



U.S. Department of Energy
Idaho Operations Office

Idaho National Laboratory (INL) Site Greenhouse Gas (GHG) Monitoring Plan - 40 CFR 98

December 2011



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**Prepared for the
U.S. Department of Energy
DOE Idaho Operations Office**

CONTENTS

1.	PURPOSE, SCOPE, and APPLICABILITY	1
2.	ROLES AND RESPONSIBILITIES	1
3.	PROCESSES AND METHODOLOGIES USED TO COLLECT DATA FOR GHG CALCULATIONS	2
3.1	Estimating Missing Data	4
4.	QUALITY ASSURANCE/MAINTENANCE	5
5.	MONITORING PLAN REVISIONS	5
6.	RECORDS	5
7.	REFERENCES	6
	Appendix A GHG Source Applicability Checklist	7
	Appendix B Example Certification Sheet	10

TABLES

Table 1:	Roles and Responsibilities	1
Table 2:	GHG Data Collection for Annual INL Site GHG Emission Reporting	3

1. PURPOSE, SCOPE, and APPLICABILITY

The purpose of this Greenhouse Gas (GHG) Monitoring Plan is to meet the monitoring plan requirements of Title 40 of the Code of Federal Regulations Part 98.3(g)(5). This GHG Monitoring Plan identifies procedures and methodologies used at the Idaho National Laboratory Site (INL Site) to collect data used for GHG emissions calculations and reporting requirements from stationary combustion and other regulated sources in accordance with 40 CFR 98, Subparts A and other applicable subparts. INL Site Contractors determined subpart applicability through the use of a checklist (Appendix A). Each facility/contractor reviews operations to determine which subparts are applicable and the results are compiled to determine which subparts are applicable to the INL Site. This plan is applicable to the 40 CFR 98-regulated activities managed by the INL Site contractors: Idaho National Laboratory (INL), Idaho Cleanup Project (ICP), Advanced Mixed Waste Treatment Project (AMWTP), and Naval Reactors Facilities (NRF).

2. ROLES AND RESPONSIBILITIES

Data collection in accordance with this GHG Monitoring Plan will be completed by assigned coordinators (Table 1) from each of the INL Site contractors and consolidated into the annual Site GHG Emissions Report by designated INL resources. INL will submit a Sitewide report to the Department of Energy – Idaho (DOE-ID) for submittal to the U.S. Environmental Protection Agency (EPA) - Region 10 by March 31st of each year for the previous calendar year. Each point of contact will obtain certification from the appropriate certifying official.

Table 1: Roles and Responsibilities

DOE-ID and INL Site Contractor Points of Contact (Positions)	Responsibility
DOE-ID: Designated representative for INL Site	INL Site Annual GHG Emission Report certification, signing, and submittal to Region 10 of EPA. Transmittal to EPA Region 10 no later than March 31 st of each year.
INL: INL Air Permitting and Reporting Lead	Develop a reporting and deliverable schedule and distribute by December 1 st of current reporting year. Review INL operations to determine which subparts are applicable during annual review of GHG Monitoring Plan. Data collection and contractor data certification for the INL Site. INL Site report preparation, contractor certification and submittal to DOE-ID. Report submitted to DOE-ID no later than March 1 st .
AMWTP: Environmental Engineering Lead, Air	Review AMWTP operations to determine which subparts are applicable during annual review of GHG Monitoring Plan. Data collection, contractor data certification, and transmittal of AMWTP information to INL contractor per annual schedule.

DOE-ID and INL Site Contractor Points of Contact (Positions)	Responsibility
ICP: ICP Air Quality Technical Representative	Review ICP operations to determine which subparts are applicable during annual review of GHG Monitoring Plan. Data collection, contractor data certification, and transmittal of ICP information to INL contractor per annual schedule.
NRF: Environmental Engineering, Air	Review NRF operations to determine which subparts are applicable during annual review of GHG Monitoring Plan. Data collection, contractor data certification, and transmittal of NRF information to INL contractor per annual schedule.

Each facility/contractor at the INL Site is responsible for collecting fuel use and emission information as required in 40 CFR 98.3, submitting certified data for each of their sources to the INL Environmental Support and Services for rollup into a single report submission for the INL Site, and maintaining appropriate data support records as described in 40 CFR 98.36 – 37.

The reporting period for the Annual INL Site GHG Emissions Report is from January 1 through December 31 of each calendar year. The deliverable will consist of a consolidated INL compliance certification of individual facility/contractor compliance of GHG emission monitoring data and supporting documentation. Each facility/contractor will monitor and report their applicable fuel use and emissions data from their applicable stationary combustion sources, including accounting for missing data information and calculating estimates. Monitoring data will be certified and submitted to INL contractor Environmental Support and Services by February 15th, for roll up of the INL Site monitoring data. DOE-ID will certify the consolidated report as required by regulation and transmit to EPA Region 10.

3. PROCESSES AND METHODOLOGIES USED TO COLLECT DATA FOR GHG CALCULATIONS

The INL Site will be using Tier I calculation methodologies for reporting GHG emissions from stationary fuel combustion sources. The data to be collected for the Tier I calculations for stationary sources subject to 40 CFR 98 consist primarily of the following information records (Table 2). These records are created, collected, and managed according to INL Site contractor-specific controlled procedures. These contractor-specific documents and procedures include operation specific procedures and maintenance procedures/ preventative maintenance work orders and applicable environmental and chemical management procedures. The contractor-controlled documents include applicable quality assurance and record keeping requirements and implementation instructions for compliance with 40 CFR 98. Contractors will supply supporting documentation that includes a list of reference documents/procedures used to collect data for generation of the Annual INL Site GHG Emissions Report.

Table 2: GHG Data Collection for Annual INL Site GHG Emission Reporting

Stationary Source Unit Type	Fuel Use Information	Dates Methodology Used
Boilers (Diesel, Propane)	Individual unit meters (fuel usage meters), Fuel delivery receipts	Start and end dates for each methodology used (i.e. 1/1/2011 – 12/31/2011 fuel receipts)
Generators, Compressors, Pumps (non-emergency, non-portable, diesel, propane, or gasoline)	Individual fuel usage or run time unit meters, Fuel delivery receipts	Start and end dates for each methodology used (i.e. 1/1/2011 – 12/31/2011 fuel receipts)
Small heater/building units (propane): (i.e.: space heating, hot water heaters)	Fuel delivery receipts	Start and end dates for each methodology used (i.e. 1/1/2011 – 12/31/2011 fuel receipts)
Incinerator (solid biomass fuel)	Individual unit meters (fuel usage meters)	Start and end dates for each methodology used (i.e. 1/1/2011 – 12/31/2011 fuel receipts)

According to 40 CFR 98.36(c)(1), data collected from each stationary source or aggregated source for the annual INL Site GHG Emission Report shall include:

- Unit/Group identification number(s);
- Code representing type of unit;
- Maximum heat input rating in million British Thermal Units per hour (MMBTU/hr) (for boilers and process heaters only);
- Cumulative maximum rated heat input capacity of the group (if aggregating units);
- Relative units of measure for other combustion sources (i.e.: HP rating, BTU rating, therms for billed natural gas);
- Customer meter number (for any units that combust natural gas) or ;
- Type of fuel combusted; and
- Annual calendar year amount of fuel combusted (in gallons for liquids, short tons for solids, and standard cubic feet for gaseous).

According to 40 CFR 98.36(c)(1), the INL Site may use aggregation of units as an alternative to reporting GHG emissions from individual units. In order to aggregate emissions, the INL Site must contain two or more units, each of which has a maximum rated heat input capacity of 250 MMBTU/hr or less. Data can be collected by a group of units, rather than by each individual unit. An example of the summation of data to be used for aggregate unit reporting is shown below.

Group ID	Highest Heat Input Value (MMBTU/hr)	Type of Fuel Combusted	Amount of Fuel Combusted (gal, scf, therms)
GP-Diesel Boilers	25	Diesel	524,125
GP-Propane Boilers	5	Propane	200,000
GP-Diesel Generators	25	Diesel	300,000
GP-Natural Gas Furnace	25	Natural Gas	1,000,000
GP-Propane Furnaces	10	Propane	10,000

Ensure any biogenic sources are identified (i.e. use of biodiesel vs. diesel fuel in equipment)

Each year facility/contractor data packages will be submitted to INL Environmental Support and Services by February 15th. An electronic file containing the reporting data and attachments should be provided to the INL Air Permitting and Reporting Lead with INL Environmental Support and Services for compiling the data into the Annual INL Site GHG Emissions Report.

Certification Statement

GHG emission report submittals will be certified in accordance with respective contract requirements to the INL Environmental Support and Services. Each facility / contractor will certify that the data is true, accurate and complete to the best of their knowledge (see Appendix B example).

3.1 Estimating Missing Data

In the event of missing data, the following approaches will be used to estimate missing data values. For each missing data event, maintain a record of the cause of the event and corrective actions taken to restore malfunctioning devices.

Individual Unit Meters

If individual unit meters malfunction or are not within calibration, fuel usage calculations will be made from the best available information, such as:

1. Available fuel receipt information (for units with dedicated supply/storage tanks)
2. Recorded equipment operation hour run times, size of each combustion unit, and manufacturer information on hourly consumption rate at identified loading. Manufacturer information will be consulted to determine fuel consumption from horsepower (hp) ratings, if applicable. If no manufacturer information is available, average fuel usage data will be used.

Fuel Delivery Receipts

If fuel delivery receipts are unavailable or missing for a particular delivery, estimates of fuel usage will be made from the best available information, such as:

1. Average of fuel receipt deliveries for the specific unit for the reporting period, in the case of missing receipts from a particular delivery, or

2. Recorded equipment operation hour run times and manufacturer information on hourly consumption rate at identified loading.

4. QUALITY ASSURANCE/MAINTENANCE

There are no monitoring and quality assurance/quality control requirements identified in 40 CFR 98.34 for Tier I calculations; therefore, ensuring facility/contractor data quality and maintaining and calibrating measurement devices in accordance with manufacturer's recommendations satisfy the quality assurance criteria for this INL Site GHG Monitoring Plan. As previously identified, supporting documentation will be provided that identifies procedures used to collect data for the annual INL Site GHG Monitoring Report. In accordance with 40 CFR 98.3(h)(i)(1), the facility/contractor will ensure the quality of the data used for GHG emissions calculations by properly calibrating and maintaining fuel meter measurement devices in accordance with manufacturer's recommendations and the fuel meter measurement devices must be calibrated to an accuracy of five percent. Information provided in INL Site contractor data submittals will be contractor certified as being true, accurate and complete, having been prepared in accordance with all applicable requirements.

5. MONITORING PLAN REVISIONS

As described in 40 CFR 98.3(g)(5)(iii), revisions to this INL Site GHG Monitoring Plan will be made as necessary to reflect changes in production processes, monitoring instrumentation, and quality assurance procedures; or to improve procedures for the maintenance and repair of monitoring systems to reduce the frequency of monitoring equipment downtime. Per DOE-ID requirements, the INL Site GHG Monitoring Plan will be reviewed annually (last quarter of calendar year).

6. RECORDS

In accordance with 40 CFR 98.3(g)(5)(iv), "[u]pon request by the [EPA], the owner or operator shall make all information that is collected in conformance with the INL Site GHG Monitoring Plan available for review during an audit. Electronic storage of the information in the plan is permissible, provided that the information can be made available in hard copy upon request during an audit."

According to 40 CFR 98.3(g), records required to be maintained for a minimum of three years from the date of submission include:

- Procedures used to ensure the accuracy of the estimates of fuel usage and boiler efficiency (as applicable, per 40 CFR 98.34(g))
- Unit Fuel usage meter data, as applicable
- Unit Fuel delivery receipts, as applicable
- Unit Combustion source operational run times, as applicable
- Missing Data Calculations, as applicable
- Unit Fuel meter calibration and maintenance records, as applicable
- Annual Site contractor data submittals, with contractor certifications
- Annual Site GHG Emissions Report and transmittals, with certifications

7. REFERENCES

40 CFR 98, Subparts A and C, "General Stationary Fuel Combustion Sources." Environmental Protection Agency, Code of Federal Regulations, current issue.

Appendix A

GHG Source Applicability Checklist

Greenhouse Gas Monitoring Plan - Source Applicability Determination Checklist Date:

Contractor: <input style="width: 90%;" type="text"/>	Facility/Bldgs: <input style="width: 90%;" type="text"/>
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Do any of your facilities operate non-electric stationary combustion sources? *(40 CFR 98 Subpart C)*
(portable and emergency equipment are exempt from reporting requirements) Yes No

If yes, mark fuel types used: Diesel Gasoline Propane Natural Gas Biomass

If other, please list:

If yes, mark equipment types used: Generator Boiler Water/ Space Heater Furnace Incinerator

If other, please list:

Do any of your facilities operate electricity generation units subject to the requirements of the Acid Rain Program or required to monitor and report CO₂ emissions year round? *(40 CFR 98 Subpart D)*
(portable and emergency equipment are exempt from reporting requirements) Yes No

Do any of your facilities produce adipic acid using oxidation? *(40 CFR 98 Subpart E)* Yes No

Do any of your facilities manufacture primary aluminum? *(40 CFR 98 Subpart F)*
(does not include experimental cells or research and development process units) Yes No

Do any of your facilities operate ammonia manufacturing process units? *(40 CFR 98 Subpart G)* Yes No

Do any of your facilities manufacture portland cement? *(40 CFR 98 Subpart H)* Yes No

Do any of your facilities manufacture electronics, including but not limited to, micro-electro-mechanical systems (MEMS), liquid crystal displays (LCDs), photovoltaic cells (PV), and semiconductors (including light-emitting diodes (LEDs))? *(40 CFR 98 Subpart I - reportable in 2011)* Yes No

Do any of your facilities produce ferroalloys (ferrochromium, ferromanganese, ferromolybdenum, ferronickel, ferrosilicon, ferrotitanium, ferrotungsten, ferrovanadium, silicomanganese, or silicon metal)? *(40 CFR 98 Subpart K)* Yes No

Do any of your facilities produce a fluorinated gas from any raw material or feedstock chemical, except for processes that generate HFC-23 during the production of HCFC-22? *(40 CFR 98 Subpart L - reportable in 2011)*
(Producing a fluorinated gas does not include the reuse or recycling of a fluorinated gas, the creation of HFC-23 during the production of HCFC-22, the creation of intermediates that are created and transformed in a single process with no storage of the intermediates, or the creation of fluorinated GHGs that are released or destroyed at the production facility before the production measurement.) Yes No

Do any of your facilities manufacture flat glass, container glass, pressed or blown glass, or wool fiberglass? *(40 CFR 98 Subpart N)* (does not include experimental furnaces or research and development process units) Yes No

Do any of your facilities produce HCFC-22 and/or destruct HFC-23? *(40 CFR 98 Subpart O)* Yes No

Do any of your facilities produce hydrogen gas sold as a product to other entities? *(40 CFR 98 Subpart P)* Yes No

Do any of your facilities produce iron and steel? *(40 CFR 98 Subpart Q)* Yes No

Do any of your facilities operate as primary or secondary lead smelters? *(40 CFR 98 Subpart R)* Yes No

Do any of your facilities manufacture lime products (e.g. calcium oxide, high-calcium quicklime, calcium hydroxide, hydrated lime, dolomitic quicklime, dolomitic hydrate)? *(40 CFR 98 Subpart S)* Yes No

Do any of your facilities produce magnesium or use molten magnesium in alloying, casting, drawing extruding, forming, or rolling operations? *(40 CFR 98 Subpart T - reportable in 2011)* Yes No

Do any of your facilities operate equipment that uses carbonates (limestone, magnesite, dolomite, siderite, ankerite, rhodochrosite, or sodium carbonate/soda ash)? *(40 CFR 98 Subpart U)* Yes No

Do any of your facilities produce nitric acid? *(40 CFR 98 Subpart V)* Yes No

Greenhouse Gas Monitoring Plan - Source Applicability Determination Checklist (contd.)

Date:

Contractor: <input style="width: 90%;" type="text"/>	Facility/Bldgs: <input style="width: 98%;" type="text"/>
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Do any of your facilities consist of onshore or offshore petroleum and natural gas production, onshore natural gas processing, onshore natural gas transmission compression, underground natural gas storage, liquefied natural gas (LNG) storage, LNG import and export equipment, or natural gas distribution? <i>(40 CFR 98 Subpart W - reportable in 2011)</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do any of your facilities produce petrochemicals (i.e. include processes that produce acrylonitrile, carbon black, ethylene, ethylene dichloride, ethylene oxide, or methanol)? <i>(40 CFR 98 Subpart X)</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do any of your facilities operate as a petroleum refinery? <i>(40 CFR 98 Subpart Y)</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do any of your facilities operate a wet-process phosphoric acid production line? <i>(40 CFR 98 Subpart Z)</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do any of your facilities manufacture pulp and paper? <i>(40 CFR 98 Subpart AA)</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do any of your facilities produce silicon carbide for abrasive purposes? <i>(40 CFR 98 Subpart BB)</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do any of your facilities manufacture soda ash? <i>(40 CFR 98 Subpart CC)</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No
Does your facility own or control an electric power system with a total nameplate capacity of SF ₆ and PFC containing equipment that exceeds 17,800 pounds? <i>(40 CFR 98 Subpart DD - reportable in 2011)</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do any of your facilities produce titanium dioxide? <i>(40 CFR 98 Subpart EE)</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do any of your facilities operate underground coal mines or under development with an operational pre-mining degasification system? <i>(40 CFR 98 Subpart FF - reportable in 2011)</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do any of your facilities operate zinc smelters or secondary zinc recycling facilities? <i>(40 CFR 98 Subpart GG)</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do any of your facilities operate municipal solid waste landfills (includes landfill gas collection systems and landfill gas destruction devices)? <i>(40 CFR 98 Subpart HH)</i> <small>(does not include hazardous waste, construction and demolition, or industrial landfills)</small>	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do any of your facilities operate industrial wastewater treatment systems (only applicable at the following operations - pulp and paper manufacturing, food processing, ethanol production, or petroleum refining)? <i>(40 CFR 98 Subpart II - reportable in 2011)</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do any of your facilities operate manure management systems? <i>(40 CFR 98 Subpart JJ)</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do any of your facilities produce, import, or export coal-based liquid fuels? <i>(40 CFR 98 Subpart LL)</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do any of your facilities produce, import, export, or supply petroleum products? <i>(40 CFR 98 Subpart MM)</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do any of your facilities operate as natural gas liquids fractionators or local natural gas distribution companies? <i>(40 CFR 98 Subpart NN)</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do any of your facilities produce a fluorinated greenhouse gas or nitrous oxide, import fluorinated greenhouse gases or nitrous oxide in bulk, or export fluorinated greenhouse gases or nitrous oxide in bulk? <i>(40 CFR 98 Subpart OO)</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do any of your facilities contain production process units or production wells that capture a CO ₂ stream for purposes of supplying CO ₂ for commercial applications or capture and maintain custody of a CO ₂ stream in order to sequester or otherwise inject it underground? Bulk importer or exporter of CO ₂ ? <i>(40 CFR 98 Subpart PP)</i> <small>(storage of CO₂ above ground or in geologic formations; use of CO₂ in enhanced oil and gas recovery; transportation or distribution of CO₂; purification, compression, or processing of CO₂; on-site use of CO₂ captured on site; and CO₂ imported or exported in equipment are excluded from reporting requirements)</small>	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do any of your facilities import or export pre-charged equipment that contains fluorinated GHG or closed-cell foams that contain fluorinated GHG? <i>(40 CFR 98 Subpart QQ - reportable in 2011)</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No

Greenhouse Gas Monitoring Plan - Source Applicability Determination Checklist (contd.)

Date:

Contractor: Facility/Bldgs:

Do any of your facilities contain any wells or groups of wells that inject a CO ₂ stream for a long-term containment in subsurface geologic formations? (40 CFR 98 Subpart RR - reportable in 2011) (this source category includes all wells permitted as Class VI under the Underground Injection Control Program. It does not include a well or group of wells where a CO ₂ stream is being injected in subsurface geologic formations to enhance the recovery of oil or natural gas unless certain conditions apply.)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Do any of your facilities manufacture or refurbish gas-insulated substations, circuit breakers, other switchgear, gas-insulated lines, or power transformers containing sulfur hexafluoride (SF ₆) or perfluorocarbons (PFCs)? (40 CFR 98 Subpart SS - reportable in 2011)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Do any of your facilities operate industrial landfills with a total landfill design capacity greater than or equal to 300,000 metric tons? (40 CFR 98 Subpart TT - reportable in 2011) (dedicated construction and demolition waste landfills, industrial landfills that only receive inert wastes (fly ash, cement kiln dust, rocks and/or soil from excavation and construction activities, glass, non-chemically bound sand, clay, gypsum, pottery cull, bricks, mortar, cement, furnace slag, refractory materials, plastics, and other waste materials that have a volatile solids concentration of 0.5 weight percent (on a dry basis) or less) are excluded from reporting requirements)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Do any of your facilities contain wells or a group of wells that inject a CO ₂ stream into the subsurface? (40 CFR 98 Subpart UU - reportable in 2011) (you must report under this subpart if your facility injects any amount of CO ₂ into the subsurface. If you report under Subpart RR of this part for a well or group of wells, you are not required to report under this subpart for that well or group of wells.)	<input type="checkbox"/> Yes	<input type="checkbox"/> No

Comments:

I certify that, based on reasonable inquiry, the information provided in this submittal has been prepared in accordance with all applicable requirements and is to the best of my knowledge and belief, true, accurate, and complete.

Print Name:

Signature:

Date:

Note: The following subparts are [reserved] and will be incorporated into this checklist once they are finalized in 40 CFR 98:
Subpart B, Subpart J, Subpart M, Subpart KK.

[Click here to access form for completion](#)

Appendix B

Example Certification Sheet

INSERT Facility Name

**2010 Annual GHG Emissions Reporting for the
Reporting Period January 01, 2011 through December 31, 2011**

I certify that, based on reasonable inquiry, the information provided in this submittal has been prepared in accordance with all applicable requirements and is to the best of my knowledge and belief, true, accurate, and complete.

Program / Project Director: _____ Date: _____
(INSERT Typed Name)

Or

Program / Project Manager: _____ Date: _____
(INSERT Typed Name)