Greenhouse Gas Reporting Program

XML Reporting Instructions
for Subpart A –
General Provisions

United States Environmental Protection Agency
Climate Change Division
Washington, DC

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These instructions explain how to report the required data for the applicable regulations. Owners and operators of units should refer to the applicable regulations for information about what data are required to be reported.

EPA has finalized a rule that defers the deadline for reporting data elements used as inputs to emission equations for direct emitters. See 76 FR 53057 (published August 25, 2011). In accordance with the rule, e-GGRT is not currently collecting data used as inputs to emission equations.

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Introduction

EPA developed e-GGRT (electronic Greenhouse Gas Reporting Tool) to support the Greenhouse Gas Reporting Program (GHGRP). Reporters have the option to enter greenhouse gas (GHG) data manually online using the web forms in e-GGRT or to submit a complete annual GHG report using the GHG XML Reporting Schema.

The purpose of this document is to provide guidance on preparing your annual GHG report using the GHG XML Reporting Schema. The schema defines expected data elements and attributes, allowable data types for each element, and the hierarchy and order in which elements must appear. Similar to an architectural blueprint that describes the structural design of a house, an XML schema describes the structural design of an XML file. It also defines which elements are optional and which are required, and the maximum number of occurrences allowed for each element. Please refer to the XML reporting instructions specifically written for your source category subpart(s) for more details.

The e-GGRT XML Reporting Schema is available for download at the GHGRP web site:
 http://www.ccdsupport.com/confluence/display/help/XML+Reporting+Instructions

XML Schema Components

The e-GGRT XML schema is made up of a root element, complex elements, and simple elements. The root element is the base of the XML schema. A complex element is a group of simple elements which are logically grouped together. A simple element is a single piece of data.

The elements are related to each other in parent-child relationships. The root element is the parent element of the entire schema. Complex elements are children of the root element, and complex elements can also be children of other complex elements. If a complex element (*see Complex Element 2 in the below diagram*) is dependent on a parent complex element, the child complex element cannot be included in the XML file unless the appropriate parent complex element is also included. Likewise, simple elements are children of complex elements.
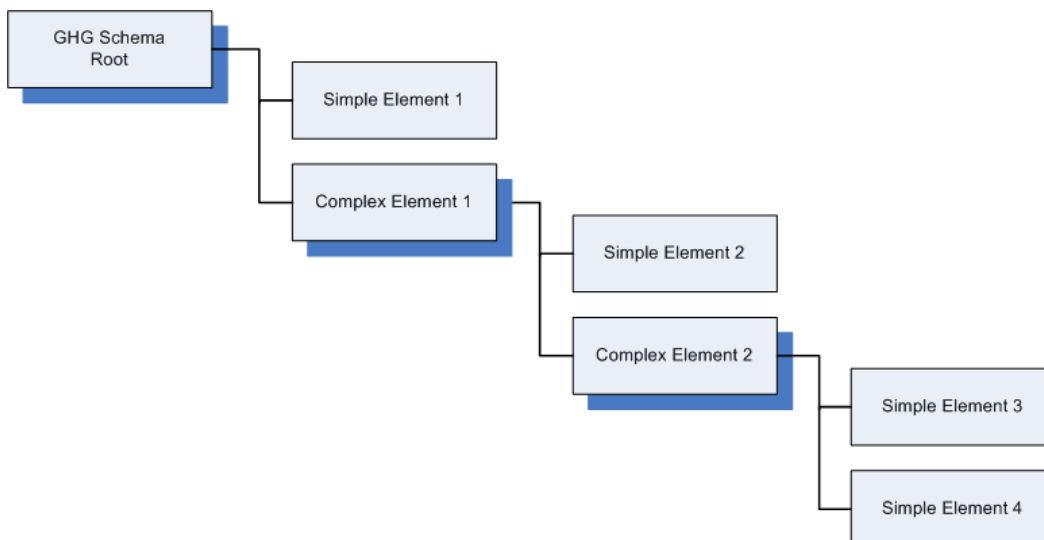
The schema is published in multiple XSD files. Organization of the schema by subpart allows users to focus on those XSDs they are using rather than the entire schema.

The following terminology is used throughout this document:

- **XML:** A markup language for documents containing structured information. The XML specification defines a standard way to add markup to documents. Its primary purpose is to facilitate the sharing of structured data across different information systems, particularly via the internet.

- **XML Schema:** An XML schema describes the structure of an XML document. An XML schema defines the set of rules to which the XML document must conform in order to be considered "valid". An instance of an XML schema is an XML schema document and is a file with the extension .xsd.

- **XML Document:** An XML document is a file containing data organized into a structured document using XML markup.

- **XML Element:** An XML element is a unit of the XML document that is expressed as tags in the form "<tagname>." XML elements must have either a start and end tag as in <ghg:GHGasInfoDetails> </ghg:GHGasInfoDetails> or a single empty tag name as in <ghg:GHGasInfoDetails/>. XML elements may be nested within one another in a structured hierarchy and sequence specified in an XML schema.

- **XML Attribute:** An XML attribute contains additional information about an XML element placed at the start tag of the XML element. XML attributes have the form attributeName = "attributeValue," as in <ghg:GHGasQuantity massUOM="Metric Tons">. XML attributes are used to report identifying information or to help e-GGRT process the data being reported within the data elements.

Important Considerations:

- The XML upload method may be used for submitting the annual GHG report only. User and facility/ supplier registration, and the Certificate of Representation must be completed online using e-GGRT. Registration instructions are available at the e-GGRT help site at: http://www.ccdsupport.com/confluence/display/help/XML+Reporting+Instructions.

- All XML files submitted to e-GGRT must be "well-formed" and will be accepted only if they conform to the current version of the e-GGRT XML schema. For more information, see section '**Validation Checks**'.

- An XML submission can only contain GHG data for a single facility or supplier. All data for a facility or supplier must be submitted in a single file as a complete report and must include all of the relevant subparts. It is not possible to submit a subset of any portion of a facility's data to add, delete, correct, or update. The entire report must be resubmitted to make any modification at all. Each subsequent submission for the same facility replaces all of the previously submitted data.

- The GHG XML schema includes enumerated lists (pick lists) of values for many data elements. For rules regarding the expected values for a specific data element, please refer to the XML reporting instructions for your specific source category subpart or to the mandatory reporting of greenhouse gases rule.

- **Not all data elements included in the schema must be reported.** Required or relevant data components and data elements are boxed in red in the schema diagrams and listed in the definition tables. If a data element is not listed, it does not need to be reported. Some data elements are conditionally required; these are also noted in the diagrams.

- **Enumerations are case sensitive.** Tagnames must be entered exactly as they are defined in the schema in order to pass validation.

Figure 1
Subpart A Reporting Instructions Diagram
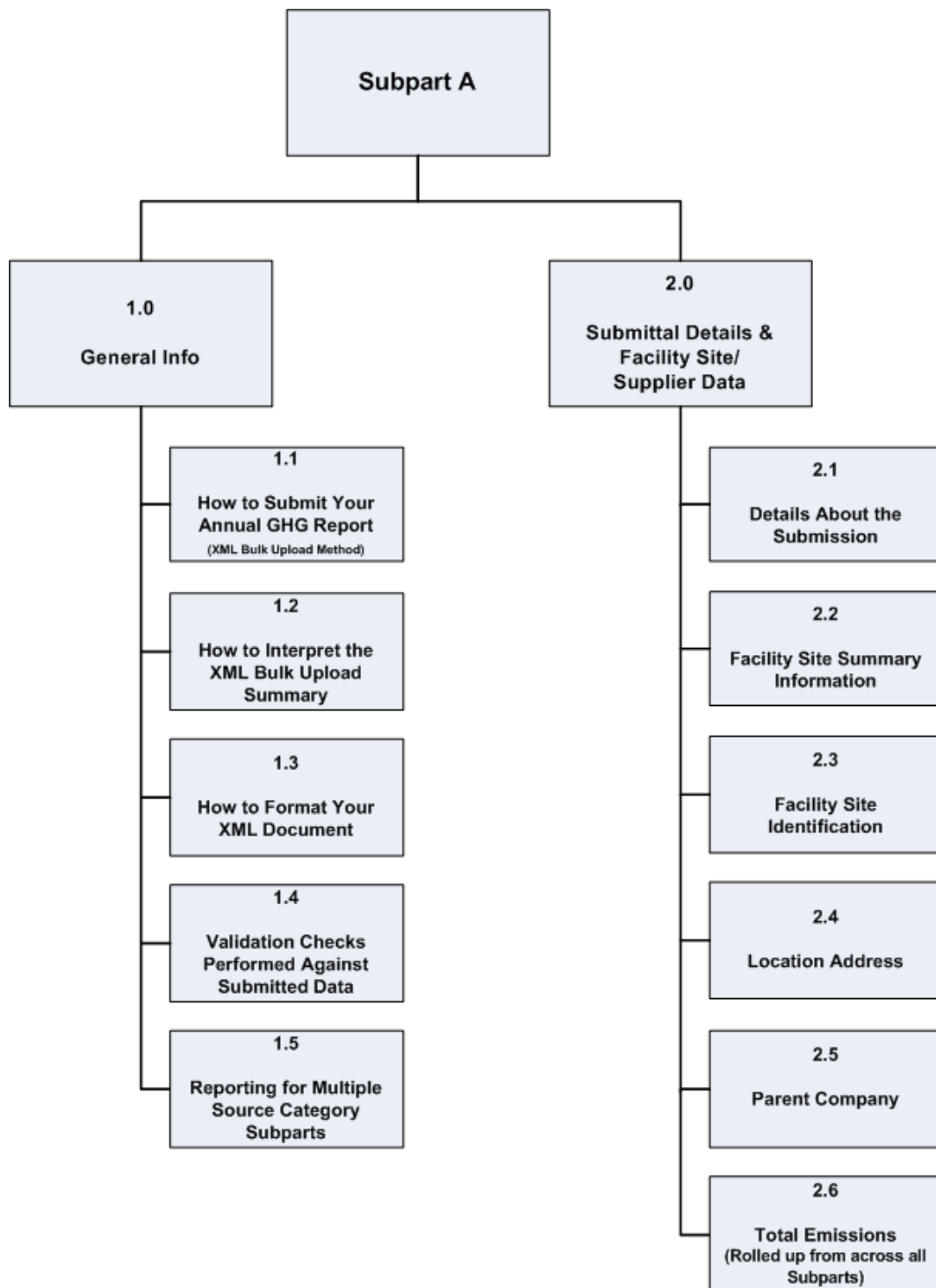
The XML schema includes the following areas for reporting for Subpart A, as diagramed in Figure 1:

1.0 General Information: includes basic information about the GHG submittal process and includes tips to ensure the completeness and quality of your reporting data.

    1.1. How to submit your annual GHG report

    1.2. How to interpret the XML bulk upload summary

    1.3. How to format your XML document

    1.4. Validation checks performed against submitted GHG data

    1.5. Reporting for multiple source category subparts

2.0 Submittal Details and Facility or Supplier Site Data: includes information on how to report general information about your annual report and the facility or supplier, such as the facility or supplier name, street address, U.S. parent company information, and the total emissions (or quantities) for CO_2e. For facilities, CO_2e (excluding biogenic CO_2) and biogenic CO_2 are reported separately. These are aggregated across all source category subparts associated with the facility or the supplier.

    2.1. Details About the Submission

    2.2. Facility Site Summary Information[†]

    2.3. Facility Site Identification[†]

    2.4. Location Address

    2.5. Parent Company

    2.6. Total Emissions for the Facility (Quantities for Suppliers)

[†] The "Facility Site Information" and "Facility Site Details" sections in the schema apply to both facility and supplier. In general, where XML instructions refer to "facility" it means "facility or supplier".

1.0 General Information

1.1 How to Submit Your Annual Report (XML Bulk Upload)

This section provides step-by-step instruction on how to upload your annual GHG data in XML format. All annual GHG reports must be submitted to the EPA through the electronic Greenhouse Gas Reporting Tool (e-GGRT). E-GGRT provides facilities and suppliers a choice of methods for reporting their GHG data to EPA:

- **Data entry via e-GGRT web-forms:** Using the web forms provided by e-GGRT to manually enter your data is the default method.

- **Data upload via XML:** This optional method allows you to upload a prepared XML file. Your GHG data will process only if the uploaded file validates against the schema.

NOTE: For a given reporting year, a facility or supplier must choose one method or the other for all of that year's data. Changing your GHG Reporting Method will result in the loss of any previously entered GHG Data for the current reporting year.

In order to submit an annual report in XML format, you must switch the facility or supplier's default reporting method to "Data upload via XML". Follow the steps outlined below.

Step 1: Create an XML file containing the required data for Subpart A and every source category subpart associated with your facility or supplier.

Step 2: Log into e-GGRT and click the **Data Reporting** tab.

Step 3: Open the facility or supplier for which you are submitting an XML report.

Step 4: Click **Change** next to the Facility or Supplier's GHG Reporting Method.

Step 5: Click "Data upload via XML" and then **Save**.

Step 6: Click **OK** at the warning prompt.

> Changing your GHG Reporting Method will result in the loss of any previously entered GHG Data for the current reporting year.

The system displays the message highlighted in yellow above. It warns that if you proceed with changing the reporting method, all previously entered web form data will be lost (removed from e-GGRT). This does not include the data that was previously submitted. You will always be able to view all previously submitted reports in HTML or XML format.

After following the steps above, you can proceed with uploading your XML data – just browse to your zipped or unzipped XML document and click **Upload**. E-GGRT will then begin processing the document.

If critical errors are encountered during this stage, then processing is halted. E-GGRT will not generate a report for your review, and you will not be allowed to submit your annual GHG data until the errors are corrected. For more information, see section "**Validation Checks".**

Frequently Asked Questions

Q: If I report via web forms this year, can I change to XML next year?

A: Yes, however, when you switch from web form reporting to XML upload, we recommend saving a backup copy of your data by generating your annual GHG report and saving both the XML and HTML versions locally on your computer.

Q: Will reporters be able to upload an XML file and then edit the data via web forms?

A: No, reporters must choose either web form data entry or XML upload. Once an XML file has been uploaded, you may review the e-GGRT summary of that file; however, you may not edit it using the web forms data entry pages. If after uploading an XML file you determine that the data must be changed, you must edit the XML file outside of e-GGRT and upload the new version.

Q: After I use the 'Data upload via XML' option for a facility or supplier can I switch to the 'Data entry via e-GGRT web-forms' option?

A: Yes, however, switching between reporting methods deletes already entered data. This is presented to the user through a pop-up confirmation warning.

Q: Can I use the *IsConfidentialBusinessInformationIndicator* flag to mark my data as CBI in my XML file?

A: No. EPA published a final rule that delineates which data submitted in e-GGRT will be treated as CBI and which data can be released to the public (76 FR 30782). This final rule made CBI determinations for the source categories required to report by September 30, 2011. EPA will handle data submitted in e-GGRT based on these determinations. Reporters cannot make additional claims in their XML file. Reporters can look at this list to determine if a particular data element will be treated as CBI: http://www.epa.gov/climatechange/emissions/downloads11/documents/CBI-final-data-category.pdf.

More information on the final CBI rule is available here: http://www.epa.gov/climatechange/emissions/CBI.html

1.2 How to Interpret the Uploaded Annual Report Summary

This section provides guidance in interpreting the Uploaded Annual Report Summary. Every time your XML document is uploaded into e-GGRT, the system will begin processing it. If your upload fails initial parsing then the upload status will be '*Not generated, Errors during report generation. See below for details.*' To see a complete description of the parsing error, click the blue link '**Show Full Error Message**' link. You will need to upload a corrected XML file in order to continue. Figure 2 below displays a screen shot of a parser error message.

Figure 2
XML Validation Error Messages

If your XML document passes the initial validation checks, then you will see an 'Uploaded Annual Report Summary' as depicted in Figure 3 below.

Figure 3
'Uploaded Annual Report Summary'

UPLOADED ANNUAL REPORT SUMMARY

Field Name	XML Value	eGGRT Value
Reporting Facility	Hardy Landfill	Hardy Landfill
Reporting Year	2010	2010
GHG Facility ID	523958	523958
CO_2 (Biogenic Carbon Dioxide C-JJ)	0	0
CO_2 (Nonbiogenic Carbon dioxide C-JJ)	72356172	72356172
CO_2 (Nonbiogenic Carbon dioxide KK-PP)	0	0

The values displayed in the **XML Value** column are parsed out of your XML document. The values displayed in the **e-GGRT Value** column are expected based on data in the e-GGRT database or, in the case of the facility-level CO_2 or CO_2e values, as calculated by e-GGRT. The first three items: **Reporting Facility**, **Reporting Year**, and **GHG Facility ID**, should always match exactly. If there is a difference between these values, then e-GGRT will display an error message as depicted in Figure 4.

Figure 4
'Uploaded Annual Report Summary' with Error Message

UPLOADED ANNUAL REPORT SUMMARY

Field Name	XML Value	eGGRT Value
Reporting Facility	Hardy Landfill	Hardy Landfill
Reporting Year	2011	2010
GHG Facility ID	523955	523958

⚠ GHG Facility ID does not match the XML GHG Facility ID and/or the reporting year does not match the XML reporting year.

Frequently Asked Question

Q: Where do I find my facility ID?

A: The "GHG Facility ID" is system assigned and is displayed on both the Data Reporting and Facility Management tabs.

The **GHG Details** table (Figure 5) includes a breakdown of GHGs by subpart parsed from your uploaded file. Examine this table closely to ensure that you agree with the results. If the 'rolled up' GHG details do not match the values you intend to report, then your XML report likely contains a formatting or calculation error.

Figure 5
Upload Annual Report Summary Diagram

UPLOADED ANNUAL REPORT SUMMARY

Field Name	XML Value	eGGRT Value
Reporting Facility	Blueglass Oil Incorporated	Blueglass Oil Incorporated
Reporting Year	2010	2010
GHG Facility ID	522954	522954
CO_2 (Biogenic Carbon Dioxide C-JJ)	6479	6479
CO_2 (Nonbiogenic Carbon dioxide C-JJ)	51109696	51109696
CO_2 (Nonbiogenic Carbon dioxide KK-PP)	0	0

GHG DETAILS (source categories, subparts C - HH)

Subpart	Greenhouse Gas	Amount (metric tons)
C	CO_2 (biogenic)	3,245
C	CH_4	22,334
C	N_2O	222
C	CO_2 (excluding biogenic)	20,211
Y	CO_2 (biogenic)	3,234
Y	CH_4	89,536
Y	N_2O	156,042
Y	CO_2 (excluding biogenic)	298,375

1.3 How to Format Your XML Document

This section explains how to create a conformant XML document. It includes advice on best practices for reporting your data as well as general information on how to construct your XML document.

Creating the XML file using Microsoft Applications

Many Microsoft applications have the capability to export data and create XML files. However, these files will not be compatible with the GHG schema structure. In particular, you cannot use MS Access to export your data and use the built-in functionality to create an XML document. You cannot use MS Excel to either export your data or create the XML document. These applications will create an XML document that is not in compliance with EPA's guidelines and will not validate against GHG_Final_v1.2.xsd.

Data Types

Most data types in the GHG schema are one of the following: strings, decimal, count (Integer), year, or date. When a data element is identified as a string but appears to be storing numeric values, you are expected to provide the correct numeric format as indicated in the reporting instructions for your specific source category subpart. E-GGRT will convert the string values into the formats defined and apply checks for these data types. Data which are not consistent with the formats defined will be rejected.

Dates and Years

All date and year data elements should be formatted as follows:

Date If a data element name contains the word "date," the data element is for a specific day. These should be represented as an eight digit sequence of numeric characters in a string format of YYYY-MM-DD and should include leading zeroes between the representative elements containing only one digit.

Year If a data element name contains the word "year," the data element is for a calendar year. This data should be reported as a four digit sequence of numeric characters in a string format of YYYY.

Reporting Numbers

There are several different reporting formats for numbers. The following table describes each format.

Table 1
Reporting Formats for Numbers

Content Type	Reporting Format	Example
Integer (count)	Whole number (no decimal places, preceding zeroes).	Valid: 2, 15, 230, 0 Invalid: -1, 4.056
Decimal	Decimal numbers.	Valid: 100.0, -34.6, 0.3, 0.0
Percentage	Decimal number with a fixed number of one decimal point. 0.0 – 100.0	Valid: 2.0, 15.5 Invalid: -1, 100.9, 101

The GHG Schema Namespace

The purpose of an XML namespace is to ensure that data elements and attributes referenced in your XML document are uniquely named. This is especially important when your GHG data is combined with data from other systems having data elements with the same name. For example, the XML schemas for the Emissions Inventory System (EIS) and e-GGRT each contain a data element named '*FacilitySiteIdentifier*'. This data element serves different purposes depending on the system with which it is associated. Now suppose both systems contain a *FacilitySiteIdentifier* = 87675. In EIS, that identifier might refer to ABC Acme, Inc. but in e-GGRT, it might refer to the Blue Glass Corporation, a completely different company.   Using a namespace identifier avoids such ambiguities.

Namespace identifiers are typically three-letter acronyms that precede every data element and attribute tag in your XML. For example, *<FacilitySiteIdentifier>* becomes *<ghg:FacilitySiteIdentifier>*. In this example, the first data element name is not unique but it becomes unique when the prefix (*ghg:*) is added.

Namespace identifiers are defined in the declaration statement at the top of each XML file. The declaration statement also contains a reference to the location of the schema definition files. Ideally, you should reference the website in which the schema is hosted. If that is not available, then you have the option of referencing a local copy of the schema files. These are the schema files that are downloaded to your system.

Figure 6 provides an example of a namespace declaration statement that references a local copy of the schema root file (on the L: network drive). Substitute the L: network directory path or URL in the example with the path to your local schema root file. If your directory path or URL contains spaces, please modify the path so that each space is replaced with "%20". For example:

Actual path: P:/GHG Reporting/XML Schema/e-GGRT/8012011/GHG_Final_v1.2.xsd

Modified path: P:/GHG**%20**Reporting/XML**%20**Schema/e-GGRT/8012011/GHG_Final_v1.2.xsd

Frequently Asked Questions

Q: Are there tools available that will generate an e-GGRT XML file out of the values in our database?

A: There are commercial products available for producing XML files but their applicability will depend on your database provider. EPA is not supporting such functionality at this time.

Q: Can I enter test data using the web forms, generate a report as XML and use that as a guideline for creating XML files?

A: Yes, the XML file generated by e-GGRT is compliant with the current schema and can be used as a model.

Q: Which file extensions are supported by e-GGRT for XML upload?

A: E-GGRT currently supports .xml and .zip file extensions.

The GHG XML File Structure

The content within your XML file must be ordered precisely as defined in the GHG schema. Some data elements, such as "SubmittalComment", are optional and do not have to be included in your XML file. However, if reported, then the data element must appear in the specified order. For example, the "SubmittalComment" data element (if reported) must always appear immediately following the namespace declaration. The diagram below depicts a high-level view of the schema's hierarchy. It contains a sample XML file that has been color coded to denote each level within the hierarchy.

Figure 6
GHG XML File Structure

```
<ghg:GHG xmlns:ghg=http://www.ccdsupport.com/schema/ghg"
xmlns:xsi=http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.ccdsupport.com/schema/ghg file:///L:/XML_Schema/GHG_schema_07272011/GHG_Final_v1.2.xsd">

    <ghg:SubmittalComment>This report was prepared by John Blue of ADC Inc.</ghg:SubmittalComment>

    <ghg:FacilitySiteInformation>

        <ghg:ReportingYear>2010</ghg:ReportingYear>

        <ghg:FacilitySiteDetails>

            <ghg:FacilitySite>
                <ghg:FacilitySiteIdentifier>509316</ghg:FacilitySiteIdentifier>
                        <ghg:FacilitySiteName>Domingo Chemicals Supplies Inc.</ghg:FacilitySiteName>
                </ghg:FacilitySite>
                <ghg:LocationAddress/>
                <ghg:TotalNonBiogenicCO2eFacilitySubpartsCtoJJ>0</ghg:TotalNonBiogenicCO2eFacilitySubpartsCtoJJ>
                <ghg:TotalBiogenicCO2eFacilitySubpartsCtoJJ>0</ghg:TotalBiogenicCO2eFacilitySubpartsCtoJJ>
                <ghg:TotalCO2eSupplierSubpartsKKtoPP>6269</ghg:TotalCO2eSupplierSubpartsKKtoPP>

                <ghg:SubPartInformation>
                        <ghg:SubPartC>

                        ...
                        </ghg:SubPartC>          Note: Report only the Subpart(s) associated with the facility.
                        <ghg:SubPartH>

                        ...
                        </ghg:SubPartH>
                </ghg:SubPartInformation>

        </ghg:FacilitySiteDetails>

        <ghg:AbbreviatedReport>N</ghg:AbbreviatedReport>
        <ghg:CalculationMethodologyChangesDescription/>
        <ghg:BestAvailableMonitoringMethodsUsed/>
        <ghg:StartDate>2010-01-01</ghg:StartDate>
        <ghg:EndDate>2010-12-31</ghg:EndDate>
        <ghg:DateTimeReportGenerated>2011-09-05</ghg:DateTimeReportGenerated>
        <ghg:DateSubmitted/>

    </ghg:FacilitySiteInformation>

</ghg:GHG>
```
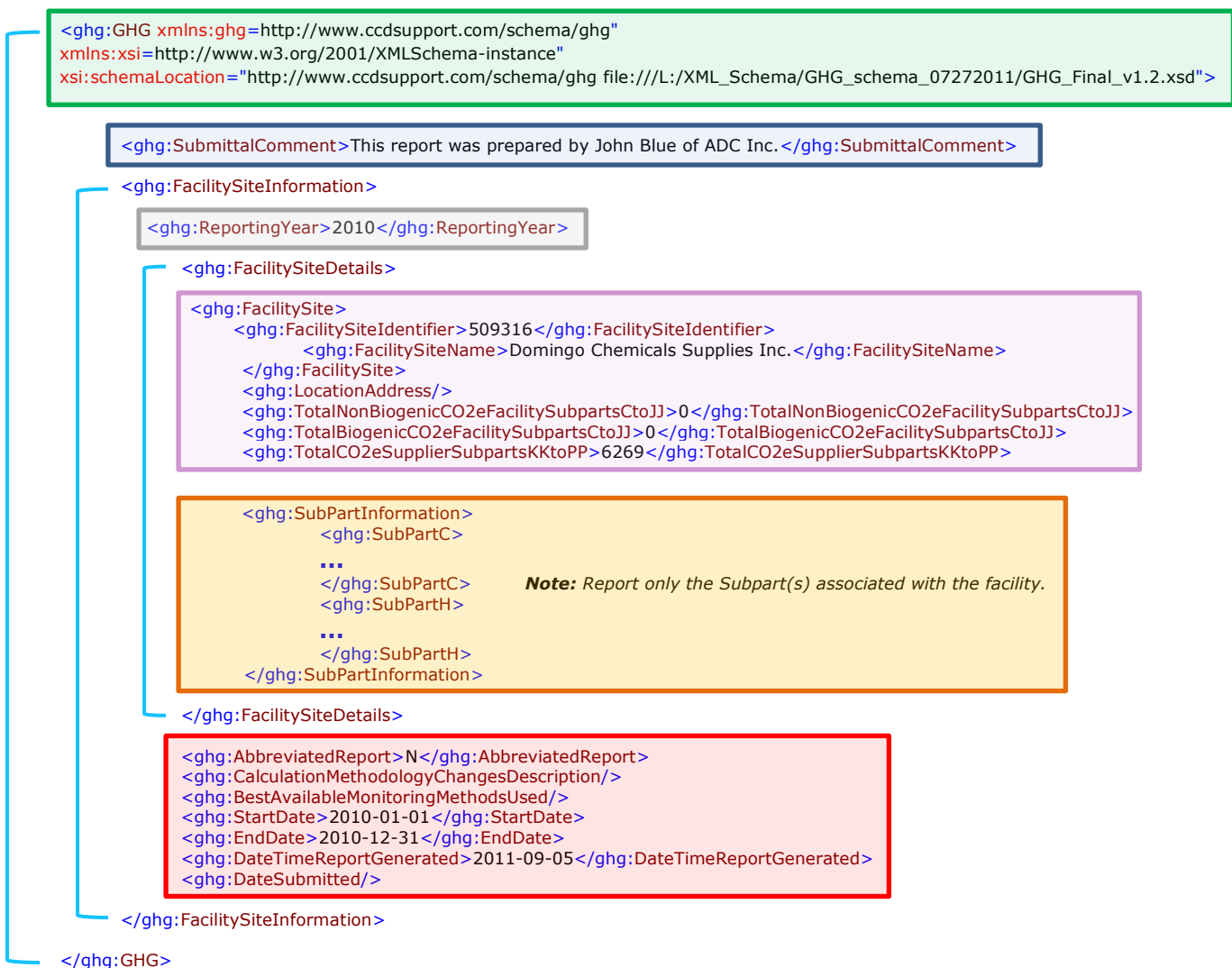
Legend

Green	Namespace declaration
Blue	Submittal comment
Gray	Reporting year
Pink	General information about the facility
Orange	Subpart GHG data
Red	Additional information about your XML file submittal

1.4 Validation Checks

This section identifies the quality checks that e-GGRT performs to ensure your XML submission file adheres to the basic specifications defined in the GHG schema. The initial checks performed on your XML file work at two levels:

- **Well-formed**
  A well-formed XML document is one that matches the basic specifications for any XML file. This means that all tags starting with a < must have a matching >. Further, values for any attributes within the opening tag element must be quoted either with single or double quotes.

  Also, the open and closing elements must match. When a close tag is encountered, it must hold the same text value as the most recent start tag. XML is case sensitive, so open and close tags must be in the same case.

  A well-formed XML document contains code that is syntactically correct. Every data element referenced within the document is either

  - o   opened and subsequently closed,
  - o   an empty element, which in that case must be closed, or
  - o   properly nested so that it does not overlap.

  For example, in XML: <GHGasName>Methane</GHGasName> is a well-formed data element, while <GHGasInfoDetails><GHGasName>Methane</GHGasInfoDetails> is not, since the *GHGasName* element is not closed. In XML, empty elements (elements that inherently have no content) should be closed by putting a slash at the end of the opening tag, e.g. <TestMethod/>.

  In a well-formed document, all data elements are well-formed and a single element, known as the root element, contains all of the other elements in the document.

  For example, the code below is not well-formed XML because the *ReportingYear* and *AbbreviatedReport* elements overlap:

  ```
  <!-- WRONG!  NOT WELL-FORMED XML! -->
  <ReportingYear>2010<AbbreviatedReport>N</ReportingYear></AbbreviatedReport>


  <!-- CORRECT: WELL-FORMED XML! -->
        <FacilitySite>
            <FacilitySiteIdentifier>523937</FacilitySiteIdentifier>
            <FacilitySiteName>ABC Industries</FacilitySiteName>
        </FacilitySite>
  ```

- **Valid**
  A valid XML document complies with the restraints stated within the schema definition. Thus data elements must appear in the defined hierarchical structure and the content of the individual elements must conform to the declared data types specified in the schema. For more information, visit the following website: http://www.codeproject.com/KB/books/wrox_beginningxml2.aspx.

Important Considerations:

1) This initial set of validation checks only determine if your XML file can be uploaded into e-GGRT for further evaluation.

2) Once uploaded, your XML submission will be subject to the same validation and quality
   assurance as a web form submission.

3) EPA will follow up if there are questions.

The e-GGRT XML schema contains validation business rules regarding the content of the submission, and some data types are constrained. You will receive a validation report from EPA upon uploading your XML file. The following table identifies the initial schema validation checks that e-GGRT will perform. E-GGRT verifies that the submission contains a valid ReportingYear.

Table 2
XML Validation upon Upload

Data Element Name	Check Type	Explanation
FacilitySiteInformation	Present	An XML submission can only contain GHG data for a single facility or supplier. Upon upload, e-GGRT will verify that your XML submission file contains one, and only one, 'FacilitySiteInformation' record.
ReportingYear	Present, Format, and matches open submission window	Submissions will only be accepted for open submission windows. Upon upload, e-GGRT will verify that your XML submission file contains a properly formatted value in the 'ReportingYear' record and that it matches an open submission window. For example, if the current submission window is 2010, then submission files containing a ReportingYear of 2011 would not be accepted.
FacilitySiteDetails	Present	E-GGRT only accepts submissions containing a facility site details record. This record contains information about the facility and its emissions.
StartDate	Present and Format	A start date record must exist and be formatted as YYYY-MM-DD.
EndDate	Present and Format	An end date record must exist and be formatted as YYYY-MM-DD. It must also be later than the start date.
DateTimeReportGenerated	Present and Format	E-GGRT verifies that the submission contains a 'DateTimeReportGenerated' value and that is properly formatted as YYYY-MM-DD.
Data formats	Format	All data values must be formatted as specified in the schema.
Elements with enumerated values	Content	If an element has enumerated values, e-GGRT verifies that the reported value matches one of them.

Frequently Asked Questions

Q: What happens if I upload multiple XML files for a facility during the reporting period? Which one counts as the 'official' submission?

A: The last submitted, signed and certified annual GHG report supersedes any prior submissions for a given reporting year.

Q: Will e-GGRT provide an error message that references a specific tag or data element if an upload fails the schema validation check?

A: No, if your XML upload fails the schema validation check, e-GGRT will display a general message. The reporter can run it against a schema validation tool to get specific error messages.

Q: I understand that an XML file must cover one and only one facility. Will e-GGRT support uploading XML files for multiple facilities at one time?

A: This feature will not be supported for the 2010 reporting year but EPA has added this suggestion to the list of possible future enhancements.

1.5 Reporting for Multiple Source Category Subparts

This section describes how to report for multiple source categories. If a particular facility or supplier includes operations falling into multiple source categories, it must report for each source category applicable to the rule. Each source category must comply with category-specific methodologies and requirements regarding calculations, monitoring and quality assurance, missing data, record keeping, and reporting. For instance, a pulp and paper mill with on-site stationary combustion units must report emissions covered by the pulp and paper manufacturing category as well as the stationary fuel combustion category.

The annual report must consist of a single XML file containing GHG data for each of the relevant subparts. The construction of the report is virtually the same as one for a single subpart except that the **SubpartInformation** section contains multiple records.

The following example contains emissions data for a single source category, Subpart D.

```
<ghg:SubPartInformation>
    <ghg:SubPartD>
        <ghg:GHGasInfoDetails>
            <ghg:GHGasName>Methane</ghg:GHGasName>
            <ghg:GHGasQuantity massUOM="Metric Tons">
                <ghg:CalculatedValue>3</ghg:CalculatedValue>
            </ghg:GHGasQuantity>
        </ghg:GHGasInfoDetails>
        <ghg:GHGasInfoDetails>
            <ghg:GHGasName>Carbon Dioxide</ghg:GHGasName>
            <ghg:GHGasQuantity massUOM="Metric Tons">
                <ghg:CalculatedValue>3588</ghg:CalculatedValue>
            </ghg:GHGasQuantity>
        </ghg:GHGasInfoDetails>
        <ghg:UnitDDetails>
            <ghg:UnitIdentification>
                <ghg:UnitName>3-Eq G-4</ghg:UnitName>
                <ghg:UnitType>Electricity Generator</ghg:UnitType>
            </ghg:UnitIdentification>
            <ghg:Part75Methodology>Appendix G, Equation G-4</ghg:Part75Methodology>
            <ghg:TierMethodologyStartDate>2010-01-01-00:05</ghg:TierMethodologyStartDate>
            <ghg:TierMethodologyEndDate>2010-12-31-00:05</ghg:TierMethodologyEndDate>
            <ghg:isAcidRainProgramIndicator>Y</ghg:isAcidRainProgramIndicator>
            <ghg:AnnualCO2EmissionsMonitoredLocationShortTons massUOM="Short Tons">
                <ghg:CalculatedValue>1000</ghg:CalculatedValue>
            </ghg:AnnualCO2EmissionsMonitoredLocationShortTons>
            <ghg:AnnualCO2EmissionsMonitoredLocationMetricTons massUOM="Metric Tons">
                <ghg:CalculatedValue>907</ghg:CalculatedValue>
            </ghg:AnnualCO2EmissionsMonitoredLocationMetricTons>
            <ghg:AnnualCO2EmissionsAllBiomassFuelsCombined massUOM="Metric Tons">
                <ghg:CalculatedValue>10</ghg:CalculatedValue>
            </ghg:AnnualCO2EmissionsAllBiomassFuelsCombined>
            <ghg:ElectricityFuelDetails>
                <ghg:FuelType>Mixed (Electric Power sector)</ghg:FuelType>
                <ghg:CH4EmissionsCO2Equivalent massUOM="Metric Tons">
                    <ghg:CalculatedValue>10</ghg:CalculatedValue>
                </ghg:CH4EmissionsCO2Equivalent>
            </ghg:ElectricityFuelDetails>
            <ghg:AppendixGEquationG4>
                <ghg:OperatingHoursFuelFlowRate>7</ghg:OperatingHoursFuelFlowRate>
                <ghg:OperatingHoursHHVSubstituted>8</ghg:OperatingHoursHHVSubstituted>
            </ghg:AppendixGEquationG4>
        </ghg:UnitDDetails>
    </ghg:SubPartD>
</ghg:SubPartInformation>
```

Subpart D

The following example contains emissions information for Subparts C and D. In addition, Subpart C contains data for multiple units – each unit is highlighted in a different color.

```xml
<ghg:SubPartInformation>
    <ghg:SubPartC>
        <ghg:GHGasInfoDetails>
            <ghg:GHGasName>Biogenic Carbon dioxide</ghg:GHGasName>
            <ghg:GHGasQuantity massUOM="Metric Tons">
                <ghg:CalculatedValue>9200</ghg:CalculatedValue>
            </ghg:GHGasQuantity>
        </ghg:GHGasInfoDetails>
        <ghg:GHGasInfoDetails>
            <ghg:GHGasName>Methane</ghg:GHGasName>
            <ghg:GHGasQuantity massUOM="Metric Tons">
                <ghg:CalculatedValue>4015.72</ghg:CalculatedValue>
            </ghg:GHGasQuantity>
        </ghg:GHGasInfoDetails>
        <ghg:GHGasInfoDetails>
            <ghg:GHGasName>Nitrous Oxide</ghg:GHGasName>
            <ghg:GHGasQuantity massUOM="Metric Tons">
                <ghg:CalculatedValue>393.58</ghg:CalculatedValue>
            </ghg:GHGasQuantity>
        </ghg:GHGasInfoDetails>
        <ghg:GHGasInfoDetails>
            <ghg:GHGasName>Carbon Dioxide</ghg:GHGasName>
            <ghg:GHGasQuantity massUOM="Metric Tons">
                <ghg:CalculatedValue>518460</ghg:CalculatedValue>
            </ghg:GHGasQuantity>
        </ghg:GHGasInfoDetails>

        <ghg:UnitsCDetails>
            <ghg:UnitIdentification>
                <ghg:UnitName>CT 6- CEMS</ghg:UnitName>
                <ghg:UnitDescription>Part 75 unit</ghg:UnitDescription>
            </ghg:UnitIdentification>
            <ghg:CO2EmissionsAllBiomassFuelsCombined massUOM="Metric Tons">
                <ghg:CalculatedValue>1000.0</ghg:CalculatedValue>
            </ghg:CO2EmissionsAllBiomassFuelsCombined>
            <ghg:TierFuelDetails>
                <ghg:FuelType>Crude Oil</ghg:FuelType>
                <ghg:Part75FuelDetails>
                    <ghg:CH4EmissionsCO2Equivalent massUOM="Metric Tons">
                        <ghg:CalculatedValue>100.00</ghg:CalculatedValue>
                    </ghg:CH4EmissionsCO2Equivalent>
                    <ghg:N2OEmissionsCO2Equivalent massUOM="Metric Tons">
                        <ghg:CalculatedValue>10.000</ghg:CalculatedValue>
                    </ghg:N2OEmissionsCO2Equivalent>
                </ghg:Part75FuelDetails>
            </ghg:TierFuelDetails>
            <ghg:Part75Details>
                <ghg:AnnualCO2EmissionsMeasuredByPart75Method massUOM="Metric Tons">
                    <ghg:CalculatedValue>100000.0</ghg:CalculatedValue>
                </ghg:AnnualCO2EmissionsMeasuredByPart75Method>
                <ghg:TierMethodologyStartDate>2010-01-01</ghg:TierMethodologyStartDate>
                <ghg:TierMethodologyEndDate>2010-12-31</ghg:TierMethodologyEndDate>
                <ghg:Part75HeatInputMethod>CEMS</ghg:Part75HeatInputMethod>
                <ghg:PartCO2Method>CEMS calculation method--- § 98.33(a)(5)(iii)</ghg:PartCO2Method>
                <ghg:CEMSDetails>
                    <ghg:OperatingHoursCO2ConcentrationSubstituted>1000</ghg:OperatingHoursCO2ConcentrationSubstituted>
                    <ghg:OperatingHoursStackGasFlowRateSubstituted>10</ghg:OperatingHoursStackGasFlowRateSubstituted>
                    <ghg:OperatingHoursStackGasMoistureContentSubstituted>1</ghg:OperatingHoursStackGasMoistureContentSubstituted>
                </ghg:CEMSDetails>
            </ghg:Part75Details>
        </ghg:UnitsCDetails>
```

Subpart C

1ˢᵗ Unit

```
<ghg:UnitsCDetails>
    <ghg:UnitIdentification>
        <ghg:UnitName>CS-CT 5- Tier 4</ghg:UnitName>
        <ghg:UnitDescription>Tier 4 unit</ghg:UnitDescription>
    </ghg:UnitIdentification>
    <ghg:CommonStackDetails>
        <ghg:NumberofUnits>7</ghg:NumberofUnits>
        <ghg:CombinedMaxRatedHeatInputCapacity heatUOM="mmBtu/hr">
            <ghg:MeasureValue>7000</ghg:MeasureValue>
        </ghg:CombinedMaxRatedHeatInputCapacity>
    </ghg:CommonStackDetails>
    <ghg:TierFuelDetails>
        <ghg:FuelType>Blast Furnace Gas</ghg:FuelType>
        <ghg:Tier4FuelDetails>
            <ghg:EmissionsNodeDetails>
                <ghg:TotalCH4CombustionEmissions massUOM="Metric Tons">
                    <ghg:CalculatedValue>700.00</ghg:CalculatedValue>
                </ghg:TotalCH4CombustionEmissions>
                <ghg:TotalN2OCombustionEmissions massUOM="Metric Tons">
                    <ghg:CalculatedValue>70.000</ghg:CalculatedValue>
                </ghg:TotalN2OCombustionEmissions>
                <ghg:CH4EmissionsCO2Equivalent massUOM="Metric Tons">
                    <ghg:CalculatedValue>14700.00</ghg:CalculatedValue>
                </ghg:CH4EmissionsCO2Equivalent>
                <ghg:N2OEmissionsCO2Equivalent massUOM="Metric Tons">
                    <ghg:CalculatedValue>21700.000</ghg:CalculatedValue>
                </ghg:N2OEmissionsCO2Equivalent>
            </ghg:EmissionsNodeDetails>
        </ghg:Tier4FuelDetails>
    </ghg:TierFuelDetails>
    <ghg:Tier4Details>
        <ghg:SlipStreamIndicator>N</ghg:SlipStreamIndicator>
        <ghg:Tier4QuarterFuelDetails>
            <ghg:QuarterName>First Quarter</ghg:QuarterName>
            <ghg:CumulativeCO2MassEmissions massUOM="Metric Tons">
                <ghg:CalculatedValue>7000</ghg:CalculatedValue>
            </ghg:CumulativeCO2MassEmissions>
        </ghg:Tier4QuarterFuelDetails>
        <ghg:Tier4QuarterFuelDetails>
            <ghg:QuarterName>Second Quarter</ghg:QuarterName>
            <ghg:CumulativeCO2MassEmissions massUOM="Metric Tons">
                <ghg:CalculatedValue>7100</ghg:CalculatedValue>
            </ghg:CumulativeCO2MassEmissions>
        </ghg:Tier4QuarterFuelDetails>
        <ghg:Tier4QuarterFuelDetails>
            <ghg:QuarterName>Third Quarter</ghg:QuarterName>
            <ghg:CumulativeCO2MassEmissions massUOM="Metric Tons">
                <ghg:CalculatedValue>7200</ghg:CalculatedValue>
            </ghg:CumulativeCO2MassEmissions>
        </ghg:Tier4QuarterFuelDetails>
        <ghg:Tier4QuarterFuelDetails>
            <ghg:QuarterName>Fourth Quarter</ghg:QuarterName>
            <ghg:CumulativeCO2MassEmissions massUOM="Metric Tons">
                <ghg:CalculatedValue>7300</ghg:CalculatedValue>
            </ghg:CumulativeCO2MassEmissions>
        </ghg:Tier4QuarterFuelDetails>
        <ghg:TotalSourceOperatingHours>7000</ghg:TotalSourceOperatingHours>
        <ghg:OperatingHoursDetails>
            <ghg:OperatingHoursCO2ConcentrationSubstituted>70</ghg:OperatingHoursCO2ConcentrationSubstituted>
            <ghg:OperatingHoursStackGasFlowRateSubstituted>7</ghg:OperatingHoursStackGasFlowRateSubstituted>
            <ghg:OperatingHoursStackGasMoistureContentSubstituted>0</ghg:OperatingHoursStackGasMoistureContentSubstituted>
        </ghg:OperatingHoursDetails>
        <ghg:CO2EmissionsNonBiogenic massUOM="Metric Tons">
            <ghg:CalculatedValue>70000.2</ghg:CalculatedValue>
        </ghg:CO2EmissionsNonBiogenic>
        <ghg:CO2EmissionsBiogenic massUOM="Metric Tons">
            <ghg:CalculatedValue>700.4</ghg:CalculatedValue>
        </ghg:CO2EmissionsBiogenic>
        <ghg:AnnualCO2EmissionsMeasuredByCEMS massUOM="Metric Tons">
            <ghg:CalculatedValue>70000.5</ghg:CalculatedValue>
        </ghg:AnnualCO2EmissionsMeasuredByCEMS>
        <ghg:TierMethodologyStartDate>2010-01-01</ghg:TierMethodologyStartDate>
        <ghg:TierMethodologyEndDate>2010-12-31</ghg:TierMethodologyEndDate>
    </ghg:Tier4Details>
</ghg:UnitsCDetails>
```

Subpart C (cont'd)

2nd Unit

```
            </ghg:SubPartC>

            <ghg:SubPartD>
                <ghg:GHGasInfoDetails>
                    <ghg:GHGasName>Methane</ghg:GHGasName>
                    <ghg:GHGasQuantity massUOM="Metric Tons">
                        <ghg:CalculatedValue>3</ghg:CalculatedValue>
                    </ghg:GHGasQuantity>
                </ghg:GHGasInfoDetails>
                <ghg:GHGasInfoDetails>
                    <ghg:GHGasName>Carbon Dioxide</ghg:GHGasName>
                    <ghg:GHGasQuantity massUOM="Metric Tons">
                        <ghg:CalculatedValue>3588</ghg:CalculatedValue>
                    </ghg:GHGasQuantity>
                </ghg:GHGasInfoDetails>
                <ghg:UnitDDetails>
                    <ghg:UnitIdentification>
                        <ghg:UnitName>3-Eq G-4</ghg:UnitName>
                        <ghg:UnitType>Electricity Generator</ghg:UnitType>
                    </ghg:UnitIdentification>
                    <ghg:Part75Methodology>Appendix G, Equation G-4</ghg:Part75Methodology>
                    <ghg:TierMethodologyStartDate>2010-01-01-00:05</ghg:TierMethodologyStartDate>
                    <ghg:TierMethodologyEndDate>2010-12-31-00:05</ghg:TierMethodologyEndDate>
                    <ghg:isAcidRainProgramIndicator>Y</ghg:isAcidRainProgramIndicator>
                    <ghg:AnnualCO2EmissionsMonitoredLocationShortTons massUOM="Short Tons">
                        <ghg:CalculatedValue>1000</ghg:CalculatedValue>
                    </ghg:AnnualCO2EmissionsMonitoredLocationShortTons>
                    <ghg:AnnualCO2EmissionsMonitoredLocationMetricTons massUOM="Metric Tons">
                        <ghg:CalculatedValue>907</ghg:CalculatedValue>
                    </ghg:AnnualCO2EmissionsMonitoredLocationMetricTons>
                    <ghg:AnnualCO2EmissionsAllBiomassFuelsCombined massUOM="Metric Tons">
                        <ghg:CalculatedValue>10</ghg:CalculatedValue>
                    </ghg:AnnualCO2EmissionsAllBiomassFuelsCombined>
                    <ghg:ElectricityFuelDetails>
                        <ghg:FuelType>Mixed (Electric Power sector)</ghg:FuelType>
                        <ghg:CH4EmissionsCO2Equivalent massUOM="Metric Tons">
                            <ghg:CalculatedValue>10</ghg:CalculatedValue>
                        </ghg:CH4EmissionsCO2Equivalent>
                    </ghg:ElectricityFuelDetails>
                    <ghg:AppendixGEquationG4>
                        <ghg:OperatingHoursFuelFlowRate>7</ghg:OperatingHoursFuelFlowRate>
                        <ghg:OperatingHoursHHVSubstituted>8</ghg:OperatingHoursHHVSubstituted>
                    </ghg:AppendixGEquationG4>
                </ghg:UnitDDetails>
            </ghg:SubPartD>
        </ghg:SubPartInformation>
```

Subpart D

2.0 Submittal and Facility Site Data

2.1 Details About the Submittal File

This section contains the information that must be reported about the XML submission itself. These data elements appear at the root of the GHG XML schema.

Figure 7
GHG (Root) Schema Diagram
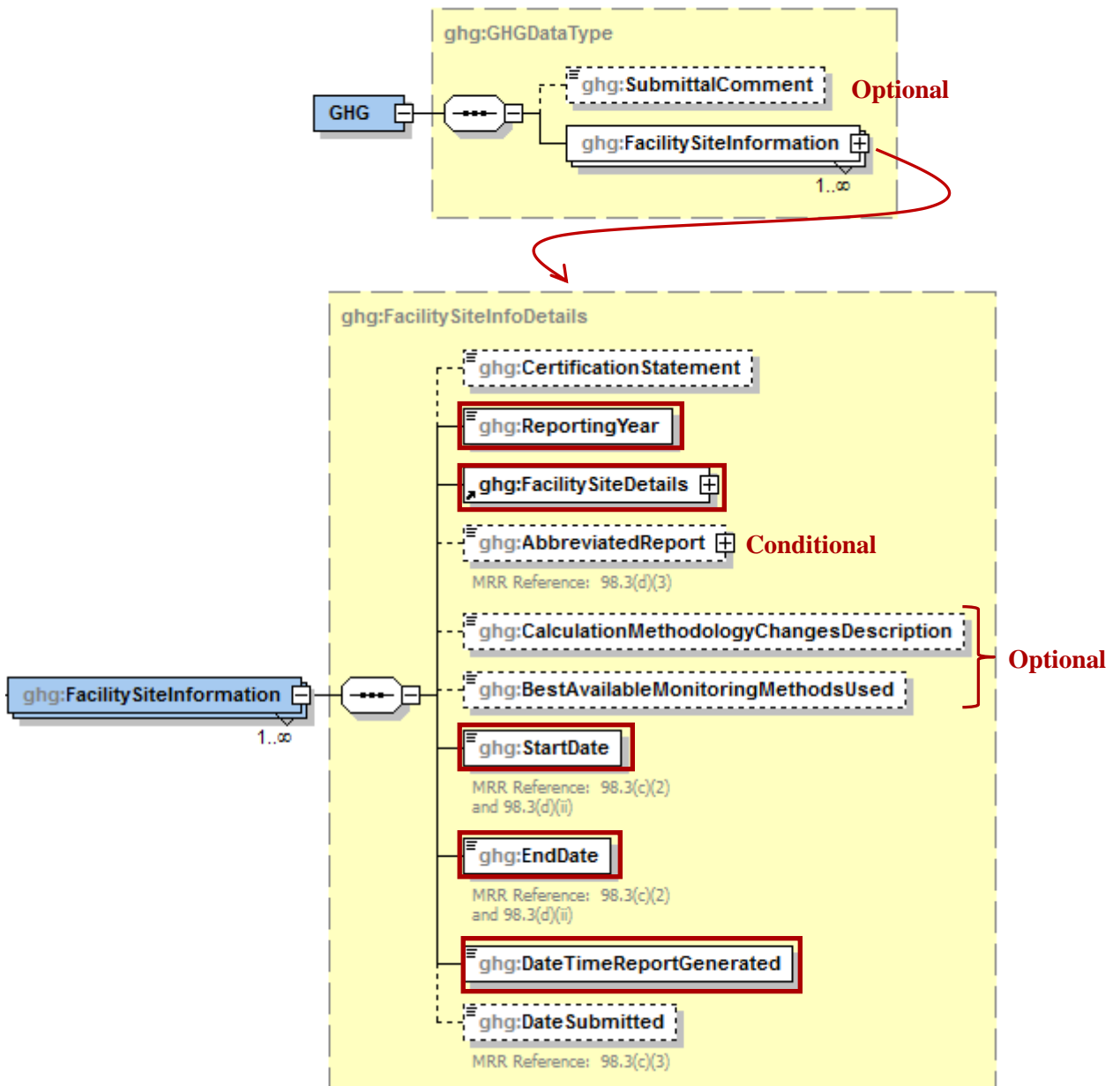
Subpart A collects the following data about your annual report:

- An optional comment about the submittal such as the person or company who prepared the annual report.

- The year covered by the annual GHG report.

- Details about the facility site. For more information, see section **Facility Site Details**.

- An indication of whether or not this is an abbreviated GHG report.

- A written explanation of any calculation methodology changes during the reporting year, including an explanation of why a change in methodology was required.

- A brief description of each "best available monitoring method" used, the parameter measured using this method, and the time period during which the best available monitoring method was used.

- The start date and end date of the reporting period.

- The date of the GHG annual report submittal.

- The date and time when your report was generated.

Table 3
GHG (Root) XML Data Elements

Data Element Name	Description or Value to Report
GHG	
SubmittalComment	An optional comment about the annual report.
FacilitySiteInformation	A collection of data elements containing information about your annual GHG report submission. Please note that your XML submission can only contain GHG data for a single facility or supplier.
ReportingYear	2010
FacilitySiteDetails	See section "**FacilitySite Details**"
AbbreviatedReport	Indicate (Y/N) whether or not you are submitting an abbreviated annual GHG report. This applies to facilities containing only general stationary fuel combustion sources. For more information, see [MRR Reference: 98.3(d)(3)].
CalculationMethodologyChangesDescription	Specify an explanation of all GHG calculation methodology changes made during the reporting year [MRR Reference: 98.3(c)(6)].
BestAvailableMonitoringMethodsUsed	Specify the best available monitoring methods (BAMM) used during the reporting year for which a parameter (e.g., fuel use, daily carbon content of feedstock by process line) could not be reasonably measured according to the QA/QC requirements of a relevant subpart. [MRR Reference: 98.3(c)(7)].

Data Element Name	Description or Value to Report
StartDate	The start date (YYYY-MM-DD) of the GHG report. The start of the timeframe covered by the report. [MRR Reference: 98.3(c)(2)].
EndDate	The end date (YYYY-MM-DD) of the GHG report. The end of the timeframe covered by the report. [MRR Reference: 98.3(c)(2)].
DateTimeReportGenerated	The date and time (YYYY-MM-DDThh:mm:ss) when your report was generated. Example: 2011-08-02T12:58:40

Figure 8
Sample XML Excerpt for the GHG Schema Root Elements

```
<ghg:GHG>
    <ghg:SubmittalComment> Report for Zippy Oil - prepared by Jim Doe of ABC Inc.</ghg:SubmittalComment>
    <ghg:FacilitySiteInformation>
        <ghg:ReportingYear>2010</ghg:ReportingYear>
        <ghg:FacilitySiteDetails>

                    ... (see section "Facility Site Details")

        </ghg:FacilitySiteDetails>
        <ghg:AbbreviatedReport>N</ghg:AbbreviatedReport>
        <ghg:CalculationMethodologyChangesDescription/>
        <ghg:BestAvailableMonitoringMethodsUsed/>
        <ghg:StartDate>2010-01-01</ghg:StartDate>
        <ghg:EndDate>2010-12-31</ghg:EndDate>
        <ghg:DateTimeReportGenerated>2011-08-29T12:00:00</ghg:DateTimeReportGenerated>

    </ghg:FacilitySiteInformation>
<ghg:GHG>
```

Note: The code excerpt above is presented here to demonstrate the concept of reporting general information about the annual GHG report.

2.2 Facility Site Summary Information

This section contains the summary information that must be reported regarding the details about your facility.

Figure 9
Facility Site Details Schema Diagram
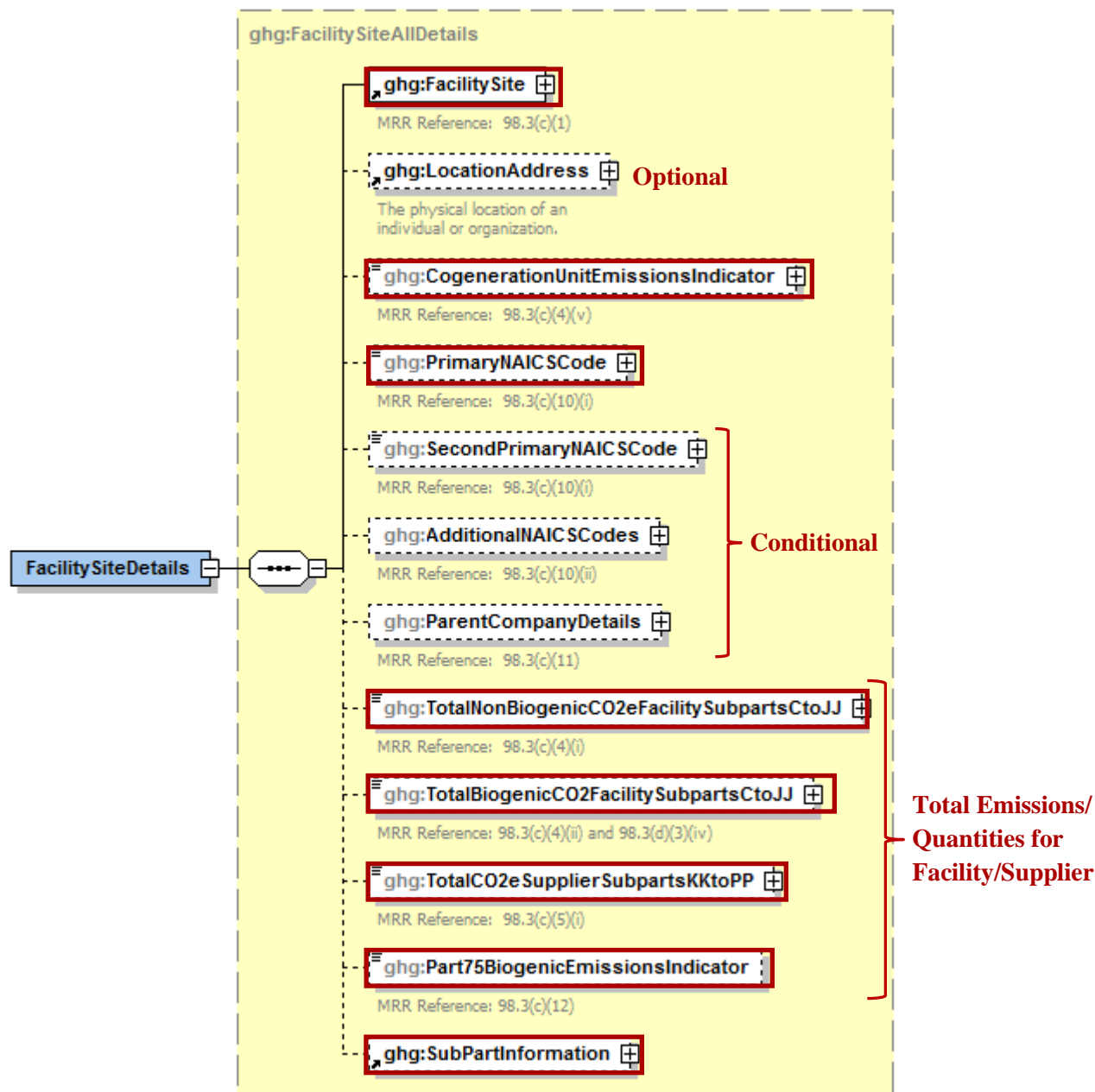
You should report the following data:

- The unique identifier issued by EPA for your facility (or supplier) and the facility or supplier name. For more information, see section **Facility Site Identification**.

- The facility or supplier's street address including the city, state and postal code. This information is not required but should be reported for confirmation purposes. Please note that changes to the

street address must be manually entered into e-GGRT on the Facility Management page, not via XML. For more information, see section **Location Address**.

- An indication (Y or N) that the reported emissions include emissions from a cogeneration unit.. You would indicate NA (not applicable) if you are a supplier.

- The facility or supplier's primary North American Industry Classification System (NAICS) code representing the product/activity that is the principal source of revenue.

  o Optionally, a second primary NAICS code if the entity has two distinct product/activities/services providing comparable revenue.

  o Additionally, all other unique six-digit NAICS codes that describe the products/activities/services of the entity, but are not related to the principal source of revenue.

  Note: If you do not know the six-digit NAICS code, use the search feature at http://www.census.gov/eos/www/naics/ to find the appropriate code. Please be sure to use the 2007 NAICS Search feature.

- The name and physical street address of every U.S. parent company and their respective percentages of ownership. For more information, see section **Parent Company Details**.

- Total GHG emissions for the facility or quantities for the supplier.

  o For facilities, report the total non-biogenic CO_2e (in metric tons) and, if applicable, the biogenic CO_2 (in metric tons).

  o For suppliers, report the total quantities of CO_2e (in metric tons).

- Additionally, for reporters subject to Part 75, an indication of the following:

  o Biogenic CO_2 emissions from Part 75 methods were excluded from the reported annual GHG emissions.

  o Biogenic CO_2 emissions from Part 75 methods were included in the reported annual GHG emission.

  o No Part 75 methods were used.

- Subpart information. For more information, see the applicable reporting instructions document.

Table 4
Facility Site Details XML Data Elements

Data Element Name	Description
FacilitySiteDetails	
FacilitySite	See section "**Facility Site Identification**" in this document.
LocationAddress	See section "**Location Address**" of this document.

Data Element Name	Description
CogenerationUnitEmissionsIndicator	Do reported emissions include emissions from a cogeneration unit?" [MRR Reference: 98.3(c)(4)(v)]. Below is a list of allowable values: Y N NA
PrimaryNAICSCode	The primary North American Industry Classification System (NAICS) code representing the product/activity/service that is the principal source of revenue for the entity as defined in "North American Industry Classification System Manual 2007" [MRR Reference: 98.3(c)(10)(i)].
SecondPrimaryNAICSCode	Optionally, a second primary North American Industry Classification System (NAICS) code for the reporting year if the facility has two distinct products/activities/services providing comparable revenue [free text, validated against selection list of 2007 NAICS codes] [MRR Reference: 98.3(c)(10)(i)].
AdditionalNAICSCodes	A collection of data elements containing all additional NAICS codes, if applicable.
AdditionalNAICSCode	All additional unique NAICS codes that describe the reporter's products/activities/services but that are not related to the principal source of revenue [MRR Reference: 98.3(c)(10)(ii)]. Repeat this data element for each additional NAICS code.
ParentCompanyDetails	See section "**Parent Company Details**" of this document.
TotalNonBiogenicCO2eFacilitySubpartsCtoJJ	Annual emissions (excluding biogenic CO_2) aggregated for all GHG from all applicable facility source categories, expressed in metric tons of CO_2e calculated using Equation A-1 of this subpart. [MRR Reference: 98.3(c)(4)(i)]. Also see section "**Facility Site Total Emissions**".
TotalNonBiogenicCO2eFacilitySubpartsCtoJJ.massUOM	Metric Tons
TotalBiogenicCO2eFacilitySubpartsCtoJJ	Annual emissions of biogenic CO_2 aggregated for all applicable facility source categories, expressed in metric tons. [MRR Reference: 98.3(c)(4)(ii)]. Also see section "**Facility Site Total Emissions**".
TotalBiogenicCO2eFacilitySubpartsCtoJJ.massUOM	Metric Tons
TotalCO2eSupplierSubpartsKKtoPP	Annual GHG from all applicable supplier source categories, expressed in metric tons of CO_2e calculated using Equation A-1 of this subpart. [MRR Reference: 98.3(c)(5)(i)]. Also see section "**Facility Site Total Emissions**".
TotalCO2eSupplierSubpartsKKtoPP.massUOM	Metric Tons

Data Element Name	Description
Part75BiogenicEmissionsIndicator	For reporters subject to Part 75, an indication that Part 75 methods were included or excluded from the reported annual emissions. [MRR Reference: 98.3(c)(12)(ii)(iii)]. Below is a list of allowable values. Biogenic carbon dioxide emissions from Part 75 methods excluded from annual GHG emissions Biogenic carbon dioxide emissions from Part 75 methods included in annual GHG emissions No Part 75 methods used
SubPartInformation	See the individual reporting instructions document related to applicable Subpart(s).

Figure 10
Sample XML Excerpt for Facility Site Details

```
<ghg:FacilitySiteDetails>
    <ghg:FacilitySite>
        <ghg:FacilitySiteIdentifier>522948</ghg:FacilitySiteIdentifier>
        <ghg:FacilitySiteName>Gemco Industries</ghg:FacilitySiteName>
    </ghg:FacilitySite>
    <ghg:LocationAddress>

                ... (See section "Location Address" of this document for more information.)

    </ghg:LocationAddress>
    <ghg:CogenerationUnitEmissionsIndicator>N</ghg:CogenerationUnitEmissionsIndicator>
    <ghg:PrimaryNAICSCode>111110</ghg:PrimaryNAICSCode>
    <ghg:SecondPrimaryNAICSCode>111130</ghg:SecondPrimaryNAICSCode>
    <ghg:AdditionalNAICSCodes>
        <ghg:AdditionalNAICSCode>111411</ghg:AdditionalNAICSCode>
            <ghg:AdditionalNAICSCode>111920</ghg:AdditionalNAICSCode>
    </ghg:AdditionalNAICSCodes>
    <ghg:ParentCompanyDetails>

                ... (See section "Parent Company Details" of this document for more information.)

    </ghg:ParentCompanyDetails >
    <ghg:TotalNonBiogenicCO2eFacilitySubpartsCtoJJ massUOM='MetricTons'>5110969</ghg:TotalNonBiogenicCO2eFacilitySubpartsCtoJJ>
    <ghg:TotalBiogenicCO2eFacilitySubpartsCtoJJ massUOM='MetricTons'>6479</ghg:TotalBiogenicCO2eFacilitySubpartsCtoJJ>
    <ghg:TotalCO2eSupplierSubpartsKKtoPP massUOM='MetricTons'>0</ghg:TotalCO2eSupplierSubpartsKKtoPP>
    <ghg:Part75BiogenicEmissionsIndicator>No Part 75 methods used</ghg:Part75BiogenicEmissionsIndicator>
    <ghg:SubPartInformation>

                ... (See individual reporting instructions document associated with the applicable Subpart(s).)

    <ghg:SubPartInformation>
</ghg:FacilitySiteDetails>
```

Note: The code excerpt above is presented here to demonstrate the concept of reporting details about the facility site.

2.3 Facility Site Identification

This section contains the information that must be reported about the identity of your facility. Some of the data elements should not be reported for the 2010 data collection year.

Figure 11
Facility Site (Identification) Schema Diagram
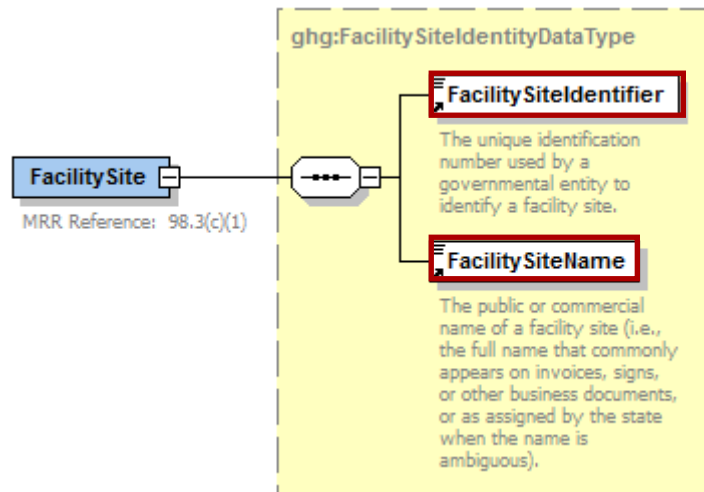
Table 5
Facility Site (Identification) XML Data Elements

Data Element Name	Description
FacilitySite	
FacilitySiteIdentifier	The GHGRP ID identifier issued by EPA that uniquely describes the facility site or supplier.
FacilitySiteName	The facility site name or supplier name (as appropriate). It should match the name that is registered with e-GGRT.

Figure 12
Sample XML Excerpt for Facility Site (Identification)

```
<ghg:FacilitySite>
     <ghg:FacilitySiteIdentifier>524748</ghg:FacilitySiteIdentifier>
     <ghg:FacilitySiteName>Atlas Industries, Inc.</ghg:FacilitySiteName>
</ghg:FacilitySite>
```

2.4 Location Address Information

This section contains the information that may be reported about the location of the facility or supplier. Please note that the location address information reported in your XML is for confirmation purposes only. The official address is stored in e-GGRT and all modifications to this information must be made in e-GGRT.

Figure 13
Location Address (Part 1 of 2) Schema Diagram
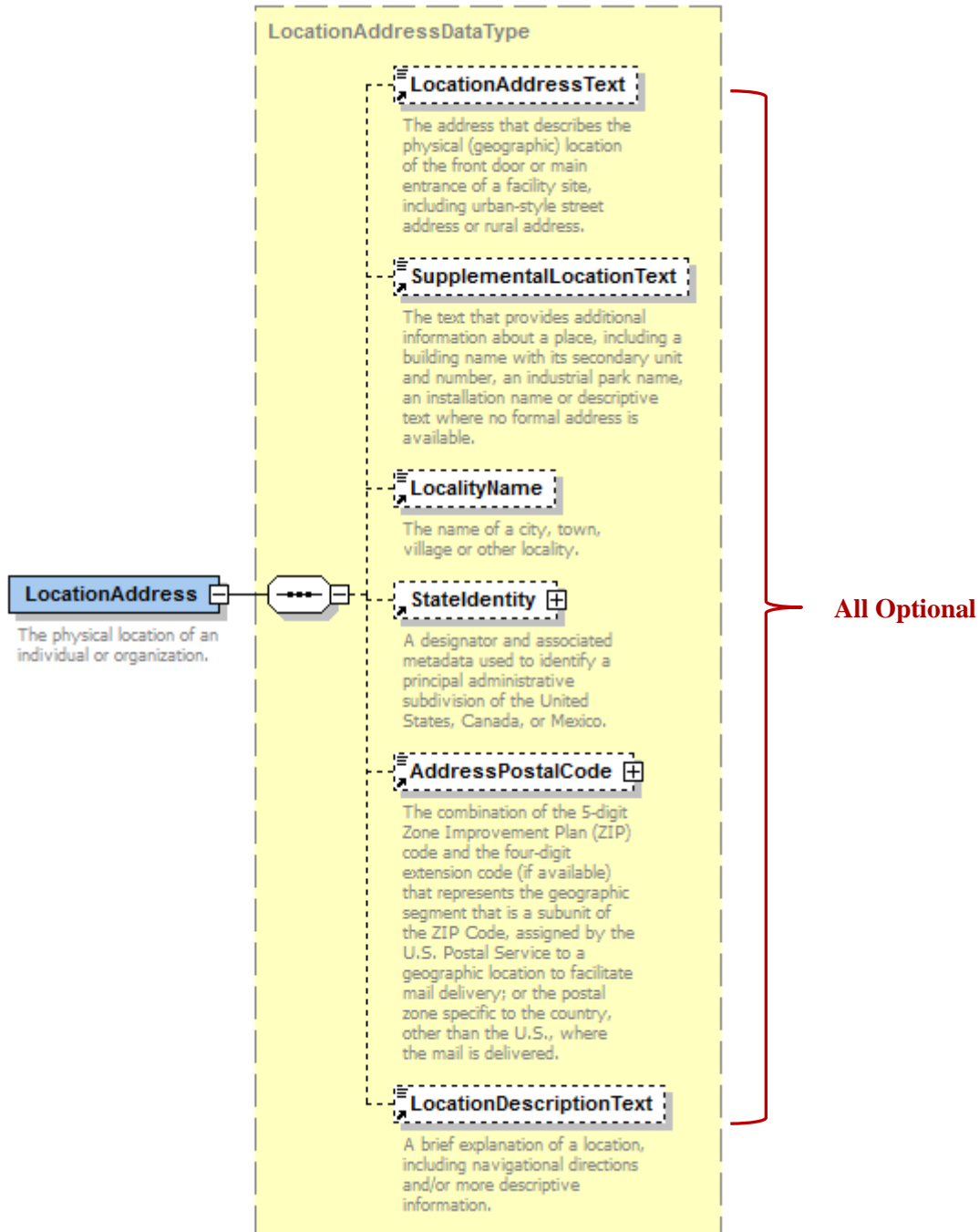
Table 6
Location Address XML Data Elements

Data Element Name	Description
LocationAddress	
LocationAddressText	The address that describes the physical (geographic) location of the front door or main entrance of a facility site, including urban-style street address or rural address.
SupplementalLocationText	Additional information about the place, including a building name with its secondary unit and number, an industrial park name, and installation name or descriptive test where no formal address is available.
LocalityName	The name of the city, town, village or other locality in which the facility is located.
StateIdentity	The name of the U.S. state or territory in which the facility or supplier is located. Please report one of the following values. AB FL MB ND OH SK AK GA MD NE OK TN AL GU ME NF ON TX AR HI MH NH OR UT AS IA MI NJ PA VA AZ ID MN NM PE VI BC IL MO NN PR VT CA IN MP NS PW WA CO KS MS NT QC WI CT KY MT NU RI WV DC LA NB NV SC WY DE MA NC NY SD YT XX
AddressPostalCode	The ZIP or postal code of the facility's physical street address.
LocationDescriptionText	A brief explanation of the location, including navigational directions and/or more descriptive information.

Figure 14
Sample XML Excerpt for Location Address

```
<ghg:LocationAddress>
    <ghg:LocationAddressText>899 North Rancho Highway</ghg:LocationAddressText>
    <ghg:SupplementalLocationText>Plant # 2</ghg:SupplementalLocationText >
    <ghg:LocalityName>Houston</ghg:LocalityName>
    <ghg:StateIdentity>
        <ghg:StateCode>TX</ghg:StateCode>
    </ghg:StateIdentity>
    <ghg:AddressPostalCode>77004</ghg:AddressPostalCode>
        <ghg:LocationDescriptionText>The facility is located at the corner of Main and Wabash  streets.</ghg: LocationDescriptionText>
</ghg:LocationAddress>
```

Note: The code excerpt above is presented here to demonstrate the concept of reporting the facility or street address.

2.5 Parent Company Details

This section contains the information that must be reported regarding corporate parent companies. Every facility or supplier that is subject to the GHGRP must report the legal names and physical street addresses of all of their U.S. parent companies and their respective percentages of ownership. A U.S. parent company is defined as the highest-level U.S. company with an ownership interest in the reporting entity as of December 31 of the year for which data are being reported.

Figure 15
Parent Company Schema Diagram
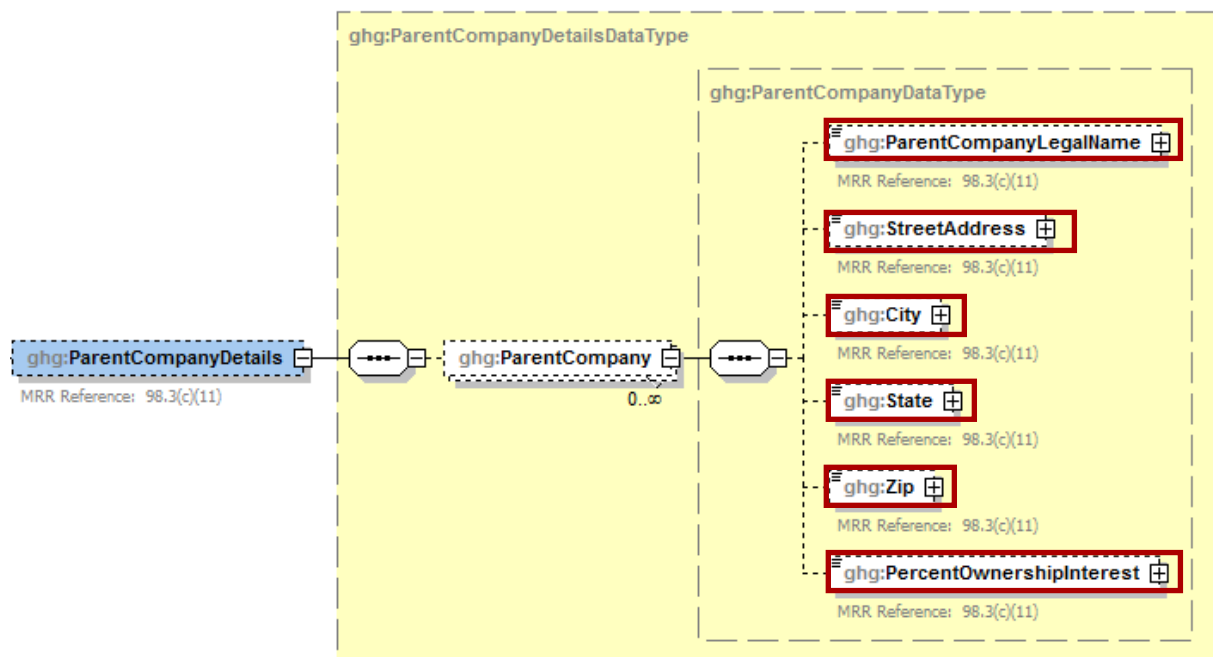
Table 7
Parent Company Details XML Data Elements

Data Element Name	Description
ParentCompanyDetails	
ParentCompany	A collection of data elements describing a single parent company. Repeat this set of data elements for each U.S. parent company.
ParentCompanyLegalName	Legal name of the U.S. parent company.
StreetAddress	Physical street address of the U.S. parent company (report the main corporate office location).
City	City in which the U.S. parent company resides.

Data Element Name	Description
State	State in which the U.S. parent company resides. Below is a list of allowable values. AB FL MB ND OH SK AK GA MD NE OK TN AL GU ME NF ON TX AR HI MH NH OR UT AS IA MI NJ PA VA AZ ID MN NM PE VI BC IL MO NN PR VT CA IN MP NS PW WA CO KS MS NT QC WI CT KY MT NU RI WV DC LA NB NV SC WY DE MA NC NY SD YT XX
Zip	ZIP code for the U.S. parent company.
PercentOwnershipInterest	Percentage of ownership interest for the listed parent company. The value must be between 0.1 and 100.0.

Figure 16
Sample XML Excerpt for Parent Company Details

```
<ghg:ParentCompanyDetails>

    <ghg:ParentCompany>
        <ghg:ParentCompanyLegalName>Company A</ghg:ParentCompanyLegalName>
        <ghg:StreetAddress>301 S Maryland Avenue</ghg:StreetAddress>
        <ghg:City>Wilmington</ghg:City>
        <ghg:State>DE</ghg:State>
        <ghg:Zip>19803</ghg:Zip>
        <ghg:PercentOwnershipIntrest>40</ghg:PercentOwnershipIntrest>
    </ghg:ParentCompany>

    <ghg:ParentCompany>
        <ghg:ParentCompanyLegalName> Company B</ghg:ParentCompanyLegalName>
        <ghg:StreetAddress>9233 Durango Point</ghg:StreetAddress>
        <ghg:City>Houston</ghg:City>
        <ghg:State>TX</ghg:State>
        <ghg:Zip>77070</ghg:Zip>
        <ghg:PercentOwnershipIntrest>35</ghg:PercentOwnershipIntrest>
    </ghg:ParentCompany>

    <ghg:ParentCompany>
        <ghg:ParentCompanyLegalName> Company C</ghg:ParentCompanyLegalName>
        <ghg:StreetAddress>839 E Olive Street</ghg:StreetAddress>
        <ghg:City>Seattle</ghg:City>
        <ghg:State>WA</ghg:State>
        <ghg:Zip>98122</ghg:Zip>
        <ghg:PercentOwnershipIntrest>25</ghg:PercentOwnershipIntrest>
    </ghg:ParentCompany>

</ghg:ParentCompanyDetails>
```

Note: The code excerpt above is presented here to demonstrate the concept of reporting parent company data. In the example above, there are three U.S. parent companies – the combined sum of their percentage of ownership must total 100%. Extra lines were added for demonstration purposes only.

Table 8
Examples for Reporting Parent Company Information

Reporting scenario	How to report U.S. parent company
The reporting entity is entirely owned by a single U.S. company that is not owned by any other company (*e.g.*, it is not a subsidiary or division of another company).	Provide that company's legal name and physical address as the U.S. parent company and report 100 percent ownership.
The reporting entity is entirely owned by a single U.S. company which is, itself, owned by another company (*e.g.*, it is a division or subsidiary of a higher-level company.	Provide the legal name and physical address of the highest-level company in the ownership hierarchy as the U.S. parent company and report 100 percent ownership.
The reporting entity is owned by more than one U.S. companies (*e.g.*, company A owns 40 percent, company B owns 35 percent, and company C owns 25 percent). Note: The XML excerpt depicted above was based on this scenario.	Provide the legal names and physical addresses of all of the highest level companies with an ownership interest as U.S. parent companies and report the percent ownership of each company.
The reporting entity is entirely owned by a foreign company.	Provide the legal name and physical address of the foreign company's highest-level company based in the U.S. as the U.S. parent company and report 100 percent ownership.
The reporting entity is partially owned by a foreign company and partially owned by one or more U.S. companies.	Provide the legal name and physical address of the foreign entity's highest-level company based in the U.S., along with the legal names and physical addresses of the other U.S. parent companies, and report the percent ownership of each company.
The reporting entity is owned by a joint venture or cooperative.	The joint venture or cooperative is its own U.S. parent company. Provide the joint venture or cooperative's legal name and physical address as the U.S. parent company and report 100 percent ownership..
The reporting entity is a federally owned facility.	Report **U.S. Government**, and do not report physical address or percent ownership.

2.6 Facility Site Total Emissions

This section contains instructions for reporting the facility or supplier's total CO_2 emissions (or quantities).

Figure 17
Facility-Level Roll-up Emissions Schema Diagram
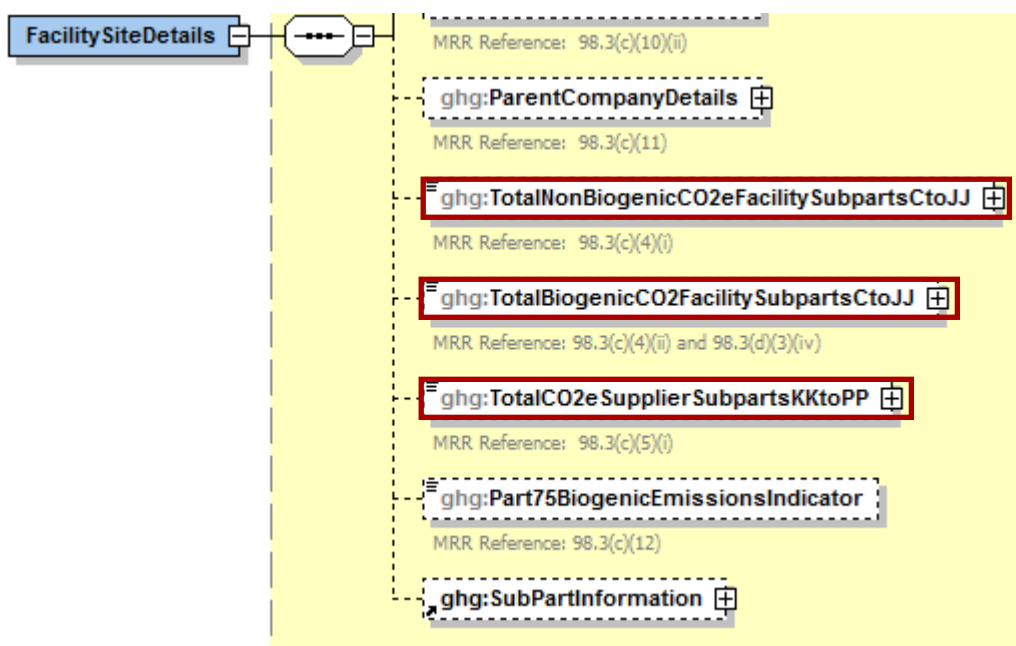
Each reporting entity (facility or supplier) must report the following:

- **Total non-biogenic CO$_2$e emissions for facility sources**.
  These are the fossil fuel related CO_2 emissions aggregated across all facility source category subparts associated with the reporting entity.

- **Total biogenic CO$_2$ emissions for facility sources**.
  These are the biogenic CO_2 emissions aggregated across all facility source category subparts associated with the reporting entity.

- **Total CO$_2$e quantity for supplier sources.**
  These are the sum total of CO_2e quantities aggregated across all supplier source categories associated with the reporting entity. Do not include subpart LL and MM totals in this data element; these values are not being collected in e-GGRT.

The calculations for CO_2e must be performed by applying the Global Warming Potential (GWP) factors as presented in Table A-1 of the Mandatory Greenhouse Reporting Rule and in conformance with Equation A-1 of the final rule.

For each source category subpart applicable to the reporting entity, calculate the total metric tons of each greenhouse gas (GHG) aggregated across all units, products, or other reporting divisions within the facility or supplier.

1) For facility source category subparts, the list of individual GHGs that must be totaled for each subpart is limited to:

    a. Biogenic CO_2

    b. CO_2 (excluding biogenic CO_2).

    c. CH_4.

    d. N_2O

    e. perfluoromethane (CF_4)

    f. perfluoroethane (C_2F_6)

    g. HFC-23

2) For supplier source category subparts, the list of individual GHGs that must be totaled for each subpart is limited to:

    a. CO_2

    b. CH_4

    c. N_2O

    d. Each fluorinated GHG identified under Subpart OO (including those not listed in Table A–1 of this subpart).

Table 9
Facility Level Roll-up Emissions XML Data Elements

Data Element Name	Description
TotalNonBiogenicCO2eFacilitySubpartsCtoJJ	The total CO_2e emissions (excluding biogenic CO_2) aggregated across all facility source category subparts associated with the reporting entity.
TotalNonBiogenicCO2eFacilitySubpartsCtoJJ.massUOM	Metric Tons
TotalBiogenicCO2eFacilitySubpartsCtoJJ	The total biogenic CO_2e emissions aggregated across all facility source category subparts associated with the reporting entity.
TotalBiogenicCO2eFacilitySubpartsCtoJJ.massUOM	Metric Tons
TotalCO2eSupplierSubpartsKKtoPP	The total CO_2e quantity aggregated across all supplier categories subparts associated with the reporting entity.
TotalCO2eSupplierSubpartsKKtoPP.massUOM	Metric Tons

Figure 18
Sample XML Excerpt for Facility Level Roll-up Emissions

```xml
<ghg:TotalNonBiogenicCO2eFacilitySubpartsCtoJJ massUOM="Metric
Tons">234578</ghg:TotalNonBiogenicCO2eFacilitySubpartsCtoJJ>
<ghg:TotalBiogenicCO2eFacilitySubpartsCtoJJ massUOM="Metric Tons">777654</ghg:TotalBiogenicCO2eFacilitySubpartsCtoJJ>
<ghg:TotalCO2eSupplierSubpartsKKtoPP massUOM="Metric Tons">0</ghg:TotalCO2eSupplierSubpartsKKtoPP>
```

Note: The code excerpt above is presented here to demonstrate the concept of reporting greenhouse gas quantity data.

Appendix A - Rounding Rules

Table 10
Rounding Rules

GHG Name	Description
CO$_2$e or CO$_2$	All quantities reported for these gases – regardless of the 'level' they are reported (e.g., for a specific fuel, for a specific unit, for an entire facility or subpart) – should be rounded to one decimal place. Quantities less than 0.05 metric tons should round to 0.0. Quantities greater than or equal to 0.05 metric tons should round to 0.1. Examples: 23.15 rounds to 23.2 23.1499999 rounds to 23.1
CH$_4$	All quantities reported for CH$_4$ should be rounded to two decimal places – regardless of the 'level' they are reported (e.g., for a specific fuel, for a specific unit, for an entire facility or subpart). Examples: 20.534 rounds to 20.53 28.499999 rounds to 28.50
N$_2$O	All quantities reported for N$_2$O should be rounded to three decimal places – regardless of the 'level' they are reported (e.g., for a specific fuel, for a specific unit, for an entire facility or subpart). Examples: 21.5348 rounds to 21.535 26.49296 rounds to 26.493
f-GHGs	All quantities reported for f-GHGs should be rounded to the nearest 1/10th of a kilogram or 0.0001 metric tons. This equates to rounding to four decimal places (fourth place to the right of the decimal). **Note**: The reporting of GHGs other than CO$_2$e, CO$_2$, CH$_4$ and N$_2$O is limited to Subparts F, O, and OO. Examples: 24.5348976 rounds to 24.5349 25.1286498 rounds to 25.1286
Non-Emissions Quantitative Data	Non-emissions quantitative data reported (e.g., a monthly HHV sample result, an annual production quantity) will not need to be rounded unless specified in the instructions.

| GHG Name	Description
CO$_2$e Aggregated/ Rolled-up Data	The multiplication by GWPs (for CH$_4$, N$_2$O and f-GHGs) required to convert to CO$_2$e involves three basic calculations: i. The first calculation should be performed on rounded emissions values with the resulting product always being a CO$_2$e value (in metric tons) with up to 4 decimal places. ii. Each of these CO$_2$e values are then summed together to generate the facility's total CO$_2$e number. iii. This CO$_2$e value is then rounded to one decimal place.

Appendix B - Legends

Legend for Tables

Blue = parent element

Legend for XML Schema Diagrams

Red box = relevant for reporting

The following XML symbol "0..∞" means that multiple occurrences for the parent element can be reported:
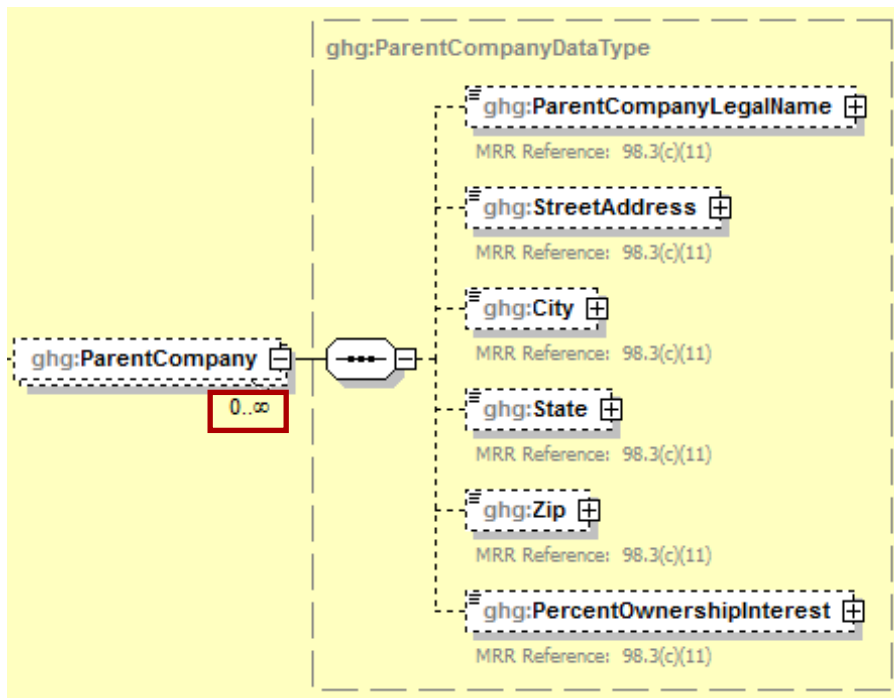
Please note the following exception to the infinity rule stated above. The schema allows for the reporting of multiple facility site information records; however, EPA is not currently accepting GHG XML submissions containing more than a single facility or supplier.

Appendix C – Sample XML Document

Sample XML Document for Subpart A
(Note: Data values do not reflect an actual facility's emissions.)

```xml
<?xml version="1.0" encoding="UTF-8"?>
<ghg:GHG xsi:schemaLocation="http://www.exchangenetwork.net/schema/ghg/1">
  <ghg:FacilitySiteInformation>
    <ghg:ReportingYear>2010</ghg:ReportingYear>
    <ghg:FacilitySiteDetails>
        <ghg:FacilitySite>
                <ghg:FacilitySiteIdentifier>509316</ghg:FacilitySiteIdentifier>
                <ghg:FacilitySiteName>Acme Farming Supplies Inc.</ghg:FacilitySiteName>
        </ghg:FacilitySite>
        <ghg:LocationAddress/>
        <ghg:CogenerationUnitEmissionsIndicator>N</ghg:CogenerationUnitEmissionsIndicator>
        <ghg:PrimaryNAICSCode>111110</ghg:PrimaryNAICSCode>
        <ghg:SecondPrimaryNAICSCode>115112</ghg:SecondPrimaryNAICSCode>
        <ghg:AdditionalNAICSCodes>
            <ghg:AdditionalNAICSCode>115115</ghg:AdditionalNAICSCode>
        </ghg:AdditionalNAICSCodes>
        <ghg:ParentCompanyDetails>
            <ghg:ParentCompany>
                <ghg:ParentCompanyLegalName>Soybean Growers of America</ghg:ParentCompanyLegalName>
                <ghg:StreetAddress>89 N. Michigan Avenue</ghg:StreetAddress>
                <ghg:City>Chicago</ghg:City>
                <ghg:State>IL</ghg:State>
                <ghg:Zip>60601</ghg:Zip>
                <ghg:PercentOwnershipIntrest>25</ghg:PercentOwnershipIntrest>
            </ghg:ParentCompany>
            <ghg:ParentCompany>
                <ghg:ParentCompanyLegalName>USA Farming, Inc.</ghg:ParentCompanyLegalName>
                <ghg:StreetAddress>1208 Marble Creek Parkway, Suite 200</ghg:StreetAddress>
                <ghg:City>Washington</ghg:City>
                <ghg:State>IA</ghg:State>
                <ghg:Zip>52353</ghg:Zip>
                <ghg:PercentOwnershipIntrest>75</ghg:PercentOwnershipIntrest>
            </ghg:ParentCompany>
        </ghg:ParentCompanyDetails>
        <ghg:TotalNonBiogenicCO2eFacilitySubpartsCtoJJ>424315</ghg:TotalNonBiogenicCO2eFacilitySubpartsCtoJJ>
        <ghg:TotalBiogenicCO2eFacilitySubpartsCtoJJ>38434</ghg:TotalBiogenicCO2eFacilitySubpartsCtoJJ>
        <ghg:TotalCO2eSupplierSubpartsKKtoPP>0</ghg:TotalCO2eSupplierSubpartsKKtoPP>
        <ghg:SubPartInformation>

                <ghg:SubPartC/>          ⟵   See XML reporting instructions for your specific subpart(s).

        </ghg:SubPartInformation>
        </ghg:FacilitySiteDetails>
        <ghg:CalculationMethodologyChangesDescription>Started using CEMS on 6/2/2010.</ghg:CalculationMethodologyChangesDescription>
        <ghg:BestAvailableMonitoringMethodsUsed>Gas well venting during well completion.</ghg:BestAvailableMonitoringMethodsUsed>
        <ghg:StartDate>2010-01-01</ghg:StartDate>
        <ghg:EndDate>2010-12-31</ghg:EndDate>
        <ghg:DateSubmitted>2011-04-05T12:00:00</ghg:DateSubmitted>
    </ghg:FacilitySiteInformation>
</ghg:GHG>
```

Appendix D – Additional Resources

- Roll Up and Rounding Requirements

- Electronic Code of Federal Regulations (e-CFR)

- Known Issues for XML Reporting

- EPA published a final rule that delineates which data submitted in e-GGRT will be treated as CBI and which data can be released to the public (76 FR 30782). This final rule made CBI determinations for the source categories required to report by September 30, 2011. EPA will handle data submitted in e-GGRT based on these determinations. Reporters cannot make additional claims in their XML file. More information on CBI is available at http://www.epa.gov/climatechange/emissions/CBI.html.