partners in the development and promotion of research studies on soil and water resources in the country. This was participated in by the Soils Laboratory – LGAREC.

Phil NASOLAN 4TH General Assembly

Soils Laboratory – LGAREC participated in the 4th General Assembly of the Phil NASOLAN on November 20-21, 2023 at the BSWM, Quezon City. This was organized for the signing of the Memorandum of Agreement between participating members as part of BSWM's implementation of the National Soil Health Program (NSHP) with the objective to address soil health for soil resources sustainability and management and improve farm productivity and income. As a partner, the Soils Laboratory – LGAREC will benefit from the programs such as the LIMS (Laboratory Information Management System) which is under development by BSWM. The use of the LIMS, the current trend in laboratories worldwide, is a software which will facilitate the operations of Soils Laboratory – LGAREC.

37TH PHILIPPINE CHEMISTRY CONGRESS

The 37th Philippine Chemistry Congress was well represented by SRA including the Soils Laboratory – LGAREC. This was held last July 26-28, 2023 in Bacolod City. The Congress, with the theme Chemistry for Agriculture 4.0 and Food Security, presented topics on the role

of chemistry in developing sustainable agricultural practices and ensuring food security. Interactions with fellow participants and laboratory equipment exhibitors were made to find ways that will help in developing the services of the laboratory.

BENCHMARKING ACTIVITIES

The Soils Laboratory – LGAREC, endeavoring to provide accurate results through the upgrading of its facilities, participated in the benchmarking activities conducted in Mindanao State University – IIT for the use of the Particle Size Analyzer in soil texture analysis, one of the bases in fertilizer recommendations being provided to sugarcane farmers/planters. The use of this equipment may provide research possibilities benefitting the sugarcane farming industry.

RESEARCH PROJECTS

SIDA-Funded

In addition to the core function of the Soils Laboratory – LGAREC, research studies funded by SIDA, are also being conducted, namely, *Kinetics of Slow Release of Fertilizer using Mill Ash; Assessment of Land Suitability for Sugarcane Production in Negros Island Using Analytical Hierarchy Process (AHP) and Geographic Information System (GIS); and Soil Microbial Population Profiling, Isolation, and Identification of Biological Nitrogen fixers in Sugarcane Planted Areas of Negros*. These are all on-going projects.

JIRCAS

Soils Laboratory-LGAREC has continuously been supporting the collaborative researches between SRA and the Japan International Research Center for Agricultural Sciences (JIRCAS) through the giving of assistance in their field activities and laboratory analyses. The research on sugarcane fibre, glucose, sucrose, and fructose of JIRCAS-SRA-Nippon Steel Corporation was completed last September 2023.

II. Photo Documentation



Participants of the Philippine Soil Partnership (PSP) Organizational Meeting and Workshop held last March 29, 2023 at the BSWM Lopez Convention Hall, Quezon City. Soils Laboratory-LGAREC was represented by Maria Lucia C. Sanchez



GOCC Participants of the Phil NASOLAN 4th General Assembly held last November 20-21, 2023 at the BSWM Lopez Convention Hall, Quezon City. SRA was represented by RDE-Vis Manager III Helen Lobaton, Chief SRS – LAREC Rafael Henri Mundo, Soils Laboratory-LGAREC Maria Lucia Sanchez and Soils Laboratory-Bacolod Nelsie Grace Gela.



Particle Size Analyzer Benchmarking Activities held in October at MSU-IIT. Participated in by Soils Laboratory – LGAREC and Bacolod technical staff, namely, Jayno Ramos and Manna Majal Tambasen.



Wastewater effluent sampling activity for Discharge Permit application with the DENR-EMB relative to the renewal of the CATO



Newly-acquired NIR Analyzer for sugarcane juice analysis



OPSI lectures on soil sampling and soil fertility management by Soils Laboratory - LGAREC staff, Jayno Ramos



Laid-out field of Kinetics of Slow Release Fertilizer research



Sampling activities in different areas of Negros Island

Table 1. Number of Clients Served for CY 2023

Month 2023	Soil Analysis			Juice Analysis			Special	Total
	Private	Researcher	Sub total	Private	Researcher	Sub Total		
January	54	7	61	0	3	3	7	71
February	33	3	36	2	2	4	3	43
March	10	3	13	1	1	2	0	15
April	44	2	46	1	4	5	1	52
May	107	0	107	1	3	4	0	111
June	74	0	74	0	1	1	2	77
July	33	1	34	0	2	2	0	36
August	93	3	96	0	1	1	1	98
September	29	3	32	1	1	2	3	37
October	51	0	51	2	0	2	1	54
November	37	9	46	5	2	7	1	54
December	71	3	74	0	6	6	0	80
Total	636	34	670	13	26	39	19	728

**Table 2. SUMMARY OF SAMPLES RECEIVED & ANALYZED
CY 2023**

A. Soil Samples

1. Private Planters

Region	No. of Samples Received/Analyzed	No. of Planters served
Negros Occidental	846	466
Negros Oriental	274	149
Panay	16	11
Cebu	25	2
Leyte	32	8

2. Experimental Field

Research Proponent	No. of Research Samples Analyzed
VIPM	6
PTCM	59
Agro-Based Lab.	130
JIRCAS	189
ASSD	8
Soils Laboratory	90

B. Cane Juice Samples

1. Private

Client	No. of Samples Received/Analyzed
Planters	21
Private Firms	174


2. Research

Proponent	No. of Samples Received/Analyzed
VIPM	455
PTCM	252
JIRCAS	43

C. Others (Sugarcane leaves, groundwater and others)

Client	No. of Samples Received/Analyzed
MDDCs	6
Private Firms	1
Private Individuals	19
SRA Stations	9
JIRCAS	221

Submitted by:


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Soils Laboratory - LGAREC

Noted:

HELEN B. LOBATON
Manager III – RD&E Dept. - Visayas

FY 2023 Annual Narrative of Accomplishments

Department/Division/Unit: Factory Services and Services Division – Visayas, RD&E
Department

I. Highlights and Impact of Accomplishment

ENVIRONMENTAL MONITORING SERVICES

SRA-SAGE Team – Visayas, an accredited Third-Party Source Emission Testing Firm for particulate matter, carbon monoxide, nitrogen oxide and sulfur dioxide emissions, continues to provide environmental monitoring services to sugar milling industry stakeholders to assist them in their commitment to alleviate environmental pollution and to be compliant with environmental rules and regulations.

Flue gas emissions of sugar mills, other sugar industry-related manufacturing firms and some companies were tested for Particulate Matter (PM), Carbon Monoxide (CO), Nitrogen Oxide (NO_x) and Sulfur Dioxide (SO_x). Ambient Air (Particulate Matter as PM₁₀ and Total Suspended Particulates) monitoring were likewise conducted. The total number of sampling services including re-sampling activities rendered to these firms are forty-two (42), with details, as follows:

- a) Sugar mills/bio-ethanol plants and other sugar-industry affiliated firms served.
 - First Farmers Holding Corporation
 - Victorias Milling Company
 - URC – La Carlota
 - Sagay Central, Inc. - Distillery
 - URC – La Carlota
 - Central Azucarera de San Antonio
 - Central Azucarera de Bais
 - BISCOP, Inc.
 - URC – La Carlota Distillery
 - Victorias Foods Corporation
 - San Carlos Bioenergy, Inc.
 - Lopez Sugar Corporation
- b) Thirty-eight (38) boiler and twelve (12) generator smokestacks were tested for PM, CO, NO_x and SO_x emissions.
- c) Four hundred ninety-one (491) samples were collected from boiler stacks and one hundred twenty-six (126) from generator stacks for PM, NO_x, SO_x and CO parameters.
- d) Seventy-four (74) samples were collected for PM₁₀ and TSP.

II. Collaborations/Attendance to Conferences

Waste No More Conference 2023

The Waste No More Conference or the 7th Philippine Solid and Hazardous Waste Management Conference in conjunction with the 4th International Conference on Circular Economy-based Waste Management was held on November 28-30, 2023 at the IEC Convention Center in Cebu City. It was participated in by Sugar Regulatory Administration representatives from Quezon City and Bacolod City. Topics on waste management and protection of the environment were presented. Research studies on ways to reuse waste were presented by practitioners and professionals from the academe, government, industry, international organizations, NGOs, and civil society. One particular presentation is the use of mill ash, a by-product of the sugar milling industry, in cement making.

43rd PICAPI National Convention

The Convention was held in Pasay City on April 19-20, 2023. It was participated in by Maria Lucia Sanchez and Gina Cahilig. Environmental, safety and health experts, environmental advocates, government, and private sector leaders attended the convention. Technical presentations were about best practices, trends, and technologies relative to overcoming challenges on environmental problems along with the compliance to the health and safety.

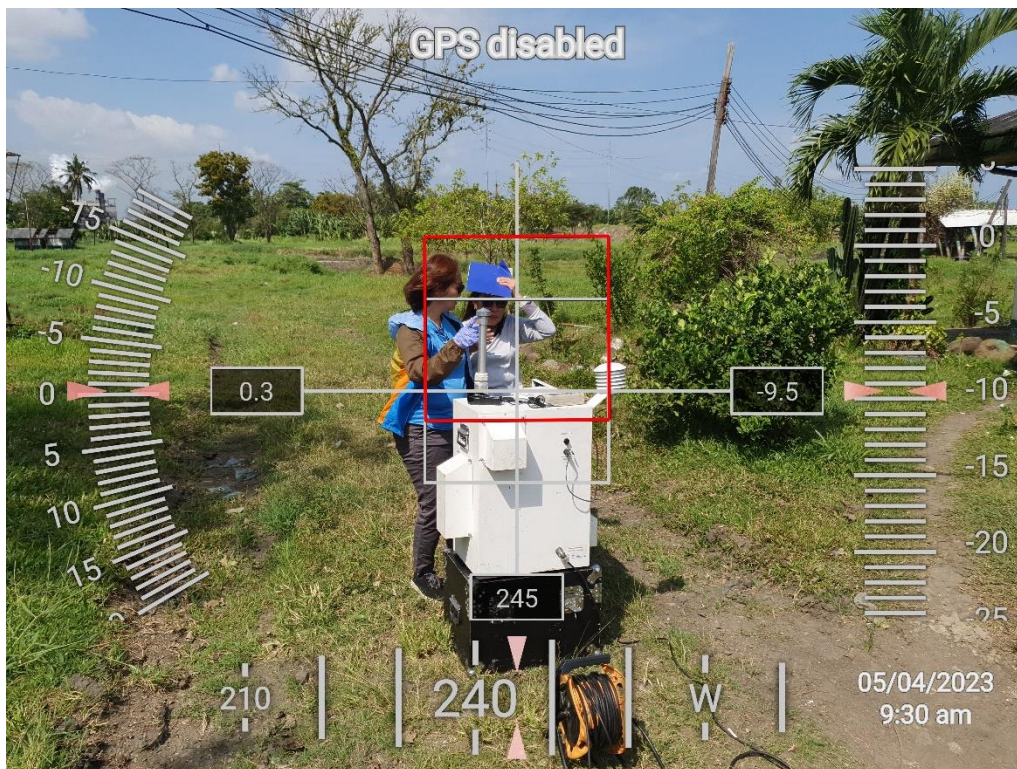
Consultation on the OSSMS / Online Accreditation System

The DENR-EMB in Quezon City conducted a face-to-face consultation of the soon-to-be implemented Online Stack Sampling Monitoring System including the Online Accreditation System for Third-party Stack Testers. It was participated in by Maria Lucia Sanchez and one (1) representative from Quezon City. It is a system in which stack testers are to be required to connect online while stack sampling is conducted. All field data are required to be encoded on a real-time basis.

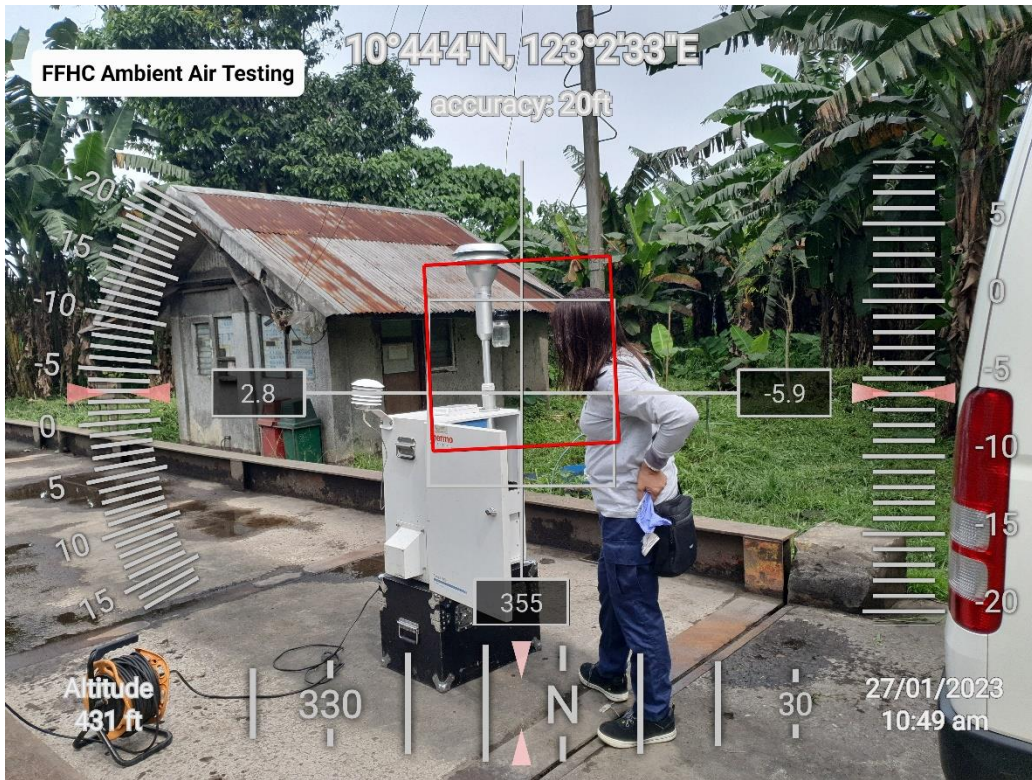
III. Photo Documentation



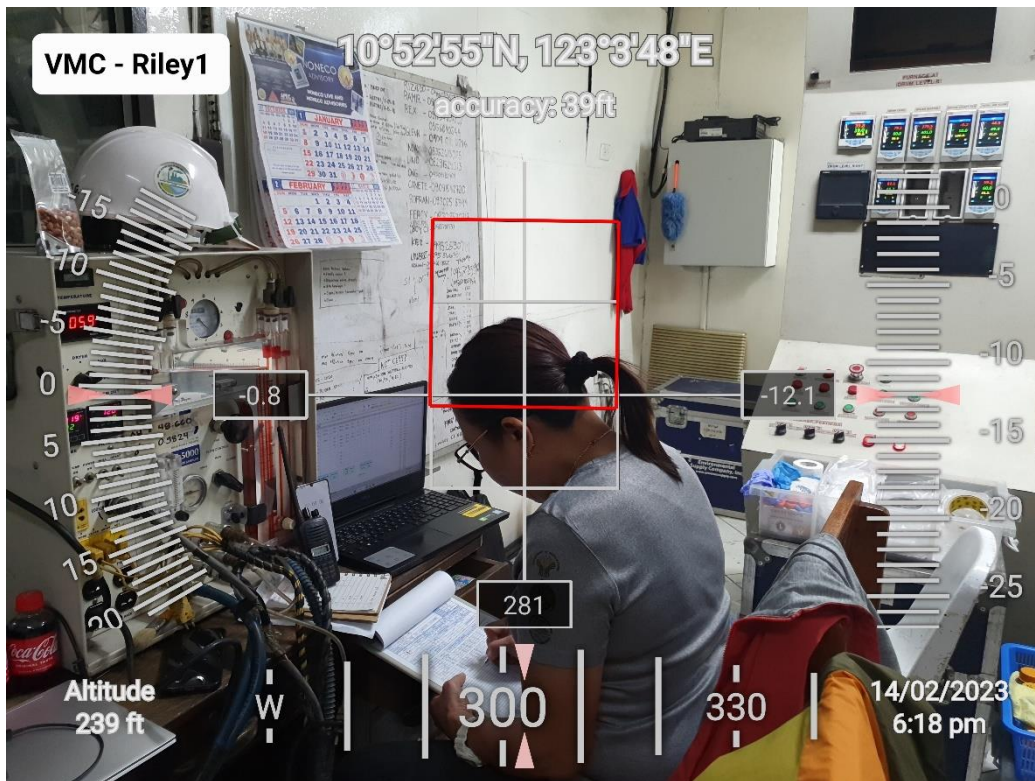
BISCOM Source Emission Sampling for PM and CO



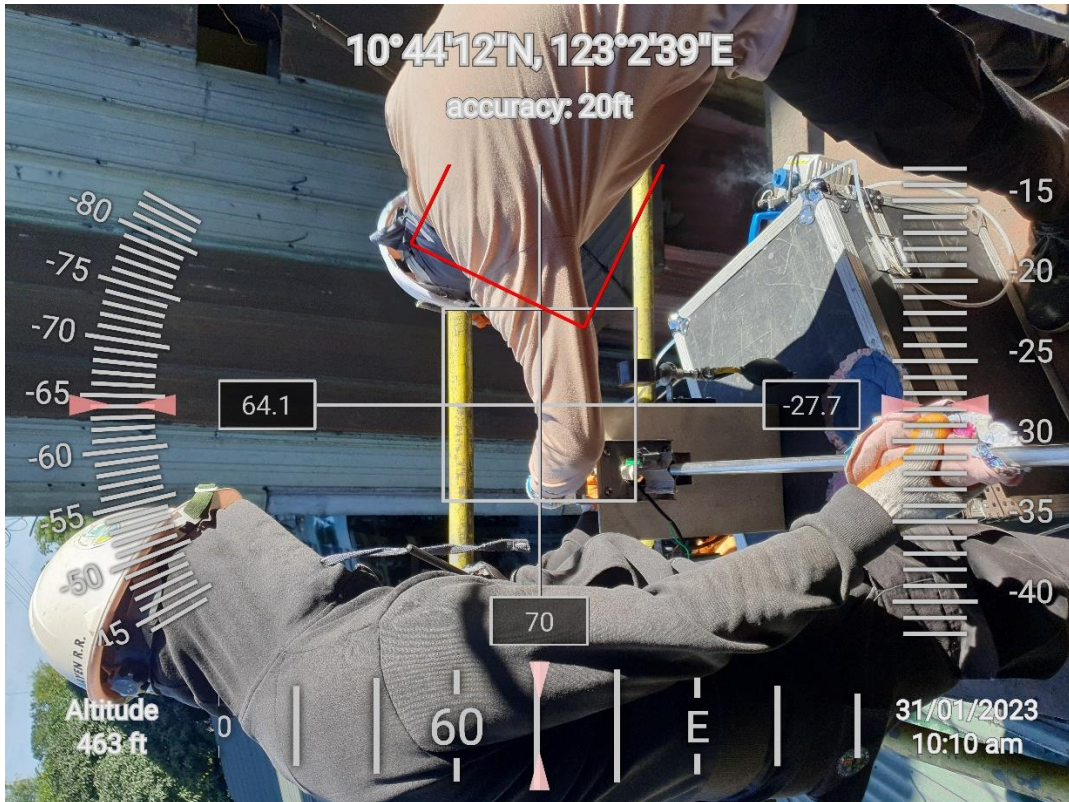
VMC Ambient Air Sampling for TSP



FFHC Ambient Air Sampling for PM10



VMC Sampling of Riley1 Boiler for PM and CO emissions

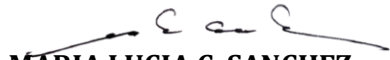


FFHC Genset Sampling for NO_x and CO emissions



SCI – Distillery Boiler Sampling for PM, SO_x and CO emissions

Prepared by:

A handwritten signature in black ink, appearing to read 'M. L. C. Sanchez', with a decorative flourish extending to the right.

MARIA LUCIA C. SANCHEZ

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For FSRD - Visayas