Illinois Pollution Control Board
R2014-10
Testimony of Keir Soderberg
References

USEPA Questionnaire

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U.S. ENVIRONMENTAL PROTECTION AGENCY

QUESTIONNAIRE FOR THE STEAM ELECTRIC POWER GENERATING EFFLUENT GUIDELINES

Form Approved
OMB Control No. 2040-0281
Approval Expires 05/31/2013

INTRODUCTION

The U.S. Environmental Protection Agency (EPA) is collecting data about steam electric power generating plants as part of its effort to review and revise the Steam Electric Power Generating effluent limitations guidelines and standards (40 CFR Part 423). This questionnaire solicits information from plants that generate steam for the primary purpose of producing electricity.

This survey effort is being conducted under the authority of Section 308 of the Clean Water Act (Federal Water Pollution Control Act, 33 U.S.C. Section 1318). **All plants that receive this questionnaire must respond within 90 days of receipt**. Failure to respond, late filing, or failure to comply with the instructions may result in fines, civil penalties, and other sanctions, as provided by law.

BACKGROUND ON EFFLUENT LIMITATIONS GUIDELINES AND STANDARDS (ELGs)

The Agency recently completed a multi-year study of the Steam Electric Power Generating industry and, based on the results, has determined that revising the current effluent guidelines is warranted. EPA's decision to revise the current effluent guidelines is largely driven by the high level of toxic-weighted pollutant discharges from power plants and the expectation that these discharges will increase significantly in the next few years as new air pollution controls are installed. Over the course of the study EPA has identified technologies that are available to significantly reduce these pollutant discharges. Effluent guidelines (i.e., effluent limitations guidelines and standards) are developed pursuant to the Clean Water Act and are restrictions that may be applied to industrial discharges. EPA develops effluent guidelines on an industry-by-industry basis using information collected during the rulemaking process.

OVERVIEW OF THE QUESTIONNAIRE

The questionnaire is divided into the following parts:

- PART A: STEAM ELECTRIC POWER PLANT OPERATIONS;
- PART B: FLUE GAS DESULFURIZATION (FGD) SYSTEMS;
- PART C: ASH HANDLING;
- PART D: POND/IMPOUNDMENT SYSTEMS AND OTHER WASTEWATER TREATMENT OPERATIONS;
- PART E: WASTES FROM CLEANING METAL PROCESS EQUIPMENT;
- PART F: MANAGEMENT PRACTICES FOR PONDS/IMPOUNDMENTS AND LANDFILLS;
- PART G: LEACHATE SAMPLING DATA FOR PONDS/IMPOUNDMENTS AND LANDFILLS;
- PART H: NUCLEAR POWER GENERATION; AND
- PART I: ECONOMIC AND FINANCIAL DATA.

The questionnaire consists of multiple sections which have been tailored to address specific processes, specific data needs, or types of power plants. Part A of the questionnaire collects general plant information and selected technical information about the plant processes and the electric generating units. Additional sections of the questionnaire are designed to collect economic data and to collect technical information on flue gas desulfurization (FGD) wastewater, ash handling, metal cleaning operations, wastewater treatment, surface impoundment and landfill operations, and nuclear operations. One section of the questionnaire requires certain power plants to collect and analyze samples of leachate from surface impoundments and landfills containing coal combustion residues. A detailed table of contents listing the specific topics of information requested is located at the beginning of each part of the questionnaire. **Respondents are required to complete and submit an electronic version of the questionnaire.**

Parts A and I of the questionnaire are provided to all questionnaire recipients; the remaining parts will be sent to discrete subpopulations of questionnaire recipients: coal-fired, petroleum coke-fired, oil-fired, gas-fired, and nuclear plants. Respondents must read the cover letter received with the questionnaire to determine which parts of the questionnaire they have been given to complete. In addition, respondents must read the instructions preceding each part to determine whether that part needs to be completed for their plant.

EPA will use the technical data collected in this survey to determine rates and characteristics of wastewater generated by the steam electric industry, to develop treatment technology options, and to evaluate incremental costs and benefits associated with different regulatory options. For more information on this rulemaking, see http://www.epa.gov/guide/steam/.

For some questions, EPA requests information for calendar year 2009. However, some questions request information regarding past, present, or future (i.e., "planned") plant operations.

COMPLETION OF THE QUESTIONNAIRE

Each part should be completed by personnel knowledgeable about the information requested. All plants must have the corporate official or designee responsible for directing or supervising the response to the questionnaire sign the Certification Statement on page vii to verify and validate the information provided. Different people may complete each part of the questionnaire.

See the instructions below for completing the electronic questionnaire. **Keep a copy of the completed questionnaire, including attachments**. EPA will review the information submitted and may request your cooperation in answering follow-up questions, if necessary, to complete analyses.

ELECTRONIC VERSION OF THE QUESTIONNAIRE

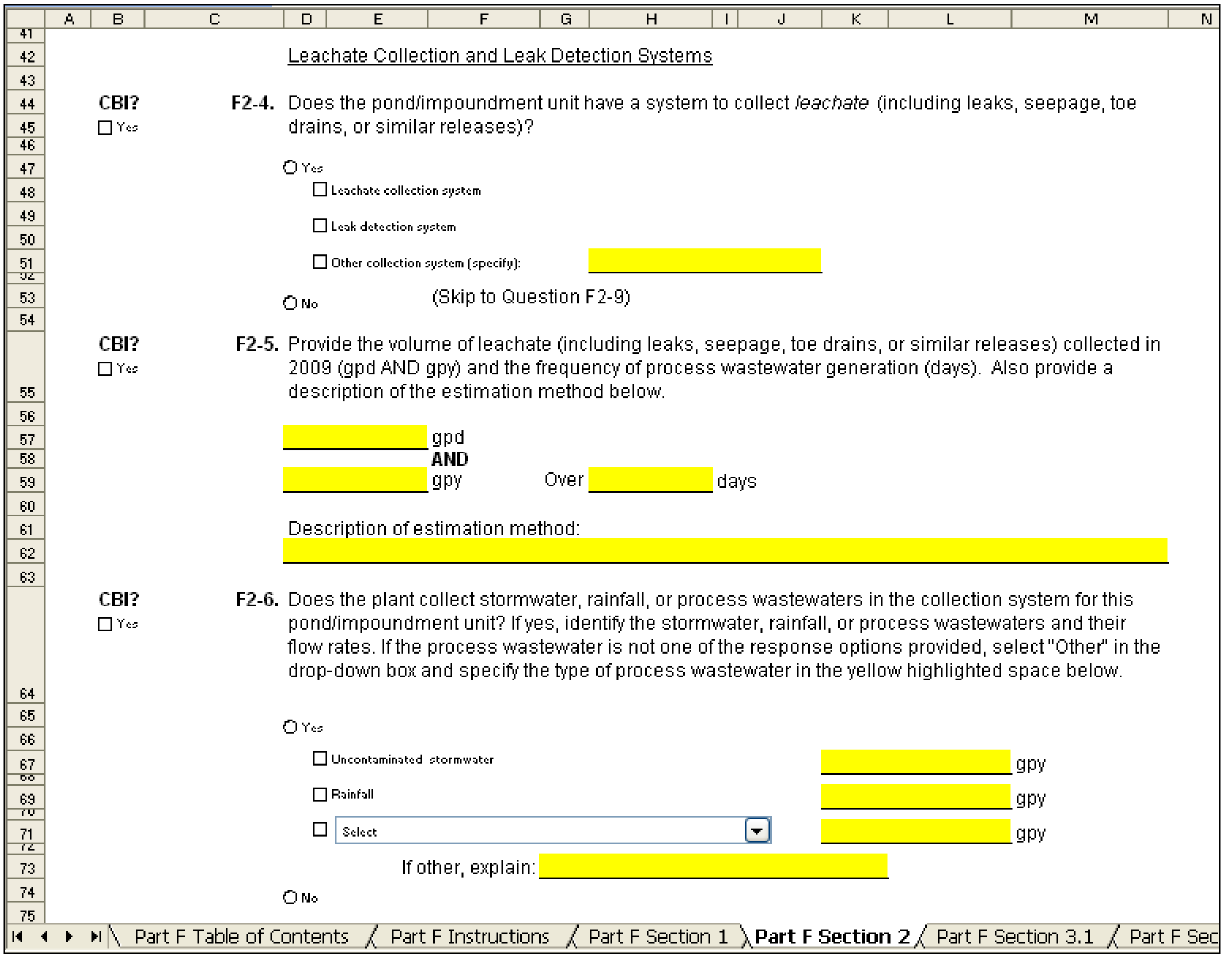
EPA has distributed the questionnaire in electronic format, and respondents are required to submit the completed questionnaire to EPA in electronic format. The electronic questionnaire is made up of a series of Microsoft® Excel workbooks. The electronic questionnaire has been developed to meet the 1998 Government Paperwork Elimination Act (GPEA).

EPA designed the questionnaire to include many burden-reducing features. The questionnaire was designed in modular fashion to reduce respondent burden by making it easier for them to separate and distribute questionnaire parts to various plant and corporate staff. The CD that will be distributed to questionnaire recipients includes both the electronic-fillable questionnaire and a pdf-file that can be printed out and used as a working copy. Copies of selected sections can be made when needed and selected sections of the working copy distributed to the appropriate staff. The electronic questionnaire format allows facilities to electronically generate the required number of copies of each section by selecting the copy button located at the beginning of the section that may require multiple copies.

Once the questionnaire is complete, save each Part file as a Microsoft® Excel workbook to a CD or DVD depending on the size required to hold your completed questionnaire files and any additional supporting documents. EPA prefers that diagrams and reports or documents submitted with the questionnaire also be saved and submitted on the CD/DVD, if possible. Please either save a pdf version of the signed certification statement on page vii to the CD/DVD or return a hardcopy of the signed certification statement. The certification statement, questionnaire response, and supporting documents must be mailed to the second address listed on page v. Do not submit the completed questionnaire and associated documents via e-mail, because the document may contain confidential business information.

HOW TO NAVIGATE THE QUESTIONNAIRE

EPA formatted the electronic-fillable questionnaire in Microsoft® Excel. Each part of the questionnaire is its own Excel workbook file that consists of multiple sections and subsections, which are each represented by separate tabs (or worksheets) in the workbook. Some parts of the questionnaire contain more sections than others. Make sure to read through each section and complete every tab within each part. Also make sure to completely scroll through every section so that every relevant question is answered. An example of the questionnaire format is located below:



Opening the Electronic Form

1. Download each file from the provided CD onto your computer's hard drive.

2. Launch Microsoft® Excel, then select Tools > Macro > Security. In the Security Level tab, select "Medium." (Note: This security level allows you to run essential macros contained in the electronic form.)

3. As you open each part of the questionnaire, a security window should appear regarding macros. Select "Enable Macros" and then "OK." If the window does not appear, close the file and repeat step 2 above.

Filling out the Electronic Form

Within the electronic form, yellow highlights indicate blank fields that you must complete. Use your mouse or tab key to navigate between blanks. Type in your response, then Tab to the next field.

Every question is formatted to collect the most consistent answers between each respondent. The format of every question is dictated by the type of information requested, summarized below:

- If a question requires a descriptive or variable response, the respondent must provide a written explanation in the highlighted yellow response box located directly below the question.

- If a question instructs the respondent to "check all that apply," the respondent must select all the square-shaped check boxes that correspond to the applicable response options.

- If a question instructs the respondent to choose only one answer, the response options are formatted in one of two ways:
  - o If a response is formatted as a drop-down-box, click on the arrow and scroll down the list to find and select the most applicable option.
  - o If a response is formatted as a list of options with corresponding circles, select the circle with the most applicable option.

- If any question does not provide an applicable response option, select "other" and provide a written response in the highlighted yellow response box adjacent to the response options or on the comments page for that Part.

Each plant is assigned a plant ID that is listed on the cover letter you received with your questionnaire CD. You will need to enter the plant name and plant ID in the "Plant Name" and "Plant ID" header fields in the table of contents for each part, after which all header fields throughout the rest of the part will automatically populate. An example of the table of contents is located below:


OMB Control Number: 2040-0281 Plant ID: Insert Plant ID
Approval Expires: 05/31/2013 Plant Name: Insert Plant Name

Steam Electric Questionnaire

PART F - MANAGEMENT PRACTICES FOR PONDS/IMPOUNDMENTS AND LANDFILLS

Table of Contents

Section Title	Tab Name
Part F Instructions	Part F Instructions
Pond/Impoundment and Landfill Use	Part F Section 1
Pond/Impoundment Management Practices	Part F Section 2
Landfill Management Practices	Part F Section 3.1
Landfill Costs	Part F Section 3.2
Leachate Treatment System Design	Part F Section 4.1
Leachate Treatment System Flows	Part F Section 4.2
Leachate Treatment System Units	Part F Section 4.3
Leachate Treatment Unit Information	Part F Section 4.4
Leachate Treatment System Costs	Part F Section 4.5
Leachate Treatment System Equipment	Part F Section 4.6
Groundwater Monitoring Practices	Part F Section 5
Part F Comments	Part F Comments
Steam Electric Questionnaire Code	Code Tables

Part F Table of Contents / Part F Instructions / Part F Section 1 / Part F Section 2

QUESTIONNAIRE ASSISTANCE

If you have any questions regarding the completion of this questionnaire, you can request assistance using EPA's e-mail and telephone helplines provided below.

EPA Steam Electric Questionnaire Help Lines

Assistance for the Technical Questionnaire (Parts A through H)

Eastern Research Group, Inc. ....Local: 703-633-1696 or Toll-free: 1-877-353-7560
Internet Electronic Mailing Address (E-mail).. steamhelp@erg.com

Assistance for the Economic and Financial Questionnaire (Part I)

Abt Associates, Inc. ....Local: 617-520-2336 or Toll-free: 1-877-344-9540
Internet Electronic Mailing Address (E-mail)... steam_econ@abtassoc.com

WHEN TO RETURN THE QUESTIONNAIRE

The response to all portions of the questionnaire except Part G is due **90** days after receipt. Part G is due **120** days after receipt.

If you wish to request an extension, you must do so **in writing** within 21 days of receipt of this questionnaire. Written requests may be e-mailed (preferred) or mailed to:

Jezebele Alicea
USEPA Headquarters
Ariel Rios Building
1200 Pennsylvania Avenue, NW
Mail Code: 4303T
Washington, DC 20460
alicea.jezebele@epa.gov
202-566-1755

Extension requests will be evaluated on a case-by-case basis. Submittal of an extension request to EPA does **not** alter the due date of your questionnaire unless and until EPA agrees to the extension and establishes a new date.

WHERE TO RETURN THE QUESTIONNAIRE

After completing the questionnaire and certifying the information that it contains, use the enclosed mailing label to mail the completed questionnaire to:

U.S. Environmental Protection Agency
Questionnaire for the Steam Electric Power Generating Effluent Guidelines
c/o Eastern Research Group, Inc.
14555 Avion Parkway, Suite 200
Chantilly, VA 20151-1102

CONFIDENTIAL BUSINESS INFORMATION

If no business confidentiality claim accompanies the information when it is received by EPA, EPA may make the information available to the public without further notice.

Regulations governing the confidentiality of business information are contained in the Code of Federal Regulations (CFR) at Title 40 Part 2, Subpart B. You may assert a business confidentiality claim covering part or all of the information you submit, other than effluent data and information or data that is otherwise publicly available, as described in 40 CFR 2.203(b):

> "(b) *Method and time of asserting business confidentiality claim.* A business which is submitting information to EPA may assert a business confidentiality claim covering the information by placing on (or attaching to) the information, at the time it is submitted to EPA, a cover sheet, stamped or typed legend, or other suitable form of notice complying language such as 'trade secret,' 'proprietary,' or 'company confidential.' Allegedly confidential portions of otherwise nonconfidential documents should be clearly identified by the business, and may be submitted separately to facilitate identification and handling by EPA. If the business desires confidential treatment only until a certain date or until the occurrence of a certain event, the notice should so state."

You may claim as confidential all information included in the response to a question by checking the Confidential Business Information (CBI) box next to the question number. Note that plant effluent data are not eligible for confidential treatment, pursuant to Section 308(b) of the Clean Water Act. In addition, information that is publicly-available should not be claimed confidential.

If you claim any questionnaire response or other data as CBI, other than by checking the box, you must specify the portion of the response or document for which you assert a claim of confidentiality by reference to page numbers, paragraphs, and lines, or specify the entire response or document. Additionally, for questions where you checked the box to indicate that the response includes CBI but only intend for a portion of the response to be claimed CBI, please specify what data are CBI. **This information must be provided as part of the submission of the completed questionnaire. Note that EPA will review the information submitted and may request your cooperation in providing information to identify and justify the basis of your CBI claim.**

If you believe that facts and documents necessary to substantiate confidentiality are themselves confidential, please identify them as such so that EPA may maintain their confidentiality pursuant to 40 CFR Part 2, Subpart B.

Information covered by a claim of confidentiality will be disclosed by EPA only to the extent of, and by means of, the procedures set forth in 40 CFR Part 2, Subpart B. In general, submitted information protected by a business confidentiality claim may be disclosed to other employees, officers, or authorized representatives of the United States concerned with implementing the Clean Water Act.

Information covered by a claim of confidentiality will be made available to EPA contractors to enable the contractors to perform the work required by their contracts with EPA. All EPA contracts provide that contractor employees use the information only for the purpose of performing the work required by their contracts and will not disclose any CBI to anyone other than EPA without prior written approval from each affected business or from EPA's legal office.

Plant Name: ______________________

Plant ID: ______________________

CERTIFICATION STATEMENT

The individual responsible for directing or supervising the preparation of the questionnaire must read and sign the Certification Statement listed below. The certifying official must be a responsible corporate official or his/her authorized representative.

Certification Statement

I certify under penalty of law that the attached questionnaire was prepared under my direction or supervision and that qualified personnel properly gathered and evaluated the information submitted. The information submitted is, to the best of my knowledge and belief, accurate and complete. In those cases where we did not possess the requested information for questions applicable to our company, we provided best estimates. We have to the best of our ability indicated what we believe to be company confidential business information as defined under 40 CFR Part 2, Subpart B. We understand that we may be required at a later time to justify our claim in detail with respect to each item claimed confidential. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment as explained in Section 308 of the Clean Water Act.

______________________ ______________________

Signature of Certifying Official Date

______________________ (   ) ______________________

Printed Name of Certifying Official Telephone Number of Certifying Official

____

Title of Certifying Official

____

Company Name

INSTRUCTIONS FOR COMPLETING THE QUESTIONNAIRE

Read all question-specific instructions (throughout the questionnaire) and definitions of key terms in the questionnaire glossary file. Throughout the questionnaire, key terms are in *italics*.

Refer to the code tables located at the end of the each part if prompted to enter a code or complete a block diagram.

Acronyms and measurement units are defined in the Acronyms list at the end of the general instructions.

Enter the Plant ID in every part of the questionnaire. You will find your Plant ID in the cover letter you received with your questionnaire. When completing the electronic form, note the following: When you enter your plant name and plant ID in the "Plant Name" and "Plant ID" header fields in the table of contents for each part, all header fields throughout the rest of the part will automatically populate.

Not all questions will be applicable to every company or plant. EPA prepared the questionnaire to be applicable to a variety of plants; therefore, not all of the questions will apply to every company or plant. Complete each relevant item in the questionnaire.

Mark responses for each question. Fill in the appropriate response(s) to each question. Answer the questions in sequence unless you are directed to skip. If you are directed to skip to another section, click on the "Skip to Section X" colored hyperlink, which will direct you to the next appropriate section. Do not leave any entry blank. If the answer is zero, enter "0". If a question is not applicable to your company or plant, enter or select "NA."

Best engineering estimates. EPA is not requiring your company or plant to perform non-routine tests or measurements solely for the purpose of responding to this questionnaire, with the exception of companies or plants chosen to complete Part G. In the event that exact data are not available, provide best engineering estimates and note the methods that were used to make the estimates in the Comments page located at the end of each part of the questionnaire.

Include any clarifying attachments. If additional pages are required to clarify a response, place the associated question number, as well as your plant name (if applicable) in the top right corner of each attachment page. The following list contains examples of items that may be included as attachments to a response to this questionnaire:

- Company brochure, pamphlet, and/or general description;
- Process and wastewater treatment flow diagrams;
- Electronic analytical data collected from monitoring locations;
- Equipment operation and maintenance logs; and
- Pollution prevention or best management practices (BMPs) policies or data.

You may need to make multiple copies of some tabs throughout the questionnaire. When completing the electronic questionnaire, select the copy button located at the beginning of the section that requires multiple copies. Selecting the copy button will generate new worksheets within the Excel file containing the same tables and questions from the specific section. Refer to the instructions of the specific section on how to copy the section within the part of the electronic questionnaire. If additional worksheets are accidentally generated from selecting the copy button, the unneeded worksheets can simply be deleted.

Pay close attention to the measurement units requested (e.g., gpd). Measurement units are defined in the acronyms list at the end of these instructions. Report answers in the units that are specified, unless the question requires you to specify the units.

Indicate information that should be treated as confidential. You may claim as confidential all information included in the response to a question by checking the Confidential Business Information (CBI) box next to the question number. Note that EPA will review the information submitted and may request your cooperation in providing information to identify and justify the basis of your CBI claim. See the CONFIDENTIAL BUSINESS INFORMATION section on page vi.

Indicate atypical data in the Comments page at the back of the questionnaire. Year-to-year operations are expected to fluctuate, but note in the Comments page if any information is not representative of normal operations and why.

Questions? If you have questions regarding the completion of this questionnaire, see the QUESTIONNAIRE ASSISTANCE section on page v.

ACRONYMS

ug/L	Micrograms per liter
%	Percent
BTU	British thermal unit
BWR	Boiler Water Reactor
CAS	Chemical Abstracts Service
CBI	Confidential business information
CFR	Code of Federal Regulations
cm/sec	Centimeter per second
DBA	Dibasic acid
deg	Degree
dpy	Days per year
DUNS	Dun & Bradstreet Number
FERC	Federal Energy Regulatory Commission
FGD	Flue gas desulfurization
ft	Feet
FTE	Full-time equivalent
gal	Gallon
gpd	Gallons per day
gpm	Gallons per minute
gpy	Gallons per year
g/L	Grams per liter
hpd	Hours per day
HRSG	Heat Recovery Steam Generator
Kwh	Kilowatt hour
lb	Pound
LOCA	Loss of coolant accident
mg/L	Milligrams per liter
MW	Megawatt
MWh	Megawatt hour
N/A	Not applicable
NOx	Nitrogen oxides
O&M	Operation and maintenance
pg/L	Picograms per liter
PHWR	Pressurized heavy water reactor
ppb	Parts per billion
ppd	Pounds per day
ppm	Parts per million
ppt	Parts per trillion
POTW	Publicly Owned Treatment Works
PURPA	Public Utility Regulatory Policies Act
PWR	Pressurized Water Reactor
SCR	Selective catalytic reduction
SEC	U.S. Securities and Exchange Commission
SNCR	Selective non-catalytic reduction
SO_2	Sulfur dioxide
tpd	Ton per day
tpy	Ton per year
TDS	Total dissolved solids
TSS	Total suspended solids
WWT	Wastewater treatment

GLOSSARY

The terms identified below are identified in the text of this questionnaire in italic font.

Aerobic biological reactor – A tank in which material is converted from one form into another form by microorganisms in the presence of free oxygen.

Air heater ash – The ash taken from hoppers below the air heater.

Air heater cleaning wash water – Any water or liquid cleaning solution used for or generated from cleaning the air heater.

Anaerobic biological reactor – A tank in which material is converted from one form into another form by microorganisms not in the presence of free oxygen.

Background concentration – The concentration of a substance in an environmental media (air, water, or soil) that is not associated with plant processes or activities.

Base load unit – A unit normally operated to produce electricity at an essentially constant rate and which typically runs for extended periods of time.

Best Management Practice (BMP) – *Pollution prevention* practices that help to avoid contact between *pollutants* and water media that may include good housekeeping measures, good management techniques, product modifications, operational changes, materials substitution, materials and water conservation, and other measures.

Boiler blowdown – The minimum amount of liquid removed from the boiler/steam generator for the purpose of preventing buildup of materials that exceed limits established by best engineering practices.

Boiler fireside cleaning wash water – Any water or liquid cleaning solution used for or generated from cleaning the boiler fireside.

Boiler tube cleaning wash water – Any water or liquid cleaning solution used for or generated from cleaning the interior surface of boiler tubes.

Bottom ash – The ash that drops out of the furnace gas stream in the furnace and which settle in the furnace or are dislodged from furnace walls. Includes boiler slag collected in wet-bottom furnaces. *Economizer ash* is included when it is collected with bottom ash.

Bottom ash sluice – *Process wastewater* generated from a *wet bottom ash handling system* that is formed by combining bottom ash with the bottom ash transport water. Bottom ash sluice is typically transferred to a *pond/impoundment* or a dewatering bin.

Carbon capture system – An air pollution control system intended to reduce emissions of carbon dioxide. Includes both post-combustion and pre-combustion carbon capture/reduction technologies.

Carbon capture wastewater – Any *process wastewater* generated from the *carbon capture system.*

Chemical precipitation/flocculation – Processes involving the addition of chemicals to alter the physical state of dissolved and suspended solids and facilitate their removal by sedimentation or filtration.

Chemical and volume control system (CVCS) purge – Purge from the chemical and volume control system, also known as the makeup and purification system. This system purifies the primary coolant of a PWR nuclear generating unit with demineralizers and filters and controls the concentration of boron. The treated primary coolant is typically recycled back into the process, while the purge also known as letdown is transferred to the radioactive waste system for treatment and/or disposal.

Clarification – A sedimentation process to remove solid particles from a liquid stream by gravitational force.

Clean Water Act (CWA) – Federal legislation enacted by Congress to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters" (Federal Water Pollution Control Act of 1972, as amended, 33 U.S.C. 1251 et seq.).

Coal pile runoff – The *runoff* from or through any coal storage pile.

Coal washing – Coal washing, also known as coal cleaning, entails separating out foreign material from coal in a liquid medium and may also include processes to remove ash, sulfur and moisture. The liquid medium may be combined with finely ground heavier minerals, such as magnetite, in a dense medium fluid, to achieve better separation of unwanted rock and mineral matter from coal particles.

Cogeneration plant – A generating facility, otherwise known as a combined heat and power plant, that produces electricity and another form of useful thermal energy (such as heat or steam), used for industrial, commercial, heating, or cooling purposes.

Combustion turbine cleaning wash water – Any water or liquid cleaning solution used for or generated from cleaning a combustion turbine, including the air compressor section of the turbine.

Continuous – A discharge which occurs without interruption throughout the operating hours of the facility, except for infrequent shutdowns for maintenance, process changes, or other similar activities.

Cost of service – A ratemaking concept used for the design and development of rate schedules to ensure that the filed rate schedules recover only the cost of providing the electric service at issue. This concept attempts to correlate the *utility*'s costs and revenue with the service provided to each of the various customer classes.

Cycling unit – A unit for which operation is undulated through a generally routine cycle. For example, a unit may run daily, but reduce capacity or shut off at night.

Deep (or shallow) well injection – Disposal of fluids underground through any bored, drilled, or driven shaft or a dug hole, improved sinkhole, or a subsurface fluid distribution system where the depth is greater than the largest surface dimension.

Discharge – The conveyance of *process wastewater* to: (1) surface waters; or (2) a publicly owned, privately owned, federally owned, combined, or other treatment works.

Dry bottom ash handling system – A system that does not use water to convey bottom ash away from the boiler. It includes systems that collect and convey the ash without any use of water, as well as systems in which bottom ash is quenched in a water bath and then mechanically or pneumatically conveyed away from the boiler.

Dry-bottom boiler – A boiler that contains a dry-bottom furnace, also known as a dry-ash furnace. In a dry-bottom furnace, a hopper bottom and sufficient cooling surface are provided so that the ash collecting on the furnace walls or the hopper bottom is solid. Dry-bottom boilers are primarily used for coal with high ash fusion temperatures.

Dry FGD system – Dry FGD system, also referred to as semi-dry FGD system, captures sulfur dioxide from flue gas by a spray dryer absorption process that produces calcium sulfite with low moisture content.

Dry fly ash handling system – A system that does not use water to convey *fly ash* as a dry material away from particulate collection equipment.

DUNS Number – Unique nine-digit numeric sequence ("Data Universal Numbering System") assigned to a corporate entity by Dun and Bradstreet.

Economizer ash – The ash taken from hoppers below the economizer.

Evaporation – The process by which water or other liquid becomes a gas.

FGD scrubber absorber – As depicted in Figure B-1, the FGD scrubber absorber is the module where contact between flue gas and sorbent occurs, which results in the capture of sulfur dioxide from the flue gas.

FGD scrubber purge – *Process wastewater* that exits an FGD scrubber system (typically from a solids separation process) and that is transferred to a *wastewater treatment system* or *discharged*. Note: The scrubber purge stream may be the same as the *FGD slurry blowdown* stream if the *plant* does not operate a solids separation system prior to *wastewater treatment*. Also note that the FGD wastewater generated from a single pass *FGD scrubber system* is referred to as FGD *slurry discharge*. See Figures B-1 and B-2.

FGD scrubber system – As shown in Figure B-1, a system that captures sulfur dioxide from flue gas. An FGD scrubber system may be wet or dry. For *wet FGD systems*, the *solids separation* and *solids dewatering* processes are part of this system.

FGD slurry blowdown – Slurry that exits an *FGD scrubber absorber* to control the solids/chlorides levels in the *FGD scrubber absorber*. FGD slurry blowdown is typically transferred to a *solids separation* process. See Figure B-1.

FGD reagent preparation water –Water used for the preparation of *FGD* ***reagent*** *slurry* (e.g., water that is added to ball mills for limestone slurry preparation).

FGD reagent slurry – All water that enters into, is used within, or recycles through the *FGD scrubber absorber*. FGD slurry water is replenished by make-up water and the solids level is controlled by *FGD slurry blowdown*.

FGD solids – Any solid material generated by the *FGD scrubber system*. This may also be called FGD sludge (e.g., calcium sulfite and calcium sulfate).

FGD solids separation – The process that separates *FGD slurry blowdown* into two separate streams: the solids-rich stream (i.e. underflow) that contains *FGD solids* and the solids-lean stream (i.e. overflow) that contains water and fines.

FGD solids separation recycle – The *FGD wastewater* that is returned to the *FGD scrubber absorber* following the *FGD solids separation* process.

FGD System – Please see either *dry FGD system* or *wet FGD system*.

FGD wastewater – *Process wastewater* generated specifically from the *FGD scrubber system.*

Filter – An apparatus using woven, granular, or other material to remove solid particles from wastewater or water.

Filter backwash – Any water generated from reversing the direction of flow through a *filter* for the purpose of washing and/or eliminating solids from the *filter*.

Filter press – An apparatus used in solids dewatering that utilizes a filter to separate liquid filtrate from solid filter cake.

Floor drain wastewater – Liquid collected in any of the floor drains at the plant.

Flue gas mercury control system – An air pollution control system installed or operated for the purpose of removing mercury from flue gas. In this questionnaire, do not include FGD or SCR/SNCR systems as flue gas mercury control systems.

Flue gas mercury control system wastewater – Any *process wastewater* generated from the *flue gas mercury control system*.

Fly ash – The ash that is carried out of the furnace by the gas stream and collected by mechanical precipitators, electrostatic precipitators, and/or fabric filters. *Economizer ash* is included when it is collected with fly ash.

Fly ash sluice – *Process wastewater* generated from a *wet fly ash handling system* that is formed by combining fly ash with the fly ash transport water. The fly ash sluice water is typically transferred to an ash *pond/impoundment*.

Forced generator outage – The removal of a generator from the connection with the transmission grid, either automatically or manually, that has not been scheduled. These outages are usually the result of a mechanical failure of a critical component of the generating system.

Form 1 – The comprehensive financial and operating report ("Annual Report For Major Public Utilities & Licensees') submitted to FERC for Electric Rate regulation and financial audits by *major utilities*.

Gross generation – Amount of power produced by an electric power plant, measured at the terminals of the plant (i.e., prior to the point at which the power leaves the station and is available to the system). This amount includes electric power generated at a power plant that is used to operate equipment at the plant.

Gypsum cake wash water – Water used to wash gypsum cake to remove impurities (e.g., chlorides).

Gypsum pile – A temporary storage pile *on site* containing gypsum.

Gypsum pile runoff – The *runoff* from or through any *gypsum pile*.

Gypsum stacking – For *plants* that sluice gypsum to a *pond/impoundment,* the process used to dig out the gypsum from the *pond/impoundment* and stack it along the sides of the *pond/impoundment* or in separate piles for dewatering.

Gypsum wash water – Process wastewater generated during the *solids dewatering* operation of gypsum or gypsum solids.

IGCC generating unit – An integrated gasification combined cycle generating unit.

Immediate parent firm – The first entity in the facility's ownership structure responsible for facility's expenses associated with steam electric generating units. This is generally the first entity in the plant ownership structure for which standard financial statements are prepared and reported. Note that for the purpose of Part I of the questionnaire, if a plant has multiple owners, detailed financial and economic data are requested, at a minimum, for the immediate parent firm that holds the largest equity share in the plant. Respondents have the option to provide detailed financial and economic data separately for each relevant immediate parent firm, for example in cases where equity shares do not appropriately indicate participation in a plant's steam generation operations.

Impoundment – See *pond/impoundment.*

Independent power producer – A corporation, person, agency, authority, or other legal entity or instrumentality that owns or operates facilities for the generation of electricity for use primarily by the public, and that is not a *utility*.

Intake water – Water from public utilities, streams, rivers, lakes, or underground aquifers that is used to supply or feed process unit operations or treatment processes.

Intermediate unit – A unit that is not used in a constant and specific cycle. The unit is instead used more sporadically on an as needed basis when energy requirements are less than peak load but more than base load.

Ion exchange – Reversible exchange of ions adsorbed on a mineral or synthetic polymer surface with ions in solution in contact with the surface.

Landfill – A disposal facility or part of a facility where solid waste, *sludges*, or other process *residuals* are placed in or on any natural or manmade formation in the earth for *disposal* and which is not a storage pile, a land treatment facility, a surface impoundment, an underground injection well, a salt dome or salt bed formation, an underground mine, a cave, or a corrective action management unit.

Leachate - Liquid, including any suspended or dissolved constituents in the liquid that has percolated through or drained from waste or other materials emplaced in a *landfill*, or that pass through the containment structure (e.g., bottom, dikes, berms) of a surface impoundment. Leachate also includes the terms seepage, leak, and leakage, which are generally used in reference to leachate from an impoundment.

Leachate collection system - A system that gathers *leachate* and conveys it to a collection area for treatment, discharge, or other use.

Leak detection system - A system whose primary purpose is to monitor performance of the containment structure of a *pond/impoundment* or *landfill* by collecting fluid which flows through the liner.

Liner – A continuous layer of natural or man-made materials, beneath or on the sides of a *pond/impoundment*, *landfill*, or landfill cell, which restricts the downward or lateral escape of the wastes placed therein or *leachate*.

Major utility – An electric utility (i.e., regulated) that submits a Form 1 comprehensive financial and operating annual report to FERC. Major is defined as having (1) one million megawatt hours or more; (2) 100 megawatt hours of annual sales for resale; (3) 500 megawatt hours of annual power exchange delivered; or (4) 500 megawatt hours of annual wheeling for others (deliveries plus losses).

Method Detection Limit (MDL) – The laboratory's MDL developed as specified in Appendix B of 40 CFR Part 136. Labs may develop an MDL for their matrix or in reagent water.

Mill reject sluice – Water stream that is generated by combining *mill rejects* with water to aid in transport and/or *disposal*.

Mill rejects – Material such as stone, slate and iron pyrite that is rejected by coal pulverizers because it could not be ground.

Nameplate capacity –The full-load continuous nominal rating of a generator, prime mover, or other electric power production equipment under specific conditions as designated by the manufacturer. Installed generator nameplate rating is usually indicated on a nameplate physically attached to the generator.

Natural wetlands – A natural area (not man-made) that is saturated by surface or ground water with vegetation adapted for life under those soil conditions, as swamps, bogs, fens, marshes, and estuaries.

Non-contact cooling water – Water used for cooling which does not come into direct contact with any raw material, product, byproduct, or waste.

Non-pond wastewater treatment unit – A *wastewater treatment unit* that is not a *pond/impoundment*. Non-pond wastewater treatment units include, but are not limited to: *chemical precipitation/flocculation*, *pH adjustment*, *clarification*, *anaerobic/aerobic biological reactor*, *thickeners*, and *filters*.

Nonutility – A corporation, person, agency, authority, or other legal entity or instrumentality that owns or operates facilities for electric generation and is not an electric *utility*. These entities are not owned by a governmental unit or the consumers that the entity serves and do not operate within the traditional *cost-of-service* price regulation. Nonutility power producers include *qualifying cogenerators*, *qualifying small power producers*, and other nonutility generators (including *independent power producers*). Nonutility power producers are without a designated franchised service area and do not file forms listed in the Code of Federal Regulations, Title 18, Part 141.

NO_x control system – An air pollution control system that prevents NO_x formation during fuel combustion or removes NO_x from flue gas. Types of NO_x control systems include, but are not limited to, selective catalytic reduction (SCR), selective non-catalytic reduction (SNCR), overfire air, and low NO_x burners.

NPDES permit – Permits issued under the National Pollutant Discharge Elimination System (NPDES) program authorized by Sections 307, 318, 402, and 405 of the *Clean Water Act* that applies to *plants* that *discharge wastewater* directly to United States surface waters.

On site – Property and equipment under the operational control of the plant, including landfills, ponds/impoundments, and outfall structures located on non-contiguous property.

Particulate matter control system – An air pollution control system that removes particulates from the flue gas. Particulate matter control systems include, but are not limited to, the following: electrostatic precipitators (ESP), fabric filters/baghouses, mechanical collectors, and venturi scrubbers.

Peaking unit – A unit normally used only during peak-load periods of electricity demand or, as an example, to replace the loss of another unit.

pH Adjustment – Changing the acidity or alkalinity of a substance by adding alkaline or acidic materials, respectively.

Plant – Includes all contiguous and non-adjoining property and equipment that is under operational control of the facility, including non-adjoining landfills, surface impoundments, and outfall structures.

Pollutant – Dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage *sludge*, munitions, chemical wastes, biological materials, radioactive materials (except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 et seq.)), heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. (See 40 CFR 122.2)

Pollution prevention – The use of materials, processes, or practices that reduce or eliminate the creation of *pollutants* or wastes. It includes practices that reduce the use of hazardous and nonhazardous materials, energy, water, or other resources, as well as those practices that protect natural resources through conservation or more efficient use. Pollution prevention includes but is not limited to source reduction, in-process *recycle/reuse*, and water conservation practices.

Pond/impoundment – A natural topographic depression, man-made excavation, or diked area formed from earthen materials or man-made materials or a combination of them, which is designed to hold an accumulation of liquid process wastes or process wastes containing free liquids, and which is not an injection well. Examples of ponds/impoundments include holding, storage, settling, and aeration pits, ponds, and lagoons. It does not include building sumps and outdoor collection/transfer concrete basins.

Pond/impoundment system – A treatment system consisting of one or more *ponds/impoundments*.

Pond outlet – The point at which the *pond/impoundment* releases water to another *pond/impoundment*, surface water, or other process

Power marketers – Business entities engaged in buying and selling electricity. Power marketers do not usually own generating or transmission facilities. Power marketers, as opposed to brokers, take ownership of the electricity and are involved in interstate trade. These entities file with the Federal Energy Regulatory Commission (FERC) for status as a power marketer.

Primary purpose – Provides the predominant source of revenue for the plant. The principal reason for which the plant operates.

Priority pollutant – Priority pollutants are a set of 126 chemical pollutants listed at 40 CFR part 423, Appendix A.

Privately Owned Treatment Works (PrOTW) – Any device or system which is (a) used to treat wastes from any facility whose operator is not the operator of the treatment works and (b) not a "POTW."

Process operation – One or more pieces of process equipment used to change the physical or chemical characteristics of one or more process streams. Process operations include, but are not limited to, boilers, scrubbers, SCR/SNCR systems, air heaters, EMC systems, and cooling towers.

Process wastewater – Any water which comes into direct contact with or results from the storage, production, or use of any raw material, intermediate product, finished product, byproduct, or waste product. Examples of process wastewater include, but are not limited to, wastewater from ash handling, equipment cleaning, *air pollution control* devices, rinse water, *coal pile runoff* or other contaminated *stormwater*, and condenser cooling water (i.e., once through cooling water, cooling tower blowdown). Process wastewater does not include other non-contact cooling for other miscellaneous cooling purposes. Process wastewater can be treated, recycled, discharged, or hauled off site for disposal. *Sanitary wastewater*, potable water, sewage, fire protection, car washes, and uncontaminated *stormwater* are not considered process wastewater for the purpose of this information collection request.

Publicly Owned Treatment Works (POTW) – In general terms, any device or system owned by a state or municipality that is used to recycle, reclaim, or treat liquid municipal sewage and/or liquid industrial wastes. See 40 CFR part 403.3 for an expanded definition of this term.

Qualifying Cogenerator and Qualifying Small Power Producer (QF) – A cogeneration or small power production facility, respectively, that meets certain ownership, operating, and efficiency criteria established by the Federal Energy Regulatory Commission (FERC) pursuant to the Public Utility Regulatory Policies Act (PURPA).

Raw intake water – Intake water prior to any treatment or use.

Recycle/reuse – To return a stream or a portion of a stream to an earlier step in the process/treatment process or to another process at the plant.

Reporting Limit (Also known by terms, such as Minimum Level, ML, or Quantitation Limit) **–** The laboratory reporting limit in the matrix analyzed. Usually this is a multiple of the MDL, e.g. 3.18 times the MDL, if seven replicates are used to develop the MDL. This ML maybe rounded to the nearest integer in this series, 1, 2, 5, or 10. If samples have been diluted the detection and reporting limits should be increased by the dilution factor.

Residue – Amount of a pollutant remaining in the environment after a natural or technological process has taken place; e.g., the sludge remaining after initial wastewater treatment, or particulates remaining in air after it passes through a scrubbing or other process.

Reverse Osmosis (RO) – A filtration process designed to separate particulate, colloidal, and dissolved matter from a liquid using a semi-permeable membrane, where pressure in excess of the osmotic pressure is applied to the concentrated side of the membrane.

RO reject water – Waste water released from the reverse osmosis process.

Rural Electric Cooperatives – For the purpose of this questionnaire, rural electric cooperatives are electric utilities that are legally established to be owned by and operated for the benefit of those using its service. This entity will generate, transmit, and/or distribute supplies of electric energy to a specified area not being serviced by another utility. Such ventures are generally exempt from Federal income tax laws. Most electric cooperatives have been initially financed by the Rural Utilities Service (prior Rural Electrification Administration), U.S. Department of Agriculture.

Sanitary wastewater – Wastewater that is generated from restrooms, cafeterias, showers, and domestic (versus industrial) activities.

Scheduled generating unit outage – The hours during which the generating unit is offline due to planned, scheduled repairs, maintenance, or upgrades, such as routine repetitive maintenance and repair that have been programmed into the power schedule.

Semi-dry FGD systems – Refer to *dry FGD system*.

SCR catalyst regeneration wastewater – Any water generated from the *SCR catalyst regeneration* process.

SCR catalyst washing wastewater – Any water generated from the *SCR catalyst washing* process.

SCR catalyst regeneration – Process by which catalysts used in the *SCR system* are regenerated after a period of time because the catalysts have become less reactive through use.

SCR catalyst washing – Process by which catalysts used in the *SCR system* are washed to remove fly ash and/or other particulates.

Settling pond – A pond used to remove solid particles from a liquid stream by gravitational force (i.e., sedimentation process).

Settling tank – A tank that uses a sedimentation process to remove solid particles from a liquid stream by gravitational force.

Sludge – Any solid, semi-solid, or liquid waste generated from a municipal, commercial, or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility exclusive of the treated effluent from a wastewater treatment plant.

Slurry Discharge – *Process wastewater* that exits a single pass *FGD scrubber system* and that is transferred to a *wastewater treatment system* or *discharged*.

Solids dewatering – The process that removes water from the solids-rich stream generated in the *solids separation* process. Typically a *vacuum belt filter* or a *vacuum drum filter* is used in this process. FGD solids such as gypsum are produced by this process.

Steam turbine cleaning wash water –Any water or liquid cleaning solution used for or generated from cleaning the steam turbine.

Stormwater runoff – Runoff generated when precipitation from rain and snowmelt events flows over land or impervious surfaces and does not percolate into the ground.

Sulfur dioxide control systems – An air pollution control system that removes sulfur dioxide from flue gas. Sulfur dioxide control systems include, but are not limited to: *wet FGD systems, dry FGD systems,* and lime/limestone addition to the boiler.

Thickener – A sedimentation process to remove solid particles from a liquid stream by gravitational force. In contrast to clarification, the primary purpose of the thickener is to increase the concentration of suspended solids of the feed stream (i.e., to remove liquids), thereby increasing the concentration of solids in *sludge*. Note that thickening should not be confused with *solids dewatering;* the cake formed from *solids dewatering* is handled as a solid and not a liquid.

Treated (water or *process wastewater*) – Water that has been processed by physical, chemical, biological, or other means to remove specific constituents of the water stream or to alter the physical or chemical state of specific constituents of the water stream.

Treated intake water – Water that is acquired from a source and treated prior to use by physical, chemical, biological, or other means to remove specific constituents of the water stream or to alter the physical or chemical state of specific constituents of the water stream.

Ultimate parent firm – The highest level domestic business entity in the facility's ownership structure. A firm that is owned by another U.S. firm is not an ultimate domestic parent firm. In contrast, a U.S. firm that is owned by a foreign firm is an ultimate domestic parent firm.

Uncontaminated stormwater – *Stormwater runoff* that has not come into contact with raw materials, byproducts, or waste products from the electricity generation process.

Utility – Any entity that generates, transmits, or distributes electricity and recovers the cost of its generation, transmission or distribution assets and operations, either directly or indirectly, through cost-based rates set by a separate regulatory authority (e.g., State Public Service Commission), or is owned by a governmental unit or the consumers that the entity serves. Examples of these entities include: investor-owned entities, public power districts, public utility districts, municipalities, rural electric cooperatives, and State and Federal agencies. Electric utilities may have Federal Energy Regulatory Commission approval for interconnection agreements and wholesale trade tariffs covering either cost-of-service and/or market-based rates under the authority of the Federal Power Act.

Vacuum drum filter – A solids dewatering system that consists of a tank containing a rotating drum covered with a cloth filter. A vacuum is used to pull water through the cloth filter to dewater the solids. Also referred to as a rotary drum filter.

Vacuum filter belt – A solids dewatering system that uses a vacuum to remove water from solids by pulling it through a revolving filter belt.

Variable O&M costs – Operation and maintenance costs that vary directly in proportion to the amount of electricity generated by a plant. For the purpose of this questionnaire, variable O&M costs include fuel handling (i.e., FERC values 501 and 547), steam expense other than direct labor costs (FERC value 502), and electric expense other than direct labor costs (FERC value 505). All other costs (e.g., 502: maintenance of boiler plant; 512: maintenance of electric plant; 533: maintenance of generating and electric equipment) are to be considered Fixed O&M costs and are to be excluded from Variable O&M costs. Note that fuel expenses are not included as Variable O&M or Fixed O&M costs but are accounted for separately.

Wastewater treatment – The processing of wastewater by physical, chemical, biological, or other means to remove specific ***pollutants*** from the wastewater stream or to alter the physical or chemical state of specific ***pollutants*** in the wastewater stream. Treatment is performed to allow for *discharge* of wastewater or ***recycle/reuse*** of wastewater.

Wastewater treatment system – A combination of one or more *wastewater treatment units*, other than ponds/impoundments, designed to achieve *wastewater treatment*.

Wastewater treatment unit – A unit operation used to remove *pollutants* from *process wastewater*. Wastewater treatment units include, but are not limited to: *pond/impoundments*, chemical precipitation, pH adjustment, clarification, biological reactor, thickeners, filters, and constructed wetlands.

Waste coal – Usable material that is a byproduct of previous coal processing operations. Waste coal is usually composed of mixed coal, soil, and rock (mine waste). Most waste coal is burned as-is in unconventional fluidized-bed combustors. For some uses, waste coal may be partially cleaned by removing some extraneous noncombustible constituents. Examples of waste coal include fine coal, coal obtained from a refuse bank or slurry dam, anthracite culm, bituminous gob, and lignite waste.

Wet bottom ash handling system – A system in which *bottom ash* is conveyed away from the boiler using water as the transport medium. Wet bottom ash systems typically send the ash slurry to dewatering bins or a *pond/impoundment*.

Wet-bottom boiler – A boiler that contains a wet-bottom furnace, also known as a slag-tap furnace. In a wet-bottom furnace, sufficient gas temperature is maintained to keep ash in a liquid, molten state in the lower furnace, where is it collected on furnace walls and surfaces. The molten ash is then tapped into water tanks that solidify the ash. Wet-bottom boilers are primarily used for coal with low ash fusion temperatures.

Wet FGD system – Wet FGD systems capture sulfur dioxide from the flue gas using a sorbent that has mixed with water to form a wet *slurry,* and that generates a water stream that exits the *FGD scrubber absorber.*

Wet fly ash handling system – A system that conveys *fly ash* away from particulate removal equipment using water as the transport medium. Wet fly ash systems typically dispose of the ash *slurry* in a *pond/impoundment*.

OMB Control Number: 2040-0281
Approval Expires: 05/31/2013

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Steam Electric Questionnaire

PART A - STEAM ELECTRIC POWER PLANT OPERATIONS

Table of Contents

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

PART A. STEAM ELECTRIC POWER PLANT OPERATIONS

INSTRUCTIONS

Complete Part A of the questionnaire for your plant. As you are completing the electronic form, note the following: When you enter your plant name and plant ID on the Part A Table of Contents tab, all name and ID fields throughout Part A will automatically populate. Refer to the overall questionnaire instructions, the glossary, and the acronym list for assistance with completing Part A.

Please provide all free response answers in the highlighted yellow areas. Throughout Part A, you may need to make copies of certain sections/questions. Instructions are provided throughout Part A regarding making copies. Note that outfall number or steam electric generating unit ID must be populated on the copied tab or section, located in the upper right corner under "Plant ID" and "Plant Name", in order to correlate the requested information with the correct outfall or steam electric generating unit.

Where the questionnaire indicates to provide an attachment, an electronic format (e.g., PDF) is preferred; however, hardcopies are also acceptable.

Use the Comments tab at the end of Part A to do the following: provide additional information as requested in certain questions within Part A; indicate atypical data (e.g., if 2009 information is not representative of normal operations); and note methods used to make best engineering estimates in the event that exact data are not available.

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: A
Section Title: 1.1. Plant Contact Information

Instructions: Throughout Section 1.1 (Questions A1-1 to A1-5), provide information requested on plant contacts. Please provide all free response answers in the highlighted yellow areas.

CBI?
☐ Yes

A1-1. Provide the physical plant address in the yellow spaces provided below.

Plant Name:

Street Address:

City:

State: State Zip Code:

CBI?
☐ Yes

A1-2. Provide the name, title, telephone and fax numbers, and e-mail address of the primary contact for technical information supplied in this questionnaire.

Primary Technical Contact Name:

Primary Technical Contact Title:

Email:

Street Address:

City:

State: State Zip Code:

Telephone Number:

Fax Number:

Convenient time to call between (Eastern Time): am/pm

to am/pm

CBI?
☐ Yes

A1-3. Provide the name, title, telephone and fax numbers, and e-mail address of the secondary contact for technical information supplied in this questionnaire.

Secondary Technical Contact Name:

Secondary Technical Contact Title:

Email:

Street Address:

City:

State: State

Zip Code:

Telephone Number:

Fax Number:

Convenient time to call between (Eastern Time): am/pm

to am/pm

CBI?
☐ Yes

A1-4. Provide the name, title, telephone and fax numbers, and e-mail address of the primary contact for economic/financial information supplied in this questionnaire.

Primary Economic/Financial Contact Name:

Primary Economic/Financial Contact Title:

Email:

Street Address:

City:

State: State

Zip Code:

Telephone Number:

Fax Number:

Convenient time to call between (Eastern Time): am/pm

to am/pm

CBI?
☐ Yes

A1-5. Provide the name, title, telephone and fax numbers, and e-mail address of the secondary contact for economic/financial information supplied in this questionnaire.

Secondary Economic/Financial Contact Name: ____

Secondary Economic/Financial Contact Title: ____

Email: ____

Street Address: ____

City: ____

State: State ▼ Zip Code: ____

Telephone Number: ____

Fax Number: ____

Convenient time to call between (Eastern Time): ____ am/pm ▼

to ____ am/pm ▼

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: A
Section Title: 1.2. General Plant Operating Characteristics

Instructions: Throughout Section 1.2 (Questions A1-6 to A1-14), provide information requested on general *plant* operating characteristics. Please provide all free response answers in the highlighted yellow areas.

CBI?
☐ Yes

A1-6. Is the plant permanently retired or will it be permanently retired by December 31, 2011?

○ Yes (Stop)
○ No (Continue)

STOP! IF YOU ANSWERED YES TO QUESTION A1-6, DO NOT COMPLETE THE REMAINDER OF THIS QUESTIONNAIRE.

CBI?
☐ Yes

A1-7. Does the plant generate or have the potential to generate electricity from a steam electric generating unit (i.e., a generating unit that utilizes a thermal cycle employing the steam/water system as the thermodynamic medium (steam turbine))? [NOTE: Combined cycle systems with at least one associated steam turbine are considered steam electric generating units.]

○ Yes (Continue)
○ No, this plant does not generate or have the potential to generate electricity from a steam electric generating unit. (Stop)

STOP! IF YOU ANSWERED NO TO QUESTION A1-7, DO NOT COMPLETE THE REMAINDER OF THIS QUESTIONNAIRE.

CBI?
☐ Yes

A1-8. Indicate all of the fossil or nuclear fuels that the plant used to generate electricity in 2009 (refer to Table A-17 for a further breakdown of fossil-type fuels in the "Type of Fuel" tab). [NOTE: Do **NOT** include fuels only used for start up or emergency generators when answering this question.]

☐ Coal
☐ Oil
☐ Gas
☐ Petroleum Coke
☐ Nuclear Fuel
☐ None (the plant did not use fossil or nuclear fuels other than for start up in 2009)

STOP! IF YOU ANSWERED NONE IN QUESTION A1-8,
DO NOT COMPLETE THE REMAINDER OF THIS QUESTIONNAIRE.

CBI?
☐ Yes

A1-9. Identify how the plant uses/handles the electricity generated and indicate the percent of **electricity** by end use/handling. [Check all boxes that apply.]

☐ Used on site ______ %
☐ Distributed for sale ______ %
☐ Other ______ %

If “Other” was selected, use the yellow space below to provide a description of electricity end use/handling.

______

CBI?
☐ Yes

A1-10. Provide the primary, secondary, and tertiary six-digit North American Industry Classification System (NAICS) codes that best describe the plant’s activities. Refer to the U.S. Census Bureau’s website to identify appropriate NAICS codes (http://www.census.gov/eos/www/naics/).

Primary NAICS: ______
Secondary NAICS: ______
Tertiary NAICS: ______

CBI?
☐ Yes

A1-11. Is the generation of electricity the *primary purpose* (i.e., the predominant source of revenue and principal reason for operation) of the plant?

◯ Yes
◯ No, specify the primary purpose of the plant to the right: ____________

STOP

STOP! IF YOU ANSWERED NO IN QUESTION A1-11,
DO NOT COMPLETE THE REMAINDER OF THIS QUESTIONNAIRE.

CBI?
☐ Yes

A1-12. Identify how the plant uses steam generated at the plant and indicate the percent of steam by use. [Check all boxes that apply.]

☐ Electricity Generation ____________ %
☐ Heating and/or Cooling ____________ %
☐ Other ____________ %

If "Other" was selected, use the space below to provide a description of the use for steam.

CBI?
☐ Yes

A1-13. Provide the total plant nameplate electric generating capacity, as reported in U.S. DOE/EIA Form 860, schedule 3, line 1, and the total electric net summer and winter capacities.

Nameplate capacity ____________ MW
Net summer capacity ____________ MW
Net winter capacity ____________ MW

CBI?
☐ Yes

A1-14. In Table A-1, provide the total net and *gross electrical generation* for all electric generating units at the plant during calendar years 2007 through 2009.

Table A-1. Net and Gross Plant Electrical Generation for 2007-2009

Calendar Year	Net Electrical Generation (MW-hrs)	Gross Electrical Generation (MW-hrs)
2007	MW-hrs	MW-hrs
2008	MW-hrs	MW-hrs
2009	MW-hrs	MW-hrs

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: A
Section Title: 2.1. Plant Identification and Information on Permits and Studies

Instructions: Throughout Section 2.1 (Question A2-1 to A2-4), provide information requested on plant identity, permits, and studies. Please provide all free response answers in the highlighted yellow areas.

CBI?
☐ Yes

A2-1. Provide the identification code of this plant as reported on U.S. DOE/EIA Form-860, "Annual Electric Generator Report," schedule 2, line 1.

EIA Plant Identification Code: ________ ☐ Check here if not applicable

CBI?
☐ Yes

A2-2. Provide the identification code of this plant as used when reporting to the Rural Utilities Service (RUS).

RUS Plant Identification Code: ________ ☐ Check here if not applicable

CBI?
☐ Yes

A2-3. Did the plant conduct any Environmental Assessment (EA) or Environmental Impact Statement (EIS) studies on receiving waters or pond/impoundments reported in Table A-4?

○ Yes (Continue)
○ No (Skip to Question A2-4)

If yes, please attach results from the study(ies).

☐ I have attached the results from the study(ies)
☐ I did not attach the results from the study(ies). Explain why: ________

CBI?
☐ Yes

A2-4. In Table A-2, provide a list of the plant's most recently approved permits that are associated with industrial activities. If the plant has more than one ID for a permit type, list all IDs in the space provided. Also indicate if the plant has a new/pending permit under development.

Note: Do **NOT** include the following types of permits: permits required for construction of wastewater and/or sanitary sewage facilities, erosion and sediment control permits associated with construction activities, temporary and general permits for hydrostatic testing water, water obstruction and encroachment permits, and/or water allocation permits.

Table A-2. Permit Information

Permit Type	Permit ID(s)	Approval Date		Expiration Date		New/Pending Permit is Under Development
		Month	Year	Month	Year	
National Pollutant Discharge Elimination System (NPDES)		Month	Year	Month	Year	
		Month	Year	Month	Year	Yes/No
		Month	Year	Month	Year	
Resource Conservation and Recovery Act (RCRA)		Month	Year	Month	Year	
		Month	Year	Month	Year	Yes/No
		Month	Year	Month	Year	
Stormwater		Month	Year	Month	Year	
		Month	Year	Month	Year	Yes/No
		Month	Year	Month	Year	
Air Pollution Operating		Month	Year	Month	Year	
		Month	Year	Month	Year	Yes/No
		Month	Year	Month	Year	
Underground Injection Control (UIC)		Month	Year	Month	Year	
		Month	Year	Month	Year	Yes/No
		Month	Year	Month	Year	

If the plant does not have an individual *NPDES permit*, skip to Section 3.

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name
Outfall Number: Insert Outfall Number

Part: A
Section Title: 2.2. Outfall Information

Instructions: Throughout Section 2.2 (Questions A2-5 to A2-10), provide information for all internal and final outfalls designated in the plant's NPDES permit. Note: This section does not require information on stormwater outfalls, other than those storm water outfalls that may be identified in the NPDES permit itself. Please provide all free response answers in the highlighted yellow areas.

Make copies of Section 2.2 for each outfall designated in the plant's NPDES permit using the "Copy Section 2.2" button below. Enter the outfall number in the space provided above.

Copy Section 2.2

CBI? ☐ Yes

A2-5. Provide the name, latitude/longitude, the typical volume of *discharge* in 2009 (either gpd and gpy OR gpm and hpd if flow is intermittent), and the number of days of discharge in 2009 for the outfall.

Outfall Name: ________

Coordinates	Degrees	Minutes	Seconds
Latitude			
Longitude			

Discharge Flow:

____ gpy **and** ____ dpy **OR** ____ gpd **and** ____ dpy **OR** ____ gpm **and** ____ hpd **and** ____ dpy

CBI? ☐ Yes

A2-6. Identify if the outfall is an internal or final outfall.

◯ Internal Outfall (Skip to Section 3)
◯ Final Outfall (Continue)

CBI?
☐ Yes

A2-7. Does the outfall release water to a discharge canal prior to discharging to surface water?

○ Yes
○ No

CBI?
☐ Yes

A2-8. Provide the receiving surface water name and type of surface water. If the receiving surface water is unnamed, provide the name(s) of the next receiving water downstream with a designated name.

Receiving Surface Water Name:

Type of Surface Water: Type of Receiving Water Other, specify:

If the receiving surface water is unnamed, provide the name(s) of the next receiving water downstream with a designated name.

CBI?
☐ Yes

A2-9. Has a mixing zone been applied to the outfall?

○ Yes
○ No

CBI?
☐ Yes

A2-10. In Table A-3, provide the percent contribution that each wastewater listed has to the total outfall flow.

Table A-3. Wastewaters Discharged Through Outfall

Wastewater	Percent Contribution of Outfall Flow
Cooling Water	
Fly Ash Sluice	
Bottom Ash Sluice	
FGD Scrubber Wastewater (slurry blowdown or scrubber purge)	
Leachate from Coal Combustion Residue Landfills or Ponds/Impoundments	
Coal Pile Runoff	
Metal Cleaning Waste	
Storm Water	
Other	
Total	100%

☐ Outfall is used for emergency discharges only. (Respondent still required to answer Table A-3.)

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: A
Section Title: 3. Ponds/Impoundments

Instructions: Throughout Section 3 (Questions A3-1 to A3-3), provide information for all *ponds/impoundments* the plant has or is currently constructing/installing or planning to construct/install by December 31, 2020.

CBI? ☐ Yes

A3-1. Does the plant have or is the plant currently constructing/installing or planning to construct/install by December 31, 2020 any ponds/impoundments used for the storage, treatment, and/or disposal of *process wastewater*, *residues*, or by-products (including *sludge* or water streams containing residues or by-products)?

Note: This includes ponds/impoundments located on non-adjoining property that are under the operational control of the plant.

○ Yes (Continue)
○ No (Skip to Section 4)

CBI? ☐ Yes

A3-2. In Table A-4 below list all pond/impoundment units located at the plant, or pond/impoundments the plant is currently constructing/installing or planning to construct/install by December 31, 2020, including those located on non-adjoining property, used for storage, treatment, and/or disposal of process wastewater, residues, or by-products (including sludge or water streams containing residues or by-products). For each pond/impoundment unit, EPA assigned an ID number (e.g., SPD-1, SPD-2) in Table A-4, which will be used throughout the remainder of the survey. In the "Plant Designation" column, provide the plant's name for each pond/impoundment unit.

Additionally, provide the latitude and longitude at the pond outlet (see glossary), the closest distance from the pond/impoundment unit to the nearest surface water, the year the pond/impoundment unit was brought online (or is planned to be brought online), and indicate whether the pond/impoundment is lined or unlined and whether leachate (see glossary) is collected from the pond/impoundment (e.g., the pond/impoundment has a leachate collection system or other means for collecting leaks or seepage, etc.). Note: If the pond/impoundment does not have a pond outlet, provide the latitude and longitude corresponding to the emergency outlet for the pond/impoundment.

Table A-4. Identification of Plant Pond/Impoundment Units

Pond/ Impoundment Unit ID	Plant Designation	Latitude and Longitude at Pond Outlet	deg	min	sec	Is the Pond Lined?	Is Leachate (including Leaks or Seepage) Collected?	Closest Distance to Nearest Surface Water (ft)	Year Initially Brought Online Or Planned to be Brought Online	Is the Pond/ Impoundment Inactive?
Active/Inactive/Open Pond/Impoundment Units										
SPD-1		Lat: Long:				Yes/No	Yes/No			Yes/No
SPD-2		Lat: Long:				Yes/No	Yes/No			Yes/No
SPD-3		Lat: Long:				Yes/No	Yes/No			Yes/No
SPD-4		Lat: Long:				Yes/No	Yes/No			Yes/No
SPD-5		Lat: Long:				Yes/No	Yes/No			Yes/No
SPD-6		Lat: Long:				Yes/No	Yes/No			Yes/No
SPD-7		Lat: Long:				Yes/No	Yes/No			Yes/No

SPD-8		Lat: / Long:				Yes/No	Yes/No			Yes/No
SPD-9		Lat: / Long:				Yes/No	Yes/No			Yes/No
SPD-10		Lat: / Long:				Yes/No	Yes/No			Yes/No
SPD-11		Lat: / Long:				Yes/No	Yes/No			Yes/No
SPD-12		Lat: / Long:				Yes/No	Yes/No			Yes/No
SPD-13		Lat: / Long:				Yes/No	Yes/No			Yes/No
SPD-14		Lat: / Long:				Yes/No	Yes/No			Yes/No
Retired/Closed Pond/Impoundment Units										
RET-SPD-1		Lat: / Long:				Yes/No	Yes/No			
RET-SPD-2		Lat: / Long:				Yes/No	Yes/No			
RET-SPD-3		Lat: / Long:				Yes/No	Yes/No			
RET-SPD-4		Lat: / Long:				Yes/No	Yes/No			
Planned Pond/Impoundment Units										
SPD-A		Lat: / Long:				Yes/No	Yes/No			
SPD-B		Lat: / Long:				Yes/No	Yes/No			
SPD-C		Lat: / Long:				Yes/No	Yes/No			
SPD-D		Lat: / Long:				Yes/No	Yes/No			
SPD-E		Lat: / Long:				Yes/No	Yes/No			

CBI?
☐ Yes

A3-3. In Table A-5 below, indicate all process wastewater, residues, or by-products (or sludges or water streams containing the wastes, residues or by-products) that are stored, treated, and/ or disposed of in each pond/impoundment unit identified in Table A-4. [Check all boxes that apply.] For solid waste and process wastewater not listed in the checkboxes or the drop down menu provide the name and description in the yellow box provided. Do not include treatment chemicals that are added to the pond/impoundment.

Table A-5. Wastes Stored or Disposed of in Plant Pond/Impoundment Units

Pond/ Impoundment Unit ID	Solid Waste		Process Wastewater	
Pond/Impoundment U	☐ Boiler Slag	☐ FGD Calcium Sulfate (Gypsum)	Process Wastewaters	Process Wastewaters
	☐ Bottom Ash	☐ FGD Calcium Sulfite – Not Pozzolanic	Process Wastewaters	Process Wastewaters
	☐ Fly Ash	☐ FGD Pozzolanic Material	Process Wastewaters	Process Wastewaters
		☐ Solids from Dry FGD		
	Other, specify:		Other, specify:	
	Other, specify:		Other, specify:	
	Other, specify:		Other, specify:	
	Other, specify:		Other, specify:	
Pond/Impoundment U	☐ Boiler Slag	☐ FGD Calcium Sulfate (Gypsum)	Process Wastewaters	Process Wastewaters
	☐ Bottom Ash	☐ FGD Calcium Sulfite – Not Pozzolanic	Process Wastewaters	Process Wastewaters
	☐ Fly Ash	☐ FGD Pozzolanic Material	Process Wastewaters	Process Wastewaters
		☐ Solids from Dry FGD		
	Other, specify:		Other, specify:	
	Other, specify:		Other, specify:	
	Other, specify:		Other, specify:	
	Other, specify:		Other, specify:	
Pond/Impoundment U	☐ Boiler Slag	☐ FGD Calcium Sulfate (Gypsum)	Process Wastewaters	Process Wastewaters
	☐ Bottom Ash	☐ FGD Calcium Sulfite – Not Pozzolanic	Process Wastewaters	Process Wastewaters
	☐ Fly Ash	☐ FGD Pozzolanic Material	Process Wastewaters	Process Wastewaters
		☐ Solids from Dry FGD		
	Other, specify:		Other, specify:	
	Other, specify:		Other, specify:	
	Other, specify:		Other, specify:	
	Other, specify:		Other, specify:	
Pond/Impoundment U	☐ Boiler Slag	☐ FGD Calcium Sulfate (Gypsum)	Process Wastewaters	Process Wastewaters
	☐ Bottom Ash	☐ FGD Calcium Sulfite – Not Pozzolanic	Process Wastewaters	Process Wastewaters
	☐ Fly Ash	☐ FGD Pozzolanic Material	Process Wastewaters	Process Wastewaters
		☐ Solids from Dry FGD		
	Other, specify:		Other, specify:	
	Other, specify:		Other, specify:	
	Other, specify:		Other, specify:	
	Other, specify:		Other, specify:	

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Pond/Impoundment U	☐ Boiler Slag ☐ Bottom Ash ☐ Fly Ash	☐ FGD Calcium Sulfate (Gypsum) ☐ FGD Calcium Sulfite – Not Pozzolanic ☐ FGD Pozzolanic Material ☐ Solids from Dry FGD	Process Wastewaters Process Wastewaters Process Wastewaters	Process Wastewaters Process Wastewaters Process Wastewaters
	Other, specify:		Other, specify:	
	Other, specify:		Other, specify:	
	Other, specify:		Other, specify:	
	Other, specify:		Other, specify:	
Pond/Impoundment U	☐ Boiler Slag ☐ Bottom Ash ☐ Fly Ash	☐ FGD Calcium Sulfate (Gypsum) ☐ FGD Calcium Sulfite – Not Pozzolanic ☐ FGD Pozzolanic Material ☐ Solids from Dry FGD	Process Wastewaters Process Wastewaters Process Wastewaters	Process Wastewaters Process Wastewaters Process Wastewaters
	Other, specify:		Other, specify:	
	Other, specify:		Other, specify:	
	Other, specify:		Other, specify:	
	Other, specify:		Other, specify:	
Pond/Impoundment U	☐ Boiler Slag ☐ Bottom Ash ☐ Fly Ash	☐ FGD Calcium Sulfate (Gypsum) ☐ FGD Calcium Sulfite – Not Pozzolanic ☐ FGD Pozzolanic Material ☐ Solids from Dry FGD	Process Wastewaters Process Wastewaters Process Wastewaters	Process Wastewaters Process Wastewaters Process Wastewaters
	Other, specify:		Other, specify:	
	Other, specify:		Other, specify:	
	Other, specify:		Other, specify:	
	Other, specify:		Other, specify:	
Pond/Impoundment U	☐ Boiler Slag ☐ Bottom Ash ☐ Fly Ash	☐ FGD Calcium Sulfate (Gypsum) ☐ FGD Calcium Sulfite – Not Pozzolanic ☐ FGD Pozzolanic Material ☐ Solids from Dry FGD	Process Wastewaters Process Wastewaters Process Wastewaters	Process Wastewaters Process Wastewaters Process Wastewaters
	Other, specify:		Other, specify:	
	Other, specify:		Other, specify:	
	Other, specify:		Other, specify:	
	Other, specify:		Other, specify:	
Pond/Impoundment U	☐ Boiler Slag ☐ Bottom Ash ☐ Fly Ash	☐ FGD Calcium Sulfate (Gypsum) ☐ FGD Calcium Sulfite – Not Pozzolanic ☐ FGD Pozzolanic Material ☐ Solids from Dry FGD	Process Wastewaters Process Wastewaters Process Wastewaters	Process Wastewaters Process Wastewaters Process Wastewaters
	Other, specify:		Other, specify:	
	Other, specify:		Other, specify:	
	Other, specify:		Other, specify:	
	Other, specify:		Other, specify:	
Pond/Impoundment U	☐ Boiler Slag ☐ Bottom Ash ☐ Fly Ash	☐ FGD Calcium Sulfate (Gypsum) ☐ FGD Calcium Sulfite – Not Pozzolanic ☐ FGD Pozzolanic Material ☐ Solids from Dry FGD	Process Wastewaters Process Wastewaters Process Wastewaters	Process Wastewaters Process Wastewaters Process Wastewaters
	Other, specify:		Other, specify:	
	Other, specify:		Other, specify:	
	Other, specify:		Other, specify:	
	Other, specify:		Other, specify:	

Pond/Impoundment U	☐ Boiler Slag ☐ Bottom Ash ☐ Fly Ash	☐ FGD Calcium Sulfate (Gypsum) ☐ FGD Calcium Sulfite – Not Pozzolanic ☐ FGD Pozzolanic Material ☐ Solids from Dry FGD	Process Wastewaters Process Wastewaters Process Wastewaters	Process Wastewaters Process Wastewaters Process Wastewaters
	Other, specify: Other, specify: Other, specify: Other, specify:		Other, specify: Other, specify: Other, specify: Other, specify:	
Pond/Impoundment U	☐ Boiler Slag ☐ Bottom Ash ☐ Fly Ash	☐ FGD Calcium Sulfate (Gypsum) ☐ FGD Calcium Sulfite – Not Pozzolanic ☐ FGD Pozzolanic Material ☐ Solids from Dry FGD	Process Wastewaters Process Wastewaters Process Wastewaters	Process Wastewaters Process Wastewaters Process Wastewaters
	Other, specify: Other, specify: Other, specify: Other, specify:		Other, specify: Other, specify: Other, specify: Other, specify:	
Pond/Impoundment U	☐ Boiler Slag ☐ Bottom Ash ☐ Fly Ash	☐ FGD Calcium Sulfate (Gypsum) ☐ FGD Calcium Sulfite – Not Pozzolanic ☐ FGD Pozzolanic Material ☐ Solids from Dry FGD	Process Wastewaters Process Wastewaters Process Wastewaters	Process Wastewaters Process Wastewaters Process Wastewaters
	Other, specify: Other, specify: Other, specify: Other, specify:		Other, specify: Other, specify: Other, specify: Other, specify:	
Pond/Impoundment U	☐ Boiler Slag ☐ Bottom Ash ☐ Fly Ash	☐ FGD Calcium Sulfate (Gypsum) ☐ FGD Calcium Sulfite – Not Pozzolanic ☐ FGD Pozzolanic Material ☐ Solids from Dry FGD	Process Wastewaters Process Wastewaters Process Wastewaters	Process Wastewaters Process Wastewaters Process Wastewaters
	Other, specify: Other, specify: Other, specify: Other, specify:		Other, specify: Other, specify: Other, specify: Other, specify:	

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: A
Section Title: 4. Landfills

Instructions: Throughout Section 4 (Questions A4-1 to A4-3), provide information for *landfills* (see glossary) the plant has or is currently constructing/installing or planning to construct/install by December 31, 2020.

Note: This includes landfills located on non-adjoining property that are under the operational control of the plant. This also includes landfills, within 20 miles, owned/operated by the plant's ultimate parent firm, for the purpose of storing/disposing of process wastewaters, residues, or by-products from the plant.

CBI?
☐ Yes

A4-1. Does the plant have or is the plant currently constructing/installing or planning to construct/install by December 31, 2020 any landfills used for the storage or disposal of *process wastewater*, *residues*, or by-products?

○ Yes (Continue)
○ No (Skip to Section 5)

CBI?
☐ Yes

A4-2. In Table A-6 below, list all landfills located at the plant, or landfills the plant (or ultimate parent firm) is currently constructing/installing or planning to construct/install by December 31, 2020, including those located on non-adjoining property, used for storage or disposal of process wastewater, residues, or by-products from the plant. For each landfill, EPA assigned an ID number (e.g., LANDFILL-1, LANDFILL-2) in Table A-6, which will be used throughout the remainder of the survey. In the "Plant Designation" column, provide the plant's name for each landfill. Additionally, provide the latitude and longitude at the center of the landfill, the closest distance from the landfill to the nearest surface water, the year the landfill was brought online (or is planned to be brought online), and indicate whether the landfill is lined or unlined and whether *leachate* is collected from the landfill (i.e., the landfill has a *leachate collection system* or other collection system).

Table A-6. Identification of Plant Landfills

Landfill ID	Plant Designation	Latitude and Longitude at Center of Landfill				Is the Landfill Lined?	Is Leachate Collected?	Closest Distance to Nearest Surface Water (ft)	Year Initially Brought Online Or Planned to be Brought Online	Is the Landfill Inactive?
			deg	min	sec					
Active/Inactive/Open Landfills										
LANDFILL-1		Lat:				Yes/No	Yes/No			Yes/No
		Long:								
LANDFILL-2		Lat:				Yes/No	Yes/No			Yes/No
		Long:								
LANDFILL-3		Lat:				Yes/No	Yes/No			Yes/No
		Long:								
LANDFILL-4		Lat:				Yes/No	Yes/No			Yes/No
		Long:								

Retired/Closed Landfills										
RET-LANDFILL-1		Lat:				Yes/No	Yes/No			
		Long:								
RET-LANDFILL-2		Lat:				Yes/No	Yes/No			
		Long:								
RET-LANDFILL-3		Lat:				Yes/No	Yes/No			
		Long:								
RET-LANDFILL-4		Lat:				Yes/No	Yes/No			
		Long:								
Planned Landfills										
LANDFILL-A		Lat:				Yes/No	Yes/No			
		Long:								
LANDFILL-B		Lat:				Yes/No	Yes/No			
		Long:								
LANDFILL-C		Lat:				Yes/No	Yes/No			
		Long:								
LANDFILL-D		Lat:				Yes/No	Yes/No			
		Long:								

CBI?
☐ Yes

A4-3. In Table A-7 below, indicate all *process wastewater*, *residues* or by-products that are stored or disposed of in each landfill identified in Table A-6. [Check all boxes that apply.] For solid waste not listed in the checkboxes provide the name and description in the yellow box provided.

Table A-7. Wastes Stored or Disposed of in Landfills

Landfill ID	Waste Stored or Disposed of in Landfill
Landfill ID	☐ Boiler Slag ☐ Bottom Ash ☐ Fly Ash ☐ FGD Calcium Sulfate (Gypsum) ☐ FGD Calcium Sulfite – Not Pozzolanic ☐ FGD Pozzolanic Material ☐ Solids from Dry FGD Other, specify: Other, specify: Other, specify: Other, specify:
Landfill ID	☐ Boiler Slag ☐ Bottom Ash ☐ Fly Ash ☐ FGD Calcium Sulfate (Gypsum) ☐ FGD Calcium Sulfite – Not Pozzolanic ☐ FGD Pozzolanic Material ☐ Solids from Dry FGD Other, specify: Other, specify: Other, specify: Other, specify:
Landfill ID	☐ Boiler Slag ☐ Bottom Ash ☐ Fly Ash ☐ FGD Calcium Sulfate (Gypsum) ☐ FGD Calcium Sulfite – Not Pozzolanic ☐ FGD Pozzolanic Material ☐ Solids from Dry FGD Other, specify: Other, specify: Other, specify: Other, specify:
Landfill ID	☐ Boiler Slag ☐ Bottom Ash ☐ Fly Ash ☐ FGD Calcium Sulfate (Gypsum) ☐ FGD Calcium Sulfite – Not Pozzolanic ☐ FGD Pozzolanic Material ☐ Solids from Dry FGD Other, specify: Other, specify: Other, specify: Other, specify:

Landfill ID	☐ Boiler Slag ☐ Bottom Ash ☐ Fly Ash	☐ FGD Calcium Sulfate (Gypsum) ☐ FGD Calcium Sulfite – Not Pozzolanic ☐ FGD Pozzolanic Material ☐ Solids from Dry FGD
	Other, specify:	
	Other, specify:	
	Other, specify:	
	Other, specify:	
Landfill ID	☐ Boiler Slag ☐ Bottom Ash ☐ Fly Ash	☐ FGD Calcium Sulfate (Gypsum) ☐ FGD Calcium Sulfite – Not Pozzolanic ☐ FGD Pozzolanic Material ☐ Solids from Dry FGD
	Other, specify:	
	Other, specify:	
	Other, specify:	
	Other, specify:	
Landfill ID	☐ Boiler Slag ☐ Bottom Ash ☐ Fly Ash	☐ FGD Calcium Sulfate (Gypsum) ☐ FGD Calcium Sulfite – Not Pozzolanic ☐ FGD Pozzolanic Material ☐ Solids from Dry FGD
	Other, specify:	
	Other, specify:	
	Other, specify:	
	Other, specify:	
Landfill ID	☐ Boiler Slag ☐ Bottom Ash ☐ Fly Ash	☐ FGD Calcium Sulfate (Gypsum) ☐ FGD Calcium Sulfite – Not Pozzolanic ☐ FGD Pozzolanic Material ☐ Solids from Dry FGD
	Other, specify:	
	Other, specify:	
	Other, specify:	
	Other, specify:	

Landfill ID	☐ Boiler Slag	☐ FGD Calcium Sulfate (Gypsum)
	☐ Bottom Ash	☐ FGD Calcium Sulfite – Not Pozzolanic
	☐ Fly Ash	☐ FGD Pozzolanic Material
		☐ Solids from Dry FGD
	Other, specify:	
	Other, specify:	
	Other, specify:	
	Other, specify:	
Landfill ID	☐ Boiler Slag	☐ FGD Calcium Sulfate (Gypsum)
	☐ Bottom Ash	☐ FGD Calcium Sulfite – Not Pozzolanic
	☐ Fly Ash	☐ FGD Pozzolanic Material
		☐ Solids from Dry FGD
	Other, specify:	
	Other, specify:	
	Other, specify:	
	Other, specify:	

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: A
Section Title: 5. Plant Property and Water Balance

Instructions: Throughout Section 5 (Questions A5-1 to A5-3), provide information requested on plant property and water balance. Please provide all free response answers in the highlighted yellow areas.

CBI?
☐ Yes

A5-1. Provide the geographical coordinates of the plant (degrees, minutes, seconds) as reported to EIA on U.S. DOE/EIA Form-860 (2007), schedule 2, line 6.

Note: Geographical coordinates are not required for any plants that have any nuclear units on site.

☐ Geographical coordinates not provided, nuclear generating unit(s) located at the plant.

Coordinate	Degrees	Minutes	Seconds
Latitude			
Longitude			

CBI?
☐ Yes

A5-2. Attach an aerial map showing the property boundary of the *plant* that shows buildings, *ponds/impoundments* , *landfills* , and other significant features of the plant. Provide as many maps as necessary. Number each map diagram in the upper right corner; the first map should be numbered MAP-1, the second MAP-2, etc. Include the plant name and plant ID in the upper right hand corner of each diagram. If there is one or more nuclear generating units on-site, an aerial map is NOT required.

☐ Diagram is attached.

☐ Diagram not attached because nuclear unit(s) on-site.

CBI?
☐ Yes

A5-3. Attach a water balance diagram for the plant that shows all sources of water, plant *process operations* , process wastewaters generated and how they are handled/*treated* , flow rates of all water streams, and all outfalls at the plant. Specific instructions for the diagram are provided in the checklist below.

NOTE: You may use an existing diagram, such as a water balance diagram included in the plant's NPDES Form 2C, and mark the additional required information on the diagram by hand. You may also use a diagram from previous years as long as the diagram is still representative of current operations.

Provide as many diagrams as necessary to convey the information requested in the checklist below. Number each block diagram in the upper right corner; the first block diagram should be numbered WB-1, the second WB-2, etc. Include the plant name and plant ID in the upper right hand corner of the diagram.

☐ Diagram is attached.

Block Diagram Checklist

Mark the boxes below to verify that you have completed each checklist item...

☐ Include the water balance diagram number, plant name, and plant ID on the diagram.

☐ Show and label all water sources (e.g., lakes and rivers), *process wastewater* generated by each steam electric generating unit and process operation, and outfalls. Use the codes provided in the Codes Tables tab. Effluent streams may include process wastewater and *sludges* .

- ☐ Identify all *wastewater treatment systems* used to treat the process wastewaters generated by the steam electric generating units. Represent the wastewater treatment systems as a block or other shape. Use EPA-assigned numbers from other parts of the questionnaire if applicable. If the wastewater treatment system does not have an EPA-assigned number, use the plant-designated name for the wastewater treatment system.
- ☐ Identify the final destination of the *treated* wastewater and process wastewater (e.g., treated wastewater effluent to *POTW* or surface waters; solid wastes to on- or off-site destinations). Use codes provided in the Codes Table tab.
- ☐ Indicate, as appropriate, where treated wastewater is *reused* or *recycled* within the plant (e.g., reuse of settling pond/impoundment water as fly ash sluice).
- ☐ Identify all outfall locations. Include *NPDES permit* outfall numbers, if applicable.
- ☐ Provide the typical flow rates for all streams on the diagram (in gpm or gpd). If the wastewater stream is intermittent, provide amount and frequency; for example “100 gal, twice/day, 100 dpy” or “1000 gpm, 4 hpd, 365 dpy”. For sludges, provide amount in tpd.

If you believe that the diagram should be treated as confidential, stamp it "Confidential" or write "Confidential" or "CBI" across the top. If any diagram is not marked "Confidential", it will be considered nonconfidential under 40 CFR Part 2, Subpart B.

Review:

If any of the statements above were not checked, revise the block diagram(s) and ensure all statements have been checked.

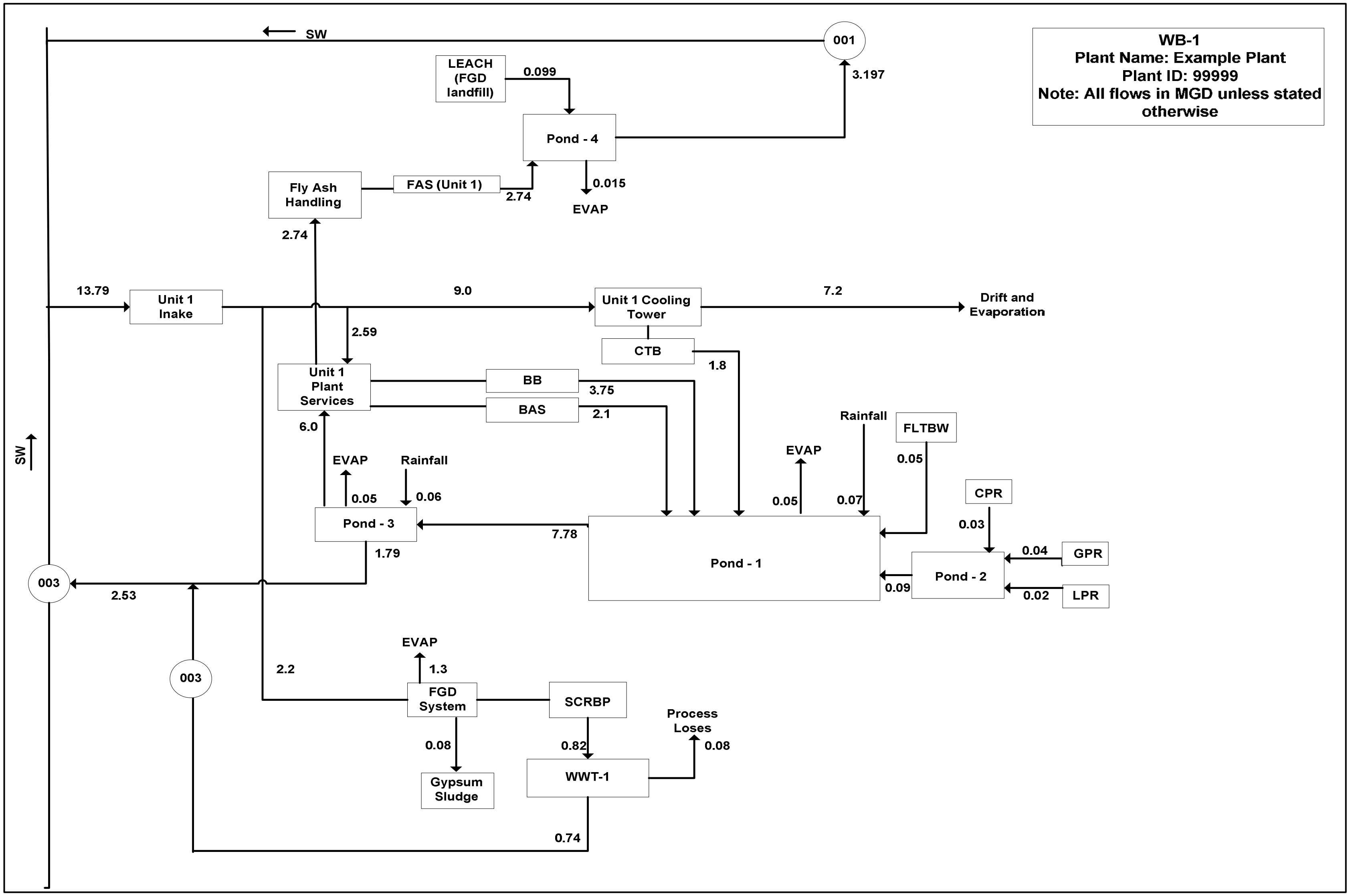

Figure A-1: Example Water Balance Diagram

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: A
Section Title: 6. Steam Electric Generating Unit Information

Instructions: Throughout Section 6 (Questions A6-1 to A6-2), provide information requested on each steam electric generating unit that the plant has operated or any steam electric generating units the plant is currently constructing/installing or planning to construct/install by December 31, 2015. Plants do NOT need to include information on units retired before January 1, 2009. Please provide all free response answers in the highlighted yellow areas.

CBI?
☐ Yes

A6-1. In Table A-8, provide information for each steam electric generating unit that commenced operating prior to January 1, 2010. Plants do NOT need to include information on units retired before January 1, 2009. For combined cycle systems, provide EIA Generator IDs for all steam and combustion turbines associated with the combined cycle system. Provide the electric generation for the entire combined cycle system in 2009. In the “Type of Unit” column, if you indicate “Other”, provide an explanation in the Comments page. See the glossary for definitions of *base load, peaking*, *cycling*, and *intermediate*.

Table A-8. Steam Electric Units Operated Prior to January 1, 2010

Steam Electric Unit	EIA Generator ID	Operated in 2009	Type of Steam Electric Prime Mover (or Turbine)	Total Unit Electric Generation in 2009 (MW-hrs)	Total Unit Nameplate Capacity: Steam Turbine Capacity (MW)	Total Unit Nameplate Capacity: Combustion Turbine Capacity (MW)	Type of Unit	Is this Unit Now Retired?
SE Unit-1		○ Yes Calendar days of operation: ○ No Was operated in previous years	Type of Turbine				○ Base load ○ Peaking ○ Cycling ○ Intermediate ○ Other, specify:	○ Yes ○ No
SE Unit-2		○ Yes Calendar days of operation: ○ No Was operated in previous years	Type of Turbine				○ Base load ○ Peaking ○ Cycling ○ Intermediate ○ Other, specify:	○ Yes ○ No
SE Unit-3		○ Yes Calendar days of operation: ○ No Was operated in previous years	Type of Turbine				○ Base load ○ Peaking ○ Cycling ○ Intermediate ○ Other, specify:	○ Yes ○ No

SE Unit-4		○ Yes Calendar days of operation: ○ No Was operated in previous years	Type of Turbine				○ Base load ○ Peaking ○ Cycling ○ Intermediate ○ Other, specify:	○ Yes ○ No
SE Unit-5		○ Yes Calendar days of operation: ○ No Was operated in previous years	Type of Turbine				○ Base load ○ Peaking ○ Cycling ○ Intermediate ○ Other, specify:	○ Yes ○ No
SE Unit-6		○ Yes Calendar days of operation: ○ No Was operated in previous years	Type of Turbine				○ Base load ○ Peaking ○ Cycling ○ Intermediate ○ Other, specify:	○ Yes ○ No
SE Unit-7		○ Yes Calendar days of operation: ○ No Was operated in previous years	Type of Turbine				○ Base load ○ Peaking ○ Cycling ○ Intermediate ○ Other, specify:	○ Yes ○ No
SE Unit-8		○ Yes Calendar days of operation: ○ No Was operated in previous years	Type of Turbine				○ Base load ○ Peaking ○ Cycling ○ Intermediate ○ Other, specify:	○ Yes ○ No

SE Unit-9		○ Yes Calendar days of operation: ○ No Was operated in previous years	Type of Turbine				○ Base load ○ Peaking ○ Cycling ○ Intermediate ○ Other, specify:	○ Yes ○ No
SE Unit-10		○ Yes Calendar days of operation: ○ No Was operated in previous years	Type of Turbine				○ Base load ○ Peaking ○ Cycling ○ Intermediate ○ Other, specify:	○ Yes ○ No

CBI?
☐ Yes

A6-2. In Table A-9, provide information for each steam electric generating unit that commenced operating after December 31, 2009, or the plant is currently constructing/installing or planning to construct/install by December 31, 2015. For combined cycle systems, provide EIA Generator IDs for all steam and combustion turbines associated with the combined cycle system and provide the total capacity for all steam turbines and combustion turbines separately (i.e., sum the respective capacity for all steam turbines and combustion turbines associated with the combined cycle system). In the "Type of Boiler or Reactor" column, check all that apply. In the "Type of Unit" column, if you indicate "Other", provide an explanation in the Comments page. See the glossary for definitions of *base load, peaking, cycling,* and *intermediate.*

Table A-9. Steam Electric Generating Units That Commenced Operating After December 31, 2009 or Planned Steam Electric Generating Units

Steam Electric Unit	EIA Generator ID (if applicable) or Plant Designation	Type of Boiler or Reactor [check all that apply]	Type of Steam Electric Prime Mover (or Turbine)	Initial Date of Operation or Planned Date of Operation: Month	Initial Date of Operation or Planned Date of Operation: Year	Total Unit Nameplate Capacity: Steam Turbine Capacity (MW)	Total Unit Nameplate Capacity: Combustion Turbine Capacity (MW)	Type of Unit
SE Unit-A		☐ Tangential-fired boiler ☐ Wall-fired boiler ☐ Cyclone-fired boiler ☐ Waste heat recovery boiler (HRSG) ☐ Pressurized water reactor ☐ Boiling water reactor ☐ Pressurized heavy water reactor ☐ Other, specify below:	Type of Turbine	Month	New Unit Yea			○ Base load ○ Peaking ○ Cycling ○ Intermediate ○ Other, specify:
SE Unit-B		☐ Tangential-fired boiler ☐ Wall-fired boiler ☐ Cyclone-fired boiler ☐ Waste heat recovery boiler (HRSG) ☐ Pressurized water reactor ☐ Boiling water reactor ☐ Pressurized heavy water reactor ☐ Other, specify below:	Type of Turbine	Month	New Unit Yea			○ Base load ○ Peaking ○ Cycling ○ Intermediate ○ Other, specify:
SE Unit-C		☐ Tangential-fired boiler ☐ Wall-fired boiler ☐ Cyclone-fired boiler ☐ Waste heat recovery boiler (HRSG) ☐ Pressurized water reactor ☐ Boiling water reactor ☐ Pressurized heavy water reactor ☐ Other, specify below:	Type of Turbine	Month	New Unit Yea			○ Base load ○ Peaking ○ Cycling ○ Intermediate ○ Other, specify:
SE Unit-D		☐ Tangential-fired boiler ☐ Wall-fired boiler ☐ Cyclone-fired boiler ☐ Waste heat recovery boiler (HRSG) ☐ Pressurized water reactor ☐ Boiling water reactor ☐ Pressurized heavy water reactor ☐ Other, specify below:	Type of Turbine	Month	New Unit Yea			○ Base load ○ Peaking ○ Cycling ○ Intermediate ○ Other, specify:

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: A
Section Title: 7. Condenser Cooling Water Systems

Instructions: Throughout Section 7 (Questions A7-1 to A7-3), provide information requested for all condenser cooling water systems currently operating at the plant and any condenser cooling water systems the plant is currently constructing/installing or planning to construct/install by December 31, 2015. Please provide all free response answers in the highlighted yellow areas.

CBI?
☐ Yes

A7-1. In Table A-10, provide information for all condenser cooling water systems currently operating at the plant and any condenser cooling water systems the plant is currently constructing/installing or planning to construct/install by December 31, 2015. Indicate the type of condenser cooling system and the specific steam electric generating units that the system cools. [Check all boxes that apply.] If the plant adds chemicals to the condenser cooling system, provide the chemical trade name, manufacturer, and active ingredient(s). If there is more than one active ingredient in the chemical additive, include all of them in the yellow box provided. Separate multiple entries with commas. Enter the typical amount of process wastewater generated or blown down from the cooling water system and the typical duration and frequency of generation or blow down. For planned cooling systems, provide this information to the extent known.

Table A-10. Condenser Cooling Systems for All Steam Electric Generating Units

Cooling System ID	Type of Condenser Cooling System	Steam Electric Units that the System Cools (check all boxes that apply)	Chemical Additives Added to the Cooling System and Make-up Water System			Typical Amount of Process Wastewater Generated/Blow Down from Cooling System (gpm)	Typical Duration AND Frequency of Generation/ Blowdown (hpd AND dpy)
			Trade Name	Manufacturer	Active Ingredient(s)		
Operating Condenser Cooling Water Systems							
CS-1	Type of Cooling System Other:	☐ SE Unit 1 ☐ SE Unit 8 ☐ SE Unit 2 ☐ SE Unit 9 ☐ SE Unit 3 ☐ SE Unit 10 ☐ SE Unit 4 ☐ SE Unit A ☐ SE Unit 5 ☐ SE Unit B ☐ SE Unit 6 ☐ SE Unit C ☐ SE Unit 7 ☐ SE Unit D				gpm	hpd dpy
CS-2	Type of Cooling System Other:	☐ SE Unit 1 ☐ SE Unit 8 ☐ SE Unit 2 ☐ SE Unit 9 ☐ SE Unit 3 ☐ SE Unit 10 ☐ SE Unit 4 ☐ SE Unit A ☐ SE Unit 5 ☐ SE Unit B ☐ SE Unit 6 ☐ SE Unit C ☐ SE Unit 7 ☐ SE Unit D				gpm	hpd dpy
CS-3	Type of Cooling System Other:	☐ SE Unit 1 ☐ SE Unit 8 ☐ SE Unit 2 ☐ SE Unit 9 ☐ SE Unit 3 ☐ SE Unit 10 ☐ SE Unit 4 ☐ SE Unit A ☐ SE Unit 5 ☐ SE Unit B ☐ SE Unit 6 ☐ SE Unit C ☐ SE Unit 7 ☐ SE Unit D				gpm	hpd dpy

Planned Cooling Water Systems

CS-A	Type of Cooling System Other:	☐ SE Unit 1 ☐ SE Unit 8 ☐ SE Unit 2 ☐ SE Unit 9 ☐ SE Unit 3 ☐ SE Unit 10 ☐ SE Unit 4 ☐ SE Unit A ☐ SE Unit 5 ☐ SE Unit B ☐ SE Unit 6 ☐ SE Unit C ☐ SE Unit 7 ☐ SE Unit D				gpm	hpd dpy
CS-B	Type of Cooling System Other:	☐ SE Unit 1 ☐ SE Unit 8 ☐ SE Unit 2 ☐ SE Unit 9 ☐ SE Unit 3 ☐ SE Unit 10 ☐ SE Unit 4 ☐ SE Unit A ☐ SE Unit 5 ☐ SE Unit B ☐ SE Unit 6 ☐ SE Unit C ☐ SE Unit 7 ☐ SE Unit D				gpm	hpd dpy
CS-C	Type of Cooling System Other:	☐ SE Unit 1 ☐ SE Unit 8 ☐ SE Unit 2 ☐ SE Unit 9 ☐ SE Unit 3 ☐ SE Unit 10 ☐ SE Unit 4 ☐ SE Unit A ☐ SE Unit 5 ☐ SE Unit B ☐ SE Unit 6 ☐ SE Unit C ☐ SE Unit 7 ☐ SE Unit D				gpm	hpd dpy

CBI?
☐ Yes

A7-2. How did the plant demonstrate compliance with limits on *priority pollutants* for cooling tower blowdown from these cooling systems? [Check all boxes that apply.]

☐ Waste stream monitoring
☐ Plant does not operate cooling towers
☐ Certification from supplier
☐ Engineering calculations
☐ Plant does not have priority pollutant limits on cooling tower blowdown
☐ Other, specify:

CBI?
☐ Yes

A7-3. Is POTW effluent used in the cooling water system?

○ Yes
○ No

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name
SE Unit ID: Insert SE Unit ID

Part: A
Section Title: 8. Fuel Usage by Steam Electric Generating Unit

Instructions: In Section 8 (Questions A8-1 through A8-3), provide information for all steam electric generating units that were operated in 2009, including units that operated for only part of 2009 (i.e., those units for which you responded "Yes" in Question A6-1, Table A-8, "Operated in 2009" column). Please provide all free response answers in the highlighted yellow areas.

Make copies of Section 8 for each steam electric generating unit ID operated in 2009 using the "Copy Section 8" button below. Enter the steam electric generating unit ID (use unit IDs assigned in Table A-8) in the space above titled "SE Unit ID".

Copy Section 8

CBI?
☐ Yes

A8-1. In Table A-11, provide the types and amounts of fuels used in 2009. [Check all boxes that apply.] Include fuels used for start up. Also provide the BTU generated by each general fuel type reported for the year 2009.

Note: EPA is requesting the BTUs actually generated by the fuel. Additionally, for reporting barrels of oil, use a conversion of one barrel is equal to 42 U.S. gallons, if needed.

Table A-11. Fuel Usage for Steam Electric Power Generation in 2009

Fossil/Nuclear Fuels								
Coal and Petroleum Coke		**Gas**		**Oil**		**Nuclear**		
BTU Generated by Coal and/or Petroleum Coke		**BTU Generated by Gas**		**BTU Generated by Oil**		**BTU Generated by Nuclear Fuels**		
Type	**Amount (tons)**	**Type**	**Amount (Million ft^3)**	**Type**	**Amount (barrels)**	**Type**	**Amount**	**Units (Specify)**
☐ Anthracite		☐ Natural Gas		☐ No. 1 Fuel Oil		☐ Nuclear		
☐ Bituminous		☐ Blast Furnace Gas		☐ No. 2 Fuel Oil		☐ None		
☐ Lignite		☐ Gaseous Propane		☐ No. 4 Fuel Oil				
☐ Subbituminous		☐ Other Gases (Provide Below)		☐ No. 5 Fuel Oil				
☐ Waste Coal				☐ No. 6 Fuel Oil				
☐ Coal Synfuel		☐ None		☐ Diesel Fuel				
☐ Other Coal (Provide below)				☐ Jet Fuel				
				☐ Kerosene				
☐ Petroleum Coke				☐ Waste Oil				
☐ None				☐ Other Oil (Provide below)				
				☐ None				
Total BTU Generated by Fossil/Nuclear Fuels								
Other Fuels (i.e., Fuels other than Fossil or Nuclear)								
Type	**Amount**	**Units (Specify)**	**Type**	**Amount**	**Units (Specify)**	**Type**	**Amount**	**Units (Specify)**
☐ Municipal Solid Waste			☐ Landfill Gas			☐ None		
☐ Wood			☐ Other Biomass			☐ Other (Provide below)		
Total BTU Generated by Other Fuels								
Total BTU Generated by All Fuels								

CBI?
☐ Yes

A8-2. Do the total BTUs generated by the fossil/nuclear fuels comprise 50 percent or more of the total BTUs generated by all fuels for the steam electric generating unit in 2009?

○ Yes
○ No

CBI?
☐ Yes

A8-3. Did the plant report a fossil or nuclear fuel as the predominant or second most predominant energy source for this generating unit on Form EIA-860 for reporting year 2009? NOTE: This information is reported in Schedule 3, Part B, lines 9 and 11.

○ Yes
○ No

If the plant responded "Yes" to either Question A8-2 or A8-3, then this steam electric generating unit is classified as a "fossil/nuclear electric generating unit" for the purposes of this questionnaire. If the plant responded "No" to both Questions A8-2 and A8-3, then this electric generating unit is classified as an "other electric generating unit" for the purposes of this questionnaire.

NOTE: IF <u>ALL</u> STEAM ELECTRIC GENERATING UNITS IDENTIFIED IN TABLE A-8 ARE CLASSIFIED AS "OTHER ELECTRIC GENERATING UNITS" (BASED ON THE CLASSIFICATION DETERMINED FROM QUESTIONS A8-2 AND A8-3), DO <u>NOT</u> COMPLETE THE REMAINDER OF THIS QUESTIONNAIRE.

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: A
Section Title: 9. NOx Control Systems

Instructions: Throughout Section 9 (Questions A9-1 to A9-11), provide information for all *NOx control systems* operated on fossil-fueled electric generating units on or after January 1, 2009 and all NOx control systems the plant is currently constructing/installing or planning to construct/install on fossil-fueled electric generating units by December 31, 2020. See Part A Section 8 for unit classifications. You will need to indicate the steam electric generating units that are serviced by these air pollution control systems. Use codes from Table A-8 or Table A-9 to designate the SE Unit ID.

CBI?
☐ Yes

A9-1. Did the plant operate any NOx control systems on fossil-fueled electric generating units after January 1, 2009 or is the plant currently constructing/installing or planning to construct/install any NOx control system on fossil-fueled electric generating units by December 31, 2020? See Part A Section 8 for unit classifications.

○ Yes (Complete Table A-12)
○ No (Skip to Section 10)

In Table A-12, provide information for NOx control systems that the plant operated after January 1, 2009, is currently constructing/installing, or planning to construct/install by December 31, 2020 on each operating or planned fossil-fueled electric generating unit (identified in Table A-8 or Table A-9). Provide the steam electric generating unit ID (use codes from Table A-8 or Table A-9), the type of NOx control system(s) operating or planned for the steam electric generating unit, whether the NOx control system(s) are operating or planned, and the date the NOx control was/will be installed. In addition, for the steam electric generating units serviced by a SCR system, identify the date and location (i.e., on- or off-site) of the last and next SCR catalyst replacement/regeneration.

Table A-12. NOx Control Systems

SE Unit ID	Type of NOx Control System	Status of NOx Control System	Date of Installation, Previous or Planned		For Steam Electric Generating Units Serviced by a SCR System					
					Date of Last SCR Catalyst Replacement or Regeneration		Where Last SCR Catalyst Regeneration Occurred	Date of Next Planned SCR Catalyst Replacement or Regeneration		Where Next SCR Catalyst Regeneration is Planned to Occur
			Month	Year	Month	Year		Month	Year	
	☐ SCR	Operating/P	Month							
	☐ SNCR	Operating/P	Month		Last Month	Last Year		Planned Mo	Planned Ye	
SE Unit ID	☐ Overfire Air	Operating/P	Month				Last Onsite/Offsite			Planned Onsite/Offsite
	☐ Low NOx burners	Operating/P	Month		Last Replaced/Regenerated			Planned Replaced/Regenera		
	☐ Other:	Operating/P	Month							
	☐ SCR	Operating/P	Month							
	☐ SNCR	Operating/P	Month		Last Month	Last Year		Planned Mo	Planned Ye	
SE Unit ID	☐ Overfire Air	Operating/P	Month				Last Onsite/Offsite			Planned Onsite/Offsite
	☐ Low NOx burners	Operating/P	Month		Last Replaced/Regenerated			Planned Replaced/Regenera		
	☐ Other:	Operating/P	Month							

	☐ SCR	Operating/P	Month					
	☐ SNCR	Operating/P	Month		Last Month / Last Year		Planned Mo / Planned Ye	
SE Unit ID	☐ Overfire Air	Operating/P	Month			Last Onsite/Offsite		Planned Onsite/Offsite
	☐ Low NOx burners	Operating/P	Month		Last Replaced/Regenerated		Planned Replaced/Regenera	
	☐ Other:	Operating/P	Month					
	☐ SCR	Operating/P	Month					
	☐ SNCR	Operating/P	Month		Last Month / Last Year		Planned Mo / Planned Ye	
SE Unit ID	☐ Overfire Air	Operating/P	Month			Last Onsite/Offsite		Planned Onsite/Offsite
	☐ Low NOx burners	Operating/P	Month		Last Replaced/Regenerated		Planned Replaced/Regenera	
	☐ Other:	Operating/P	Month					
	☐ SCR	Operating/P	Month					
	☐ SNCR	Operating/P	Month		Last Month / Last Year		Planned Mo / Planned Ye	
SE Unit ID	☐ Overfire Air	Operating/P	Month			Last Onsite/Offsite		Planned Onsite/Offsite
	☐ Low Nox burners	Operating/P	Month		Last Replaced/Regenerated		Planned Replaced/Regenera	
	☐ Other:	Operating/P	Month					
	☐ SCR	Operating/P	Month					
	☐ SNCR	Operating/P	Month		Last Month / Last Year		Planned Mo / Planned Ye	
SE Unit ID	☐ Overfire Air	Operating/P	Month			Last Onsite/Offsite		Planned Onsite/Offsite
	☐ Low NOx burners	Operating/P	Month		Last Replaced/Regenerated		Planned Replaced/Regenera	
	☐ Other:	Operating/P	Month					
	☐ SCR	Operating/P	Month					
	☐ SNCR	Operating/P	Month		Last Month / Last Year		Planned Mo / Planned Ye	
SE Unit ID	☐ Overfire Air	Operating/P	Month			Last Onsite/Offsite		Planned Onsite/Offsite
	☐ Low NOx burners	Operating/P	Month		Last Replaced/Regenerated		Planned Replaced/Regenera	
	☐ Other:	Operating/P	Month					
	☐ SCR	Operating/P	Month					
	☐ SNCR	Operating/P	Month		Last Month / Last Year		Planned Mo / Planned Ye	
SE Unit ID	☐ Overfire Air	Operating/P	Month			Last Onsite/Offsite		Planned Onsite/Offsite
	☐ Low NOx burners	Operating/P	Month		Last Replaced/Regenerated		Planned Replaced/Regenera	
	☐ Other:	Operating/P	Month					

CBI?
☐ Yes

A9-2. If the plant has sent an SCR catalyst off site for regeneration, provide the company name, location, and phone number for the company(ies) that performed the last two *SCR catalyst regenerations* .

☐ Plant did not send SCR catalyst offsite for regeneration.

Table A-13. Companies that performed the last two SCR catalyst regenerations

Company Name	City	State	Telephone Number
		State	
		State	

CBI?
☐ Yes

A9-3. If the SCR catalyst is regenerated on site, indicate whether process wastewater is generated from the regeneration process.

○ Yes (Continue)
○ No (Skip to Question A9-7)
○ NA: SCR catalyst is NOT regenerated on site (Skip to Question A9-7)

CBI?
☐ Yes

A9-4. Provide the typical volume of *SCR catalyst regeneration wastewater* generated (gpy) and the frequency at which the process wastewater is generated.

________ gpy ______ times every ______ year(s)

CBI?
☐ Yes

A9-5. Is the SCR catalyst regeneration wastewater commingled with other wastewaters? If yes, indicate the wastewaters with which the SCR catalyst regeneration wastewater is commingled. [Check all boxes that apply.]

○ Yes
- ☐ Fly ash transport water
- ☐ Bottom ash transport water
- ☐ FGD scrubber purge
- ☐ Cooling tower blowdown
- ☐ Once-through cooling water
- ☐ Cleaning wastes from cleaning metal process equipment
- ☐ Other, specify: ______

○ No

CBI?
☐ Yes

A9-6. Indicate all intermediate and final destination(s) of the SCR catalyst regeneration wastewater. If the plant recycles the SCR catalyst regeneration wastewater, indicate the plant process to which this water is recycled. [Check all that apply].

☐ Immediately recycled back to plant process. Please describe how the process wastewater is reused:
______

☐ Transferred to on-site treatment system. Identify the type of treatment system below. [Check all boxes that apply.]
- ☐ Settling pond
- ☐ pH adjustment
- ☐ Chemical precipitation
- ☐ Constructed wetlands
- ☐ Other, specify: ______

☐ Discharged to surface water. Provide NPDES permitted outfall number (from Part A Section 2.2): ______
☐ Indirect discharge to a publicly or privately owned treatment works
☐ Other, explain: ______

CBI?
☐ Yes

A9-7. Is the SCR catalyst washed on site?

○ Yes (Continue)
○ No (Skip to Section 10)

CBI?
☐ Yes

A9-8. Is process wastewater generated from the *SCR catalyst washing* process?

○ Yes (Continue)
○ No (Skip to Section 10)

CBI?
☐ Yes

A9-9. Provide the typical volume of *SCR catalyst washing wastewater* generated (gpy) and the frequency at which the process wastewater is generated.

________ gpy ______ times every ______ year(s)

CBI?
☐ Yes

A9-10. Is the SCR catalyst washing wastewater commingled with other wastewaters? If yes, indicate the wastewaters with which the SCR catalyst washing wastewater is commingled. [Check all boxes that apply.]

○ Yes
- ☐ Fly ash transport water
- ☐ Bottom ash transport water
- ☐ FGD scrubber purge
- ☐ Cooling tower blowdown
- ☐ Once-through cooling water
- ☐ Cleaning wastes from cleaning metal process equipment
- ☐ Other, specify: ________

○ No

CBI?
☐ Yes

A9-11. Indicate all intermediate and final destination(s) of the SCR catalyst washing wastewater. If the plant recycles the SCR catalyst washing wastewater, indicate the plant process to which this water is recycled. [Check all that apply].

☐ Immediately recycled back to plant process. Please describe how the process wastewater is reused:

____

☐ Transferred to on-site treatment system. Identify the type of treatment system below. [Check all boxes that apply.]

- ☐ Settling pond
- ☐ Constructed wetlands
- ☐ pH adjustment
- ☐ Other, specify: ________
- ☐ Chemical precipitation

☐ Discharged to surface water. Provide NPDES permitted outfall number (from Part A Section 2.2): ________

☐ Indirect discharge to a publicly or privately owned treatment works

☐ Other, explain: ________

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: A
Section Title: 10. Flue Gas Mercury Control Systems

Instructions: Throughout Section 10 (Questions A10-1 to A10-5), provide information for all *flue gas mercury control systems* (including those not currently operating) that are currently installed on fossil-fueled electric generating units and all systems the plant is currently constructing/installing or planning to construct/install on fossil-fueled electric generating units by December 31, 2020. See Part A Section 8 for unit classifications. Do NOT include FGD, SCR/SNCR, and *particulate matter control systems*. You will need to indicate the steam electric generating units that are serviced by these air pollution control systems. Use codes from Table A-8 or Table A-9 to designate the SE Unit ID.

CBI?
☐ Yes

A10-1. Are there any flue gas mercury control systems (other than FGD, SCR/SNCR, or *particulate matter control systems*) installed on fossil-fueled electric generating units or is the plant currently constructing/installing or planning to construct/install any flue gas mercury control systems on fossil-fueled electric generating units by December 31, 2020? See Part A Section 8 for unit classifications.

○ Yes (Complete Table A-14)
○ No (Skip to Question A10-3)

In Table A -14 provide information for all flue gas mercury control systems (other than FGD, SCR/SNCR, or particulate matter control systems) currently installed on fossil-fueled electric generating units (including those not currently operating) and all systems the plant is currently constructing/installing or planning to construct/install on fossil-fueled electric generating units by December 31, 2020. Provide the type of mercury control system and the generating units that are or will be serviced by the system. [Check all boxes that apply.] For planned mercury control systems, provide the type of system it will be and all generating units that will be serviced by the system.

Table A-14. Flue Gas Mercury Control Systems

Mercury Control Systems	Type of Mercury Control System	Steam Electric Units that Exhaust to the System (Check all boxes that apply)	Date of Installation, Previous or Planned		Location of Mercury Control System in Relation to Initial Particulate Matter Control System	Handling of Mercury Control Solid Waste	Design or Targeted Mercury Removal Efficiency (%)
			Month	Year			
Currently Operating Flue Gas Mercury Control Systems							
FGMC-1		☐ SE Unit 1 ☐ SE Unit 6 ☐ SE Unit 2 ☐ SE Unit 7 ☐ SE Unit 3 ☐ SE Unit 8 ☐ SE Unit 4 ☐ SE Unit 9 ☐ SE Unit 5 ☐ SE Unit 10 Other:	Month		Upstream/Downstream	Wet/Dry	

FGMC-2		SE Unit 1 SE Unit 6 SE Unit 2 SE Unit 7 SE Unit 3 SE Unit 8 SE Unit 4 SE Unit 9 SE Unit 5 SE Unit 10 Other:	Month		Upstream/Downstream	Wet/Dry	
FGMC-3		SE Unit 1 SE Unit 6 SE Unit 2 SE Unit 7 SE Unit 3 SE Unit 8 SE Unit 4 SE Unit 9 SE Unit 5 SE Unit 10 Other:	Month		Upstream/Downstream	Wet/Dry	
FGMC-4		SE Unit 1 SE Unit 6 SE Unit 2 SE Unit 7 SE Unit 3 SE Unit 8 SE Unit 4 SE Unit 9 SE Unit 5 SE Unit 10 Other:	Month		Upstream/Downstream	Wet/Dry	
Planned Flue Gas Mercury Control Systems							
FGMC-A		SE Unit 1 SE Unit 6 SE Unit 2 SE Unit 7 SE Unit 3 SE Unit 8 SE Unit 4 SE Unit 9 SE Unit 5 SE Unit 10 Other:	Month		Upstream/Downstream	Wet/Dry	
FGMC-B		SE Unit 1 SE Unit 6 SE Unit 2 SE Unit 7 SE Unit 3 SE Unit 8 SE Unit 4 SE Unit 9 SE Unit 5 SE Unit 10 Other:	Month		Upstream/Downstream	Wet/Dry	
FGMC-C		SE Unit 1 SE Unit 6 SE Unit 2 SE Unit 7 SE Unit 3 SE Unit 8 SE Unit 4 SE Unit 9 SE Unit 5 SE Unit 10 Other:	Month		Upstream/Downstream	Wet/Dry	

CBI?
☐ Yes

A10-2. In the space below, provide a description of all flue gas mercury control system processes, the plant is currently operating, currently constructing/installing, or planning to construct/install by December 31, 2020. Include the solid wastes and process wastewater streams generated, the volume and characteristics (i.e., *pollutants* present) of the process wastewater generated, and any known or anticipated probable effect on other process wastewater (e.g., fly ash transport water). Additionally, indicate how the solid wastes and process wastewater from mercury control systems are/will be handled (e.g., are solid wastes combined with fly ash). Provide the final destination of all mercury control system wastes (e.g., sent to an ash pond or other impoundment, landfilled, or hauled off site).

CBI?
☐ Yes

A10-3. Has the plant ever operated or does it plan to operate a pilot-scale flue gas mercury control system for a pilot study evaluation?

○ Yes (Continue)
○ No (Skip to Section 11)

Specify the type(s) of technology studied:

CBI?
☐ Yes

A10-4 Did the study evaluate *process wastewaters* generated by the technology or identify that *process wastewater* will be generated or affected by the technology?

○ Yes (Continue)
○ No (Skip to Section 11)

CBI?
☐ Yes

A10-5 Provide the name of the company whose technology was/will be tested, the start and end date of the pilot study, and attach the final technical evaluation report from the pilot study (if study is complete).

Company Name:

Start Date: End Date:

☐ I have attached the final technical evaluation report.
☐ I did not attach the final technical evaluation report. Explain why:

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: A
Section Title: 11. Carbon Capture Systems

Instructions: Throughout Section 11 (Questions A11-1 to A11-6), provide information for all *carbon capture systems* operated on fossil-fueled electric generating units on or after January 1, 2009 and all systems the plant is currently constructing/installing or planning to construct/install on fossil-fueled electric generating units by December 31, 2020. See Part A Section 8 for unit classifications. Provide this information for both full-scale and pilot-scale systems. You will need to indicate the steam electric generating units that are serviced by these air pollution control systems. Use codes from Table A-8 or Table A-9 to designate the SE Unit ID.

CBI?
☐ Yes

A11-1. Did the plant operate any *carbon capture systems* on fossil-fueled electric generating units after January 1, 2009 or is the plant currently constructing/installing or planning to construct/install any carbon capture systems on fossil-fueled electric generating units by December 31, 2020? See Part A Section 8 for unit classifications.

○ Yes (Complete Table A-15)
○ No (Skip to Section 12)

In Table A-15 provide information for carbon capture systems that the plant operated after January 1, 2009 on fossil-fueled electric generating units at the plant and systems that the plant is currently constructing/installing or planning to construct/install on fossil-fueled electric generating units by December 31, 2020. Provide the type of carbon capture system and the steam electric generating units that correspond to the system. [Check all boxes that apply.] For planned carbon capture systems, provide the type of system it will be and all steam electric generating units that will correspond to the system.

Table A-15. Carbon Capture Systems

CCS Systems	Type of Carbon Capture System	Steam Electric Units Corresponding to the System (Check all boxes that apply).	Date of Installation, Previous or Planned: Month	Date of Installation, Previous or Planned: Year	Full Scale or Pilot Scale	Percent of Flue Gas Treated
Currently Operating Carbon Capture Systems						
CCS-1		☐ SE Unit 1 ☐ SE Unit 6 ☐ SE Unit 2 ☐ SE Unit 7 ☐ SE Unit 3 ☐ SE Unit 8 ☐ SE Unit 4 ☐ SE Unit 9 ☐ SE Unit 5 ☐ SE Unit 10 Other:	Month		○ Full Scale ○ Pilot Scale	
CCS-2		☐ SE Unit 1 ☐ SE Unit 6 ☐ SE Unit 2 ☐ SE Unit 7 ☐ SE Unit 3 ☐ SE Unit 8 ☐ SE Unit 4 ☐ SE Unit 9 ☐ SE Unit 5 ☐ SE Unit 10 Other:	Month		○ Full Scale ○ Pilot Scale	

CCS-3		☐ SE Unit 1 ☐ SE Unit 6 ☐ SE Unit 2 ☐ SE Unit 7 ☐ SE Unit 3 ☐ SE Unit 8 ☐ SE Unit 4 ☐ SE Unit 9 ☐ SE Unit 5 ☐ SE Unit 10 Other:	Month		○ Full Scale ○ Pilot Scale	
CCS-4		☐ SE Unit 1 ☐ SE Unit 6 ☐ SE Unit 2 ☐ SE Unit 7 ☐ SE Unit 3 ☐ SE Unit 8 ☐ SE Unit 4 ☐ SE Unit 9 ☐ SE Unit 5 ☐ SE Unit 10 Other:	Month		○ Full Scale ○ Pilot Scale	
Planned Carbon Capture Systems						
CCS-A		☐ SE Unit 1 ☐ SE Unit 6 ☐ SE Unit 2 ☐ SE Unit 7 ☐ SE Unit 3 ☐ SE Unit 8 ☐ SE Unit 4 ☐ SE Unit 9 ☐ SE Unit 5 ☐ SE Unit 10 Other:	Month		○ Full Scale ○ Pilot Scale	
CCS-B		☐ SE Unit 1 ☐ SE Unit 6 ☐ SE Unit 2 ☐ SE Unit 7 ☐ SE Unit 3 ☐ SE Unit 8 ☐ SE Unit 4 ☐ SE Unit 9 ☐ SE Unit 5 ☐ SE Unit 10 Other:	Month		○ Full Scale ○ Pilot Scale	
CCS-C		☐ SE Unit 1 ☐ SE Unit 6 ☐ SE Unit 2 ☐ SE Unit 7 ☐ SE Unit 3 ☐ SE Unit 8 ☐ SE Unit 4 ☐ SE Unit 9 ☐ SE Unit 5 ☐ SE Unit 10 Other:	Month		○ Full Scale ○ Pilot Scale	

CBI?
☐ Yes

A11-2. In the space below, provide a description of all full-scale and pilot-scale carbon capture system processes, previously tested, previously operated, currently operating, currently being constructed/installed, and/or planned to constructed/installed by December 31, 2020. Provide a general description of the system, including the specific list of types of chemicals and equipment used, the types of process wastewater generated, and any known or anticipated probable effect on other *process wastewater* streams (e.g., fly ash transport water). Additionally, indicate how the process wastewater streams from the carbon capture process were/will be managed.

CBI?
☐ Yes

A11-3. Has the plant operated any full-scale or pilot-scale carbon capture systems for studies in which process wastewaters generated by the technology were evaluated?

○ Yes (Continue)
○ No (Skip to Section 12)

CBI?
☐ Yes

A11-4. Provide the name of the company whose technology was tested, the start and end date of the study, and attach the final technical evaluation report from the study (if study is complete).

Company Name: ______

Start Date: ______ End Date: ______

☐ I have attached the final technical evaluation report.
☐ I did not attach the final technical evaluation report. Explain why: ______

CBI?
☐ Yes

A11-5. Provide the typical volume of *process wastewater* generated from the carbon capture system (gpm) and the duration (hpd) and frequency (dpy) of *carbon capture wastewater* generation.

______ gpm ______ hpd ______ dpy

CBI?
☐ Yes

A11-6. Were characterization samples of the *carbon capture wastewater* collected during the study?

○ Yes (Continue)
○ No (Skip to Section 12)

Provide the analytical results of the *carbon capture wastewater* characterization (if not already included in the technical report requested in Question A11-4).

☐ I have attached the analytical results of the carbon capture wastewater characterization.
☐ I did not attach the analytical results of the carbon capture wastewater characterization. Explain why: ______

Plant ID: Insert Plant ID

Plant Name: Insert Plant Name

Part: A

Section Title: 12. Wet Electrostatic Precipitator Systems

Instructions: Throughout Section 12, provide information for all wet electrostatic precipitator (ESP) systems operated on fossil-fueled electric generating units on or after January 1, 2009 and all systems the plant is currently constructing/installing or planning to construct/install on fossil-fueled electric generating units by December 31, 2020. See Part A Section 8 for unit classifications. Provide this information for both full-scale and pilot-scale systems. You will need to indicate the steam electric generating units that are serviced by these air pollution control systems. Use codes from Table A-8 or Table A-9 to designate the SE Unit ID.

CBI?
☐ Yes

A12-1. Did the plant operate any wet ESP systems on fossil-fueled electric generating units after January 1, 2009 or is the plant currently constructing/installing or planning to construct/install any wet ESP systems on fossil-fueled electric generating units by December 31, 2020? See Part A Section 8 for unit classifications.

○ Yes (Complete Table A-16)

○ No (Skip to Section 13)

In Table A-16 provide information for wet ESP systems that the plant operated after January 1, 2009 that service fossil-fueled electric generating units and systems that the plant is currently constructing/installing or planning to construct/install to service fossil-fueled electric generating units by December 31, 2020. Provide the steam electric generating units that correspond to the system, the date the system was/is planned to be installed, the location of the system, whether it is a full-scale or pilot-scale system, and if it is a pilot-scale system, the percent of flue gas that is treated.

Table A-16. Wet Electrostatic Precipitator Systems

Wet ESP System IDs	Steam Electric Units Corresponding to the System (Check all boxes that apply).	Date of Installation, Previous or Planned: Month	Date of Installation, Previous or Planned: Year	Location of Wet ESP System	Full Scale or Pilot Scale	Percent of Flue Gas Treated
Currently Operating Wet ESP Systems						
WESP-1	☐ SE Unit 1 ☐ SE Unit 6 ☐ SE Unit 2 ☐ SE Unit 7 ☐ SE Unit 3 ☐ SE Unit 8 ☐ SE Unit 4 ☐ SE Unit 9 ☐ SE Unit 5 ☐ SE Unit 10 Other:	Month		○ Immediately downstream of dry ESP ○ Immediately downstream of baghouse ○ Immediately downstream of wet FGD ○ Other (Explain below):	○ Full Scale ○ Pilot Scale	

WESP-2	☐ SE Unit 1 ☐ SE Unit 6 ☐ SE Unit 2 ☐ SE Unit 7 ☐ SE Unit 3 ☐ SE Unit 8 ☐ SE Unit 4 ☐ SE Unit 9 ☐ SE Unit 5 ☐ SE Unit 10 Other:	Month		○ Immediately downstream of dry ESP ○ Immediately downstream of baghouse ○ Immediately downstream of wet FGD ○ Other (Explain below):	○ Full Scale ○ Pilot Scale	
WESP-3	☐ SE Unit 1 ☐ SE Unit 6 ☐ SE Unit 2 ☐ SE Unit 7 ☐ SE Unit 3 ☐ SE Unit 8 ☐ SE Unit 4 ☐ SE Unit 9 ☐ SE Unit 5 ☐ SE Unit 10 Other:	Month		○ Immediately downstream of dry ESP ○ Immediately downstream of baghouse ○ Immediately downstream of wet FGD ○ Other (Explain below):	○ Full Scale ○ Pilot Scale	
WESP-4	☐ SE Unit 1 ☐ SE Unit 6 ☐ SE Unit 2 ☐ SE Unit 7 ☐ SE Unit 3 ☐ SE Unit 8 ☐ SE Unit 4 ☐ SE Unit 9 ☐ SE Unit 5 ☐ SE Unit 10 Other:	Month		○ Immediately downstream of dry ESP ○ Immediately downstream of baghouse ○ Immediately downstream of wet FGD ○ Other (Explain below):	○ Full Scale ○ Pilot Scale	
Planned Wet ESP Systems						
WESP-A	☐ SE Unit 1 ☐ SE Unit 6 ☐ SE Unit 2 ☐ SE Unit 7 ☐ SE Unit 3 ☐ SE Unit 8 ☐ SE Unit 4 ☐ SE Unit 9 ☐ SE Unit 5 ☐ SE Unit 10 Other:	Month		○ Immediately downstream of dry ESP ○ Immediately downstream of baghouse ○ Immediately downstream of wet FGD ○ Other (Explain below):	○ Full Scale ○ Pilot Scale	
WESP-B	☐ SE Unit 1 ☐ SE Unit 6 ☐ SE Unit 2 ☐ SE Unit 7 ☐ SE Unit 3 ☐ SE Unit 8 ☐ SE Unit 4 ☐ SE Unit 9 ☐ SE Unit 5 ☐ SE Unit 10 Other:	Month		○ Immediately downstream of dry ESP ○ Immediately downstream of baghouse ○ Immediately downstream of wet FGD ○ Other (Explain below):	○ Full Scale ○ Pilot Scale	
WESP-C	☐ SE Unit 1 ☐ SE Unit 6 ☐ SE Unit 2 ☐ SE Unit 7 ☐ SE Unit 3 ☐ SE Unit 8 ☐ SE Unit 4 ☐ SE Unit 9 ☐ SE Unit 5 ☐ SE Unit 10 Other:	Month		○ Immediately downstream of dry ESP ○ Immediately downstream of baghouse ○ Immediately downstream of wet FGD ○ Other (Explain below):	○ Full Scale ○ Pilot Scale	

CBI?
☐ Yes

A12-2. Provide the flow rate, duration, and frequency of the wastewater generated from the wet ESP system for calendar year 2009.

_______ gpm
_______ hpd
_______ dpy

CBI?
☐ Yes

A12-3. Provide the source of the water used in the wet ESP system. [Check all boxes that apply.]

☐ Raw intake water

☐ Intake water that has been treated on site prior to use

☐ Process wastewater, specify Process Wastewaters

Other process wastewater, specify: ______

☐ Other, explain: ______

CBI?
☐ Yes

A12-4. For water sources that may be used in the wet ESP (e.g., fresh intake, recycled process water), indicate the maximum chlorides concentration and maximum solids percentage that is acceptable for the water to be used for those purposes. Identify any other criteria that the source water must meet.

☐ Chlorides concentration: ______ ppm

☐ Solids percentage: ______ %

☐ Other, explain: ______

CBI?
☐ Yes

A12-5. Indicate all intermediate and final destination(s) of the wet ESP wastewater. If the plant recycles the wet ESP wastewater, indicate the plant process to which this water is recycled. [Check all that apply].

☐ Immediately recycled back to plant process. Please describe how the wet ESP wastewater is reused:

______

☐ Transferred to solid separation process. Identify the type of solid separation process below. [Check all boxes that apply.]

☐ Dewatering bin ☐ Hydrocyclones

☐ Centrifuges ☐ Filters

☐ Other (Explain): ______

☐ Transferred to treatment system reported in Tables D-1 or D-2. Identify the type of treatment system below. [Check all boxes that apply.]

☐ Settling pond ☐ Chemical precipitation

☐ Biological reactor – aerobic ☐ Biological reactor – anoxic/anaerobic

☐ Mechanical vapor compression (brine concentrator) ☐ Constructed wetlands

☐ Mechanical vapor compression (brine concentrator) with spray dryer

☐ Mechanical vapor compression (brine concentrator) with crystallizer

☐ Other, explain: ______

☐ Discharged to surface water. Provide NPDES permitted outfall number (from Part A Section 2.2): ______

☐ Indirect discharge to a publicly or privately owned treatment works

☐ Deep well injection

☐ Other, explain: ______

CBI?
☐ Yes

A12-6. Has the plant operated any full-scale or pilot-scale wet ESP systems for studies in which process wastewaters generated by the technology were evaluated?

○ Yes (Continue)
○ No (Skip to Section 13)

CBI?
☐ Yes

A12-7. Provide the name of the company whose technology was tested, the start and end date of the study, and attach the final technical evaluation report from the study (if study is complete).

Company Name: ____________

Start Date: ____________ End Date: ____________

☐ I have attached the final technical evaluation report.
☐ I did not attach the final technical evaluation report. Explain why: ____________

CBI?
☐ Yes

A12-8. Were characterization samples of the wet ESP wastewater collected during the study?

○ Yes (Continue)
○ No (Skip to Section 13)

Provide the analytical results of the wet ESP wastewater characterization (if not already included in the technical report requested in Question A12-7).

☐ I have attached the analytical results of the wet ESP wastewater characterization.
☐ I did not attach the analytical results of the wet ESP wastewater characterization. Explain why: ____________

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: A
Section Title: 13. Coal Storage and Processing

Instructions: Throughout Section 13 (Questions A13-1 to A13-17), provide information regarding the storage, processing, and use of coal for all steam electric generating units that were operated in 2009. Please provide all free response answers in the highlighted yellow areas.

CBI?
☐ Yes

A13-1. Did the plant store or process any coal on site in 2009? Processing coal includes any methods used to prepare the coal for use at the plant including but not limited to crushing/pulverizing coal.

○ Yes (Continue)
○ No (Skip to Question A13-16)

CBI?
☐

A13-2. Provide the amount (gpy) and number of days of *discharge* of *coal pile runoff* in 2009. If there was no coal pile runoff discharge, enter “0” and provide the reason in the Comments tab. The plant can estimate discharge of coal pile runoff, but a description of the estimation method must be included in the Comments tab.

__________ gpy __________ number of days of discharge in 2009

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CBI?
☐ Yes

A13-3. Was the coal pile runoff monitored for pH?

◯ Yes (Continue)
◯ No (Skip to Question A13-4)

If yes, provide the pH range for the coal pile runoff generated at the plant (prior to any commingling with other water streams, including other stormwater).

pH in coal pile runoff:	Minimum:		S.U.
	Maximum:		S.U.
	Median:		S.U.

CBI?
☐ Yes

A13-4. Is coal pile runoff transferred to a pond/impoundment?

◯ Yes, transferred to a pond/impoundment

☐ Segregated - specify pond/impoundment unit ID(s) from Table A-4: ______

☐ Commingled - specify pond/impoundment unit ID(s) from Table A-4: ______

◯ No

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CBI?
☐ Yes

A13-5. Indicate all intermediate and final destination(s) of the coal pile runoff. If the plant recycles the coal pile runoff, indicate the plant process to which this water is recycled. [Check all that apply].

☐ Immediately recycled back to plant process. Please indicate the plant process(es) to which the process wastewater is recycled.

- ☐ Fly or bottom ash sluicing
- ☐ Flue gas desulfurization
- ☐ Other, explain: ____________

☐ Transferred to on-site treatment system. Identify the type of treatment system below. [Check all boxes that apply.]

- ☐ Settling pond
- ☐ pH adjustment
- ☐ Chemical precipitation
- ☐ Constructed wetlands
- ☐ Other, specify: ____________

☐ Discharged to surface water. Provide NPDES permitted outfall number (from Part A Section 2.2): ____________

☐ Indirect discharge to a publicly or privately owned treatment works

☐ Other, explain: ____________

CBI?
☐ Yes

A13-6. Indicate whether the plant washes the coal on site. (See the definition for *coal washing* in the glossary for assistance).

◯ Yes (Continue)
◯ No (Skip to Question A13-8)

Provide the average volume of *coal wash* water generated (gpm), the duration of water generation (hpd), and the frequency of water generation (dpy).

____________ gpm ____________ hpd ____________ dpy

CBI?
☐ Yes

A13-7. Indicate all intermediate and final destination(s) of the *coal wash* water. If the plant recycles the coal wash water, indicate the plant process to which this water is recycled. [Check all that apply].

☐ Immediately recycled back to plant process. Please indicate the plant process(es) to which the wastewater is recycled.

- ☐ Fly or bottom ash sluicing
- ☐ Flue gas desulfurization
- ☐ Other, explain: ______

☐ Transferred to pond(s)/impoundment(s). Provide the IDs of the pond/impoundment unit(s) previously defined in Table A-4:

______

☐ Transferred to on-site treatment system. Identify the type of treatment system below. [Check all boxes that apply.

- ☐ Settling pond
- ☐ Constructed wetlands
- ☐ Biological reactor - aerobic
- ☐ Biological reactor - anoxic/anaerobic
- ☐ Chemical precipitation
- ☐ Other, specify: ______

☐ Discharged to surface water. Provide NPDES permitted outfall number (from Part A Section 2.2): ______

☐ Indirect discharge to a publicly or privately owned treatment works

☐ Other, explain: ______

CBI?
☐ Yes

A13-8. Did the plant blend more than one coal together on site during 2009? Blending is the act of intentionally mixing different coal types (e.g., bituminous and subbituminous) prior to combustion. Note that natural mixing of coal types that occurs in the coal piles does not constitute blending.

○ Yes (Continue)
○ No (Skip to Question A13-10)

CBI?
☐ Yes

A13-9. Did the plant generate any process wastewater associated with the blending of the coals during 2009?

○ Yes (provide amount below)

________ Units ▼ Over ________ days

○ No

CBI?
☐ Yes

A13-10. Did the plant pulverize coal for use in any boiler during 2009?

○ Yes (Continue)
○ No (Skip to Question A13-16)

CBI?
☐ Yes

A13-11. Was any water used in the coal pulverization process, other than that used for sluicing mill rejects?

○ Yes (Continue)
○ No (Skip to Question A13-12)

Provide the volume of coal pulverization *process wastewater* generated in 2009 (gpd OR gpy) and the frequency of this process wastewater generation (days).

______ Units ▼ Over ______ days

CBI?
☐ Yes

A13-12. Were mill rejects sluiced in 2009?

○ Yes (Continue)
○ No (Skip to Question A13-14)

Provide the volume of *mill rejects sluice* water generated in 2009 (gpd OR gpy) and the frequency of sluice water generation (days).

______ Units ▼ Over ______ days

CBI?
☐ Yes

A13-13. Were the mill rejects sluiced separately or were they sluiced with fly and/or bottom ash?

Sluiced by ▼

CBI?
☐ Yes

A13-14. Are the mill rejects pyritic?

○ Yes
○ No
○ Unknown

CBI?
☐ Yes

A13-15. Indicate how mill rejects are disposed of and provide amount(s). If the mill rejects are sent to a pond/impoundment, indicate whether they are combined with fly and/or bottom ash. [Check all boxes that apply.]

☐ Stored in/transferred to a pond/impoundment reported in Table A-4 ________ tpd
- ☐ Combined with fly ash in pond/impoundment
- ☐ Combined with bottom ash in pond/impoundment
- ☐ Not combined with fly or bottom ash in pond/impoundment

☐ Stored in/transferred to a landfill reported in Table A-6 ________ tpd
☐ Hauled off site for disposal ________ tpd
☐ Other, explain: ________ ________ tpd

CBI?
☐ Yes

A13-16. Did the plant gasify coal, petroleum coke, or oil to operate an IGCC generating unit during 2009?

○ Yes
○ No

CBI?
☐ Yes

A13-17. Is the plant currently operating, currently constructing/installing, or planning to construct/install by December 31, 2015 an *IGCC generating unit* that was not in operation during 2009?

○ Yes
○ No

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: A
Section Title: Part A Comments

Instructions: Cross reference your comments by question number and indicate the confidential status of your comment by checking the box next to “Yes” under "CBI?" (Confidential Business Information).

	Question Number	Comment
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		

Approved: May 20, 2010

CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		

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CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		

Table A-17. Listing of Fossil-Type Fuels

Type of Fuel
Coal
Anthracite Coal
Bituminous Coal
Lignite Coal
Subbituminous Coal
Waste Coal (including anthracite culm, bituminous gob)
Other Coal
Coal Synfuel
Oil
Distillate Fuel Oil (including Diesel, No. 1, No. 2, and No. 4 fuel oils)
Jet Fuel
Kerosene
Residual Fuel Oil (including No. 5 and No. 6 fuel oil and Bunker C fuel oil)
Other Oil (Crude oil, liquid butane, liquid propane, re-refined motor oil, sludge oil, tar oil, other petroleum-based liquid wastes)
Waste Oil
Petroleum Coke
Petroleum Coke
Gas
Blast Furnace Gas
Natural Gas
Gaseous Propane
Other Gases (Define on “Comments Page”, NOT including landfill gas or biomass gas)

Steam Electric Questionnaire Code Tables

Process Wastewaters	
For Use in Tables and Questions throughout Parts A, B, C, D, and F.	
Air heater cleaning water	AHCW
Ash pile runoff	APR
Boiler blowdown	BB
Boiler fireside cleaning water	BFCW
Boiler tube cleaning water	BTCW
Bottom ash sluice	BAS
Carbon capture wastewater	CCAPW
Coal pile runoff	CPR
Combined ash sluice	CAS
Combustion turbine cleaning (combustion gas portion of turbine) water	COMBCW
Combustion turbine cleaning (compressor portion of the turbine) water	COMPRCW
Combustion turbine evaporative coolers blowdown	TECB
Cooling tower blowdown	CTB
FGD scrubber purge	SCRBP
FGD slurry blowdown	FGDB
Filter Backwash	FLTBW
Floor drain wastewater	FDW
Flue gas mercury control system wastewater	FGMCW
Fly ash sluice	FAS
General runoff	GR
Gypsum pile runoff	GPR
Gypsum wash water	GYPWW
Ion exchange wastewater	IXW
Landfill runoff - capped landfill	LRC
Landfill runoff - uncapped landfill	LRUC
Leachate	LEACH
Limestone pile runoff	LPR
Mill reject sluice	MRS

Treated Wastewaters	
For Use as Effluents from Pond/Impoundment Systems and/or Wastewater Treatment Systems in Part D, Table D-4.	
Effluent - 1	EFF-1
Effluent - 2	EFF-2
Effluent - 3	EFF-3
Effluent - 4	EFF-4
Effluent - 5	EFF-5
Effluent - 6	EFF-6
Filter backwash	FltBW
Sludge	SLDG
For Use as Influents to Pond/Impoundment Systems and/or Wastewater Treatment Systems in Part D, Table D-3, AND Recycled Waters Throughout Questionnaire.	
POND-1 Effluent	POND-1-EFF
POND-2 Effluent	POND-2-EFF
POND-3 Effluent	POND-3-EFF
POND-4 Effluent	POND-4-EFF
POND-5 Effluent	POND-5-EFF
POND-6 Effluent	POND-6-EFF
POND-7 Effluent	POND-7-EFF
POND-8 Effluent	POND-8-EFF
POND-9 Effluent	POND-9-EFF
POND-10 Effluent	POND-10-EFF
POND-A Effluent	POND-A-EFF
POND-B Effluent	POND-B-EFF
POND-C Effluent	POND-C-EFF
WWT-1 Effluent	WWT-1-EFF
WWT-2 Effluent	WWT-2-EFF
WWT-3 Effluent	WWT-3-EFF
WWT-4 Effluent	WWT-4-EFF
WWT-5 Effluent	WWT-5-EFF

Steam Electric Questionnaire Code Tables

Process Wastewaters	
For Use in Tables and Questions throughout Parts A, B, C, D, and F.	
Once -through cooling water	CW
Reverse osmosis reject water	RORW
SCR catalyst regeneration wastewater	SCRRW
SCR catalyst washing wastewater	SCRWW
Soot blowing wash water	SOOTW
Steam turbine cleaning water	STCW
Yard drain wastewater	YARDW

Treated Wastewaters	
For Use as Influents to Pond/Impoundment Systems and/or Wastewater Treatment Systems in Part D, Table D-3, AND Recycled Waters Throughout Questionnaire.	
WWT-6 Effluent	WWT-6-EFF
WWT-A Effluent	WWT-A-EFF
WWT-B Effluent	WWT-B-EFF
WWT-C Effluent	WWT-C-EFF

Steam Electric Questionnaire Code Tables

Wastewater Treatment Units	
For Use in Tables and Questions Throughout Parts D and F.	
Adsorptive media	ADSORB
Aerobic Biological Reactor	AERBIO
Anaerobic Biological Reactor	ANBIO
Aerobic/Anaerobic Biological Reactor	AER/ANBIO
Chemical Precipitation Reaction Tank 1 - 1	CP-1-1
Chemical Precipitation Reaction Tank 1 - 2	CP-1-2
Chemical Precipitation Reaction Tank 2 - 1	CP-2-1
Chemical Precipitation Reaction Tank 2 - 2	CP-2-2
Chemical Precipitation Reaction Tank 3 - 1	CP-3-1
Chemical Precipitation Reaction Tank 3 - 2	CP-3-2
Clarification, Primary - 1	CL-P-1
Clarification, Primary - 2	CL-P-2
Clarification, Secondary - 1	CL-S-1
Clarification, Secondary - 2	CL-S-2
Clarification, Tertiary - 1	CL-T-1
Clarification, Tertiary - 2	CL-T-2
Constructed wetland - Cell 1	CWL -1
Constructed wetland - Cell 2	CWL -2
Constructed wetland - Cell 3	CWL -3
Constructed wetland - Cell 4	CWL -4
Constructed wetland - Cell 5	CWL -5
Constructed wetland - Cell 6	CWL -6
Constructed wetland system	CWTS
Equalization, Primary	EQ-P
Equalization, Secondary	EQ-S
Filter, Microfiltration - 1	FLT-M-1
Filter, Microfiltration - 2	FLT-M-2

Destinations	
For Use in Tables and Questions Throughout Parts A, C, D, and F.	
Burned on site	BURN
Deep-well injection	DWELL
Discharge to POTW	POTW
Discharge to PrOTW	PrOTW
Discharge to surface water	SW
Evaporation	EVAP
Hauled off site for reuse (removal fee)	HAULR - RF
Hauled off site for reuse (given away)	HAULR - GA
Hauled off site for reuse (marketed and sold)	SOLD
Hauled off site for disposal	HAUL
Mixed with fly ash for disposal	MFA
On-site landfill (as reported in Table A-6)	LANDF
POND-1	POND-1
POND-2	POND-2
POND-3	POND-3
POND-4	POND-4
POND-5	POND-5
POND-6	POND-6
POND-7	POND-7
POND-8	POND-8
POND-9	POND-9
POND-10	POND-10
POND-A	POND-A
POND-B	POND-B
POND-C	POND-C
WWT-1	WWT-1
WWT-2	WWT-2

Steam Electric Questionnaire Code Tables

Wastewater Treatment Units	
For Use in Tables and Questions Throughout Parts D and F.	
Filter, Microfiltration - 3	FLT-M-3
Filter, Microfiltration - 4	FLT-M-4
Filter, Sand/Gravity - 1	FLT-S-1
Filter, Sand/Gravity - 2	FLT-S-2
Filter, Sand/Gravity - 3	FLT-S-3
Filter, Sand/Gravity - 4	FLT-S-4
Filter, Ultrafiltration - 1	FLT-U-1
Filter, Ultrafiltration - 2	FLT-U-2
Filter, Ultrafiltration - 3	FLT-U-3
Filter, Ultrafiltration - 4	FLT-U-4
Filter press - 1	FP-1
Filter press - 2	FP-2
Holding tank	HT
Ion exchange	IX
Natural wetlands	NW
pH adjustment - 1	PH-1
pH adjustment - 2	PH-2
pH adjustment - 3	PH-3
Reverse osmosis	ROS
Pond Unit - 1	SPD-1
Pond Unit - 2	SPD-2
Pond Unit - 3	SPD-3
Pond Unit - 4	SPD-4
Pond Unit - 5	SPD-5
Pond Unit - 6	SPD-6
Pond Unit - 7	SPD-7
Pond Unit - 8	SPD-8
Pond Unit - 9	SPD-9

Destinations	
For Use in Tables and Questions Throughout Parts A, C, D, and F.	
WWT-3	WWT-3
WWT-4	WWT-4
WWT-5	WWT-5
WWT-6	WWT-6
WWT-A	WWT-A
WWT-B	WWT-B
WWT-C	WWT-C
Reuse as boiler water	RECYC - BW
Reuse as bottom ash sluice	RECYC - BAS
Reuse as combined ash sluice	RECYC - CAS
Reuse as FGD slurry preparation water	RECYC - FGDP
Reuse as FGD absorber makeup	RECYC - FGDAB
Reuse as fly ash sluice	RECYC - FAS
Reuse as mill reject sluice	RECYC - MRS
Reuse in cooling towers	RECYC - CW

Steam Electric Questionnaire Code Tables

Wastewater Treatment Units	
For Use in Tables and Questions Throughout Parts D and F.	
Pond Unit - 10	SPD-10
Pond Unit - 11	SPD-11
Pond Unit - 12	SPD-12
Pond Unit - 13	SPD-13
Pond Unit - 14	SPD-14
Settling tank - 1	ST-1
Settling tank - 2	ST-2
Settling tank - 3	ST-3
Settling tank - 4	ST-4
Settling tank - 5	ST-5
Thickener - 1	TH-1
Thickener - 2	TH-2
Vacuum drum filter - 1	VF-1
Vacuum drum filter - 2	VF-2
Vacuum filter belt - 1	VFB-1
Vacuum filter belt - 2	VFB-2

Solids Handling	
For Use as Planned Solids Handling for the FGD Slurry Blowdown in Part B Table B-2.	
Centrifuge - 1	CENT-1
Centrifuge - 2	CENT-2
Centrifuge - 3	CENT-3
Centrifuge - 4	CENT-4
Hydrocyclones - 1	HYC-1
Hydrocyclones - 2	HYC-2
Hydrocyclones - 3	HYC-3
Hydrocyclones - 4	HYC-4
Filter press - 1	FP-1
Filter press - 2	FP-2
Thickener - 1	TH-1
Thickener - 2	TH-2
Vacuum drum filter - 1	VF-1
Vacuum drum filter - 2	VF-2
Vacuum filter belt - 1	VFB-1
Vacuum filter belt - 2	VFB-2

Part A Drop Downs

State Names and Abbreviations	
	State
	Select
ALABAMA	AL
ALASKA	AK
AMERICAN SAMOA	AS
ARIZONA	AZ
ARKANSAS	AR
CALIFORNIA	CA
COLORADO	CO
CONNECTICUT	CT
DELAWARE	DE
DISTRICT OF COLUMBIA	DC
FEDERATED STATES OF MICRONESIA	FM
FLORIDA	FL
GEORGIA	GA
GUAM	GU
HAWAII	HI
IDAHO	ID
ILLINOIS	IL
INDIANA	IN
IOWA	IA
KANSAS	KS
KENTUCKY	KY
LOUISIANA	LA
MAINE	ME
MARSHALL ISLANDS	MH
MARYLAND	MD
MASSACHUSETTS	MA
MICHIGAN	MI
MINNESOTA	MN
MISSISSIPPI	MS
MISSOURI	MO
MONTANA	MT
NEBRASKA	NE
NEVADA	NV
NEW HAMPSHIRE	NH
NEW JERSEY	NJ
NEW MEXICO	NM
NEW YORK	NY
NORTH CAROLINA	NC
NORTH DAKOTA	ND
NORTHERN MARIANA ISLANDS	MP
OHIO	OH
OKLAHOMA	OK
OREGON	OR
PALAU	PW
PENNSYLVANIA	PA
PUERTO RICO	PR
RHODE ISLAND	RI
SOUTH CAROLINA	SC
SOUTH DAKOTA	SD
TENNESSEE	TN
TEXAS	TX
UTAH	UT
VERMONT	VT
VIRGIN ISLANDS	VI
VIRGINIA	VA
WASHINGTON	WA
WEST VIRGINIA	WV
WISCONSIN	WI
WYOMING	WY

Units
Units
Select
gpd
gpy

Sluiced by
Sluiced by
Select
Sluiced separately
Sluiced with fly ash
Sluiced with bottom ash
Sluiced with fly ash and bottom ash

Yes/No
Yes/No
Select
Yes
No

am/pm
am/pm
Select
am
pm

Month
Month
Select
January
February
March
April
May
June
July
August
September
October
November
December

Planned Month
Planned Month
Select
January
February
March
April
May
June
July
August
September
October
November
December
Unknown

Last Month
Last Month
Select
January
February
March
April
May
June
July
August
September
October
November
December
N/A

Year
Year
Select
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
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1994
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1997
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2001
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2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020

New Unit Year
New Unit Year
Select
2010
2011
2012

2013
2014
2015

Planned Year
Planned Year
Select
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
Unknown

Last Year
Last Year
Select
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
N/A

Type of Receiving Water
Type of Receiving Water
Select
Estuary
Great Lakes
Lake/Pond
Reservoir
River/Stream
Other

Process Wastewaters
Process Wastewaters
Select
Air heater cleaning water
Ash pile runoff
Boiler blowdown
Boiler fireside cleaning water
Boiler tube cleaning water
Bottom ash sluice
Carbon capture wastewater
Coal pile runoff
Combined ash sluice
Combustion turbine cleaning (combustion gas portion of turbine) water
Combustion turbine cleaning (compressor portion of the turbine) water
Combustion turbine evaporative coolers blowdown
Cooling tower blowdown
FGD scrubber purge
FGD slurry blowdown
Filter Backwash
Floor drain wastewater
Flue gas mercury control system wastewater
Fly ash sluice
General runoff
Gypsum pile runoff
Gypsum wash water
Ion exchange wastewater
Landfill runoff - capped landfill
Landfill runoff - uncapped landfill
Leachate
Limestone pile runoff
Mill reject sluice
Once -through cooling water
Reverse osmosis reject water
SCR catalyst regeneration wastewater
SCR catalyst washing wastewater
Soot blowing wash water
Steam turbine cleaning water
Yard drain wastewater
Other

Pond/Impoundment Unit ID
Pond/Impoundment Unit ID
Select
SPD-1
SPD-2
SPD-3
SPD-4
SPD-5
SPD-6
SPD-7
SPD-8
SPD-9
SPD-10
SPD-11
SPD-12
SPD-13
SPD-14
RET-SPD-1
RET-SPD-2
RET-SPD-3
RET-SPD-4
SPD-A
SPD-B
SPD-C
SPD-D
SPD-E

Landfill ID
Landfill ID
Select
LANDFILL-1
LANDFILL-2
LANDFILL-3
LANDFILL-4
RET-LANDFILL-1
RET-LANDFILL-2
RET-LANDFILL-3
RET-LANDFILL-4
LANDFILL-A
LANDFILL-B
LANDFILL-C
LANDFILL-D

Type of Turbine
Type of Turbine
Select
Combined Cycle
Stand-Alone Steam Turbine

Type of Cooling System
Type of Cooling System
Select
Dry Cooling
Once-Through
Recirculating
Other, specify below

SCR Catalyst Wastewater Handled
SCR Catalyst Wastewater Handled
Select
Transferred to pond and/or wastewater treatment system
Transferred to pond or holding basin without discharge
Hauled off site
Discharged without treatment
Other (specify below)

Operating/Planned
Operating/Planned
Select
Operating
Planned

Last Replaced/Regenerated
Last Replaced/Regenerated
Select
Replaced
Regenerated
Not replaced/regenerated

Planned Replaced/Regenerated
Planned Replaced/Regenerated
Select
Replaced
Regenerated
Unknown

Last Onsite/Offsite
Last Onsite/Offsite
Select
Onsite
Offsite
Not regenerated

Planned Onsite/Offsite
Planned Onsite/Offsite
Select
Onsite
Offsite
Unknown

Upstream/Downstream
Upstream/Downstream
Select
Upstream
Downstream

Wet/Dry
Wet/Dry
Select
Wet
Dry

SE Unit ID
SE Unit ID
Select
SE Unit-1
SE Unit-2
SE Unit-3
SE Unit-4
SE Unit-5
SE Unit-6
SE Unit-7
SE Unit-8
SE Unit-9
SE Unit-10
SE Unit-A
SE Unit-B
SE Unit-C
SE Unit-D

OMB Control Number: 2040-0281
Approval Expires: 05/31/2013

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Steam Electric Questionnaire

PART B - FLUE GAS DESULFURIZATION (FGD) SYSTEMS

Table of Contents

Approved: May 20, 2010

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

PART B. FLUE GAS DESULFURIZATION (FGD) SYSTEMS

INSTRUCTIONS

Part B requests information about flue gas desulfurization (FGD) systems that are located at the plant or are planned to be located at the plant. Complete Part B if you operate one or more FGD systems, or if you are currently constructing/installing or planning to construct/install one or more FGD systems by December 31, 2020.

Throughout Part B, information is requested on FGD systems that are under construction/installation or planned to be constructed/installed by December 31, 2020. Provide design information, or best engineering estimates as necessary, for these planned systems.

As you are completing the electronic form, note the following: When you enter your plant name and plant ID on the Part B Table of Contents tab, all name and ID fields throughout Part B will automatically populate. Refer to the overall questionnaire instructions, the glossary, and the acronym list for assistance with completing Part B.

Please provide all free response answers in the highlighted yellow areas. Throughout Part B, you may need to make copies of certain sections/questions for multiple FGD systems. Instructions are provided throughout Part B regarding making copies. Note that system ID fields must be populated on the copied tab or section, located in the upper right corner under "Plant ID" and "Plant Name", in order to correlate the requested information with the correct system.

Use the Part B Comments tab to do the following: provide additional information as requested in certain questions within Part B; indicate atypical data (e.g., if 2009 information is not representative of normal operations); and note methods used to make best engineering estimates in the event that exact data are not available.

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: B
Section Title: 1. General FGD System Information

Instructions: Part B requests information about flue gas desulfurization (FGD) systems that are located at the plant or are planned to be located at the plant that are used to service fossil-fueled electric generating units. See Part A Section 8 for unit classifications. Complete Part B if you operate one or more *FGD systems*, or if you are currently constructing/installing or planning to construct/install one or more FGD systems by December 31, 2020, to service fossil-fueled electric generating units.

CBI? ☐ Yes

B1-1. Does the plant operate one or more flue gas desulfurization (FGD) systems that service fossil-fueled steam electric generating units, or is the plant currently constructing/installing or planning to construct/install one or more FGD systems to service fossil-fueled steam electric generating units by December 31, 2020?

○ Yes (Continue)
○ No (Skip to next Questionnaire Part)

CBI? ☐ Yes

B1-2. Complete Table B-1 for each FGD system that the plant operates that services fossil-fueled electric generating units, or is currently constructing/installing or planning to construct/install to service fossil-fueled electric generating units by December 31, 2020. Assign an FGD system ID to each FGD system using the drop down menu provided. Assign the FGD systems sequentially using the numbered IDs (e.g., FGD-1, FGD-2) for the systems currently operating. Assign the FGD systems sequentially using the lettered IDs (e.g., FGD-A, FGD-B) for the systems that are planned to operate. Enter the date the system initially began operation or is planned to begin operation. Identify each steam electric unit (currently operating or planned units) that is serviced by each FGD system using the codes EPA assigned to steam electric units in Table A-8 and/or Table A-9. Identify the type of oxidation performed in the FGD system for all wet FGD systems (Note: mark "Not Applicable" for dry FGD systems). Also provide the design or actual sulfur dioxide removal efficiency for each FGD system.

Wet FGD systems capture sulfur dioxide from the flue gas using a wet slurry that generates a *process wastewater* that exits the scrubber absorber, shown as *FGD slurry blowdown* in Figure B-1 for recirculation scrubbers, or as FGD *slurry discharge* in Figure B-2 for single pass scrubbers. Indicate for each FGD system if FGD slurry blowdown (or FGD slurry discharge) is generated.

Use the drop down boxes to identify the type of FGD system and to specify the type(s) of sorbents used in the system. If a sorbent used is not provided in the drop down, identify "other" and provide the type(s) of sorbent in the yellow highlighted box to the right.

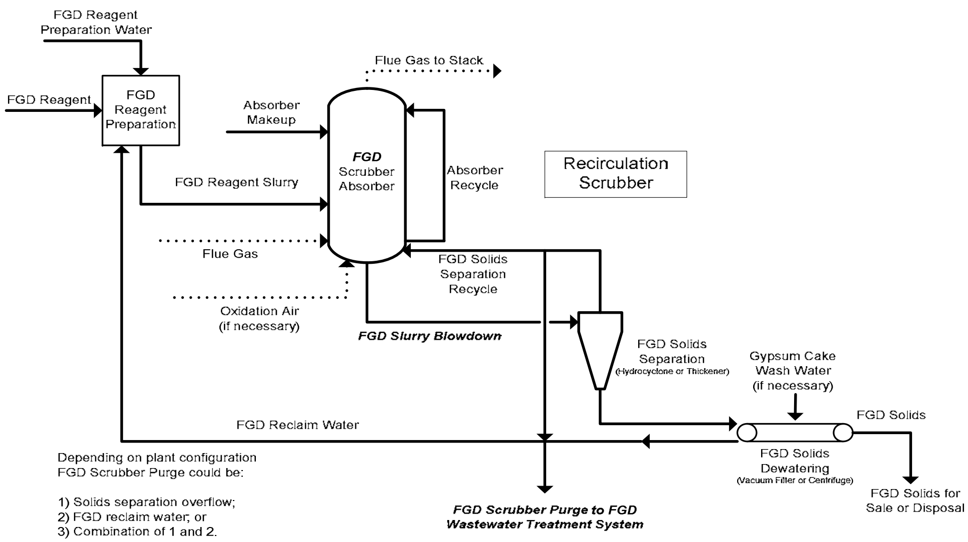

Figure B-1. Example Recirculation Wet FGD Scrubber System Diagram

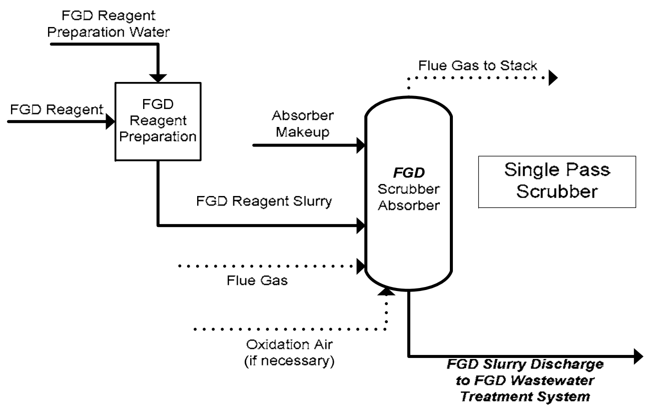

Figure B-2. Example Single Pass Wet FGD Scrubber System Diagram

Table B-1. FGD Systems in Operation or Planning to be Operated by December 31, 2020

FGD System ID	Date System Initially Brought On Line, or Planned to be Brought On Line (month/year)	Steam Electric Units from Table A-8 and/or A-9 Serviced by This FGD System [check all boxes that apply]	Does (or Will) the System Generate a FGD Slurry Blowdown (or Slurry Discharge) Stream (i.e., is it a wet system)?	Type of Oxidation (Forced, Natural, or Inhibited)	Type of FGD System	Type of Sorbent	Sulfur Dioxide Removal Efficiency (%)
Example: FGD-1	01/1995	☑ SE Unit 1 ☐ SE Unit 2 ☐ SE Unit 3 ☐ SE Unit 4 ☐ SE Unit 5 ☐ SE Unit 6 ☐ SE Unit 7 ☐ SE Unit 8 ☐ SE Unit 9 ☐ SE Unit 10 ☐ SE Unit A ☐ SE Unit B ☐ SE Unit C ☐ SE Unit D	◉ Yes ○ No	○ Forced ◉ Inhibited ○ Natural ○ Not Applicable	Spray	Primary: Limestone Secondary: Soda Ash Tertiary: Not Applicable Quaternary: Not Applicable	97.5
FGD System ID		☐ SE Unit 1 ☐ SE Unit 2 ☐ SE Unit 3 ☐ SE Unit 4 ☐ SE Unit 5 ☐ SE Unit 6 ☐ SE Unit 7 ☐ SE Unit 8 ☐ SE Unit 9 ☐ SE Unit 10 ☐ SE Unit A ☐ SE Unit B ☐ SE Unit C ☐ SE Unit D	○ Yes ○ No	○ Forced ○ Inhibited ○ Natural ○ Not Applicable	Type of FGD System	Primary: Type of Sorbent Secondary: Type of Sorbent Tertiary: Type of Sorbent Quaternary: Type of Sorbent	
FGD System ID		☐ SE Unit 1 ☐ SE Unit 2 ☐ SE Unit 3 ☐ SE Unit 4 ☐ SE Unit 5 ☐ SE Unit 6 ☐ SE Unit 7 ☐ SE Unit 8 ☐ SE Unit 9 ☐ SE Unit 10 ☐ SE Unit A ☐ SE Unit B ☐ SE Unit C ☐ SE Unit D	○ Yes ○ No	○ Forced ○ Inhibited ○ Natural ○ Not Applicable	Type of FGD System	Primary: Type of Sorbent Secondary: Type of Sorbent Tertiary: Type of Sorbent Quaternary: Type of Sorbent	
FGD System ID		☐ SE Unit 1 ☐ SE Unit 2 ☐ SE Unit 3 ☐ SE Unit 4 ☐ SE Unit 5 ☐ SE Unit 6 ☐ SE Unit 7 ☐ SE Unit 8 ☐ SE Unit 9 ☐ SE Unit 10 ☐ SE Unit A ☐ SE Unit B ☐ SE Unit C ☐ SE Unit D	○ Yes ○ No	○ Forced ○ Inhibited ○ Natural ○ Not Applicable	Type of FGD System	Primary: Type of Sorbent Secondary: Type of Sorbent Tertiary: Type of Sorbent Quaternary: Type of Sorbent	
FGD System ID		☐ SE Unit 1 ☐ SE Unit 2 ☐ SE Unit 3 ☐ SE Unit 4 ☐ SE Unit 5 ☐ SE Unit 6 ☐ SE Unit 7 ☐ SE Unit 8 ☐ SE Unit 9 ☐ SE Unit 10 ☐ SE Unit A ☐ SE Unit B ☐ SE Unit C ☐ SE Unit D	○ Yes ○ No	○ Forced ○ Inhibited ○ Natural ○ Not Applicable	Type of FGD System	Primary: Type of Sorbent Secondary: Type of Sorbent Tertiary: Type of Sorbent Quaternary: Type of Sorbent	
FGD System ID		☐ SE Unit 1 ☐ SE Unit 2 ☐ SE Unit 3 ☐ SE Unit 4 ☐ SE Unit 5 ☐ SE Unit 6 ☐ SE Unit 7 ☐ SE Unit 8 ☐ SE Unit 9 ☐ SE Unit 10 ☐ SE Unit A ☐ SE Unit B ☐ SE Unit C ☐ SE Unit D	○ Yes ○ No	○ Forced ○ Inhibited ○ Natural ○ Not Applicable	Type of FGD System	Primary: Type of Sorbent Secondary: Type of Sorbent Tertiary: Type of Sorbent Quaternary: Type of Sorbent	
FGD System ID		☐ SE Unit 1 ☐ SE Unit 2 ☐ SE Unit 3 ☐ SE Unit 4 ☐ SE Unit 5 ☐ SE Unit 6 ☐ SE Unit 7 ☐ SE Unit 8 ☐ SE Unit 9 ☐ SE Unit 10 ☐ SE Unit A ☐ SE Unit B ☐ SE Unit C ☐ SE Unit D	○ Yes ○ No	○ Forced ○ Inhibited ○ Natural ○ Not Applicable	Type of FGD System	Primary: Type of Sorbent Secondary: Type of Sorbent Tertiary: Type of Sorbent Quaternary: Type of Sorbent	
FGD System ID		☐ SE Unit 1 ☐ SE Unit 2 ☐ SE Unit 3 ☐ SE Unit 4 ☐ SE Unit 5 ☐ SE Unit 6 ☐ SE Unit 7 ☐ SE Unit 8 ☐ SE Unit 9 ☐ SE Unit 10 ☐ SE Unit A ☐ SE Unit B ☐ SE Unit C ☐ SE Unit D	○ Yes ○ No	○ Forced ○ Inhibited ○ Natural ○ Not Applicable	Type of FGD System	Primary: Type of Sorbent Secondary: Type of Sorbent Tertiary: Type of Sorbent Quaternary: Type of Sorbent	
FGD System ID		☐ SE Unit 1 ☐ SE Unit 2 ☐ SE Unit 3 ☐ SE Unit 4 ☐ SE Unit 5 ☐ SE Unit 6 ☐ SE Unit 7 ☐ SE Unit 8 ☐ SE Unit 9 ☐ SE Unit 10 ☐ SE Unit A ☐ SE Unit B ☐ SE Unit C ☐ SE Unit D	○ Yes ○ No	○ Forced ○ Inhibited ○ Natural ○ Not Applicable	Type of FGD System	Primary: Type of Sorbent Secondary: Type of Sorbent Tertiary: Type of Sorbent Quaternary: Type of Sorbent	
FGD System ID		☐ SE Unit 1 ☐ SE Unit 2 ☐ SE Unit 3 ☐ SE Unit 4 ☐ SE Unit 5 ☐ SE Unit 6 ☐ SE Unit 7 ☐ SE Unit 8 ☐ SE Unit 9 ☐ SE Unit 10 ☐ SE Unit A ☐ SE Unit B ☐ SE Unit C ☐ SE Unit D	○ Yes ○ No	○ Forced ○ Inhibited ○ Natural ○ Not Applicable	Type of FGD System	Primary: Type of Sorbent Secondary: Type of Sorbent Tertiary: Type of Sorbent Quaternary: Type of Sorbent	

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: B
Section Title: 2. Planned FGD System Information

Instructions: Throughout this section, provide information for all *FGD systems* under construction/installation or planned to be constructed/installed by December 31, 2020 that are reported in Table B-1 and are expected to generate *FGD slurry blowdown*. Please provide all free response answers in the highlighted yellow areas.

CBI?
☐ Yes

B2-1. Complete Table B-2 for each FGD system under construction/installation or planned to be constructed/installed by December 31, 2020 that is reported in Table B-1 and is expected to generate FGD slurry blowdown. Enter the planned method for handling solids generated, whether *FGD scrubber purge* (or *slurry discharge*) will be generated, the type of *wastewater treatment system*, the design maximum and 24-hour daily average flow rate for the treatment system, and the date the treatment system will be brought on line. Use codes from the Code Tables tab, as appropriate, and separate multiple entries with commas. If you do not know the type of wastewater treatment system that will be installed or the flow rate of the treatment system, enter "Unknown" into the appropriate columns in the table.

Table B-2. FGD Systems Planned or Under Construction/Installation

FGD System ID	Planned Solids Handling for the FGD Slurry Blowdown (See Solids Handling Table in Code Tables Tab) [a]	Will System Generate FGD Scrubber Purge (or Slurry Discharge)?	Will FGD Scrubber Purge (or Slurry Discharge) be Treated by New or Existing Treatment System	Type of Wastewater Treatment System Planned to Treat FGD Scrubber Purge (or Slurry Discharge) (See Wastewater Treatment Units Table in Code Tables Tab)	Design Flow Rate for FGD Treatment System: Maximum (gpm)	Design Flow Rate for FGD Treatment System: 24-Hour Daily Average (gpm)	Estimated Date the New FGD Treatment System Will be Brought On Line (or Date FGD Scrubber Purge (or Slurry Discharge) Will be Transferred to Existing System) (month/year)
Example FGD-A	***HYC-1, VFB-1***	Yes	New	***EQ-P, CP-1-1, CL-P-1, PH-1, FLT-S-1***	***1,200***	***1,000***	***06/2012***
FGD System ID (Planned)		Yes/No	New/Existing				
FGD System ID (Planned)		Yes/No	New/Existing				
FGD System ID (Planned)		Yes/No	New/Existing				
FGD System ID (Planned)		Yes/No	New/Existing				
FGD System ID (Planned)		Yes/No	New/Existing				
FGD System ID (Planned)		Yes/No	New/Existing				

a – This question refers to the blowdown solids handling, *not* the treatment system solids handling.

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: B
Section Title: 3. FGD Additive Information

Instructions: Throughout this section, provide information for all *FGD Systems* listed in Table B-1. Please provide all free response answers in the highlighted yellow areas.

CBI?
☐ Yes

B3-1. In Table B-3, indicate the additive(s) used or planned to be used in each FGD system listed in Table B-1, and provide a description of its purpose. [Check all boxes that apply.]

Table B-3. FGD Additive Information

Additive	FGD System(s) in which Additive is Used or is Planned to be Used	Purpose of Additive
Adipic acid	☐ FGD 1 ☐ FGD 4 ☐ FGD A ☐ FGD 2 ☐ FGD 5 ☐ FGD B ☐ FGD 3 ☐ FGD 6 ☐ FGD C	☐ Increase sulfur dioxide removal ☐ Increase mercury removal ☐ Defoaming agent ☐ Inhibit oxidation of FGD solids ☐ Scale inhibitor ☐ Other (specify below):
Dibasic acid (DBA)	☐ FGD 1 ☐ FGD 4 ☐ FGD A ☐ FGD 2 ☐ FGD 5 ☐ FGD B ☐ FGD 3 ☐ FGD 6 ☐ FGD C	☐ Increase sulfur dioxide removal ☐ Increase mercury removal ☐ Defoaming agent ☐ Inhibit oxidation of FGD solids ☐ Scale inhibitor ☐ Other (specify below):
Elemental sulfur	☐ FGD 1 ☐ FGD 4 ☐ FGD A ☐ FGD 2 ☐ FGD 5 ☐ FGD B ☐ FGD 3 ☐ FGD 6 ☐ FGD C	☐ Increase sulfur dioxide removal ☐ Increase mercury removal ☐ Defoaming agent ☐ Inhibit oxidation of FGD solids ☐ Scale inhibitor ☐ Other (specify below):
Formic acid	☐ FGD 1 ☐ FGD 4 ☐ FGD A ☐ FGD 2 ☐ FGD 5 ☐ FGD B ☐ FGD 3 ☐ FGD 6 ☐ FGD C	☐ Increase sulfur dioxide removal ☐ Increase mercury removal ☐ Defoaming agent ☐ Inhibit oxidation of FGD solids ☐ Scale inhibitor ☐ Other (specify below):
Organosulfide	☐ FGD 1 ☐ FGD 4 ☐ FGD A ☐ FGD 2 ☐ FGD 5 ☐ FGD B ☐ FGD 3 ☐ FGD 6 ☐ FGD C	☐ Increase sulfur dioxide removal ☐ Increase mercury removal ☐ Defoaming agent ☐ Inhibit oxidation of FGD solids ☐ Scale inhibitor ☐ Other (specify below):
Sodium thiosulfate	☐ FGD 1 ☐ FGD 4 ☐ FGD A ☐ FGD 2 ☐ FGD 5 ☐ FGD B ☐ FGD 3 ☐ FGD 6 ☐ FGD C	☐ Increase sulfur dioxide removal ☐ Increase mercury removal ☐ Defoaming agent ☐ Inhibit oxidation of FGD solids ☐ Scale inhibitor ☐ Other (specify below):

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Other (specify below):	☐ FGD 1 ☐ FGD 4 ☐ FGD A ☐ FGD 2 ☐ FGD 5 ☐ FGD B ☐ FGD 3 ☐ FGD 6 ☐ FGD C	☐ Increase sulfur dioxide removal ☐ Increase mercury removal ☐ Defoaming agent ☐ Inhibit oxidation of FGD solids ☐ Scale inhibitor ☐ Other (specify below):
Other (specify below):	☐ FGD 1 ☐ FGD 4 ☐ FGD A ☐ FGD 2 ☐ FGD 5 ☐ FGD B ☐ FGD 3 ☐ FGD 6 ☐ FGD C	☐ Increase sulfur dioxide removal ☐ Increase mercury removal ☐ Defoaming agent ☐ Inhibit oxidation of FGD solids ☐ Scale inhibitor ☐ Other (specify below):
None	☐ FGD 1 ☐ FGD 4 ☐ FGD A ☐ FGD 2 ☐ FGD 5 ☐ FGD B ☐ FGD 3 ☐ FGD 6 ☐ FGD C	

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name
FGD System ID: Insert System ID

Part: B
Section Title: 4. Wet FGD System Information

Instructions: Throughout this section, you will be required to provide information for each *wet FGD system* that the plant operates, reported in Table B-1. This section does not need to be completed for planned systems. Please provide all free response answers in the highlighted yellow areas.

Make copies of Section 4 and the Section 4 tables for each wet FGD system previously defined in Table B-1 using the "Copy Section 4 and Section 4 Tables" button below. Please note that you will create two new tabs for these sections. You may delete unneeded tabs, if accidently created. Enter the FGD system ID in the space provided above (use FGD system IDs assigned in Table B-1).

CBI?
☐ Yes

B4-1. Did you report use of a FGD system that generates *FGD slurry blowdown* (i.e., wet system) in Table B-1?

○ Yes (Continue)
○ No (Skip to Section 8)

Copy Section 4 and Section 4 Tables

CBI?
☐ Yes

B4-2. Provide the operating concentration range of chlorides within the *FGD scrubber absorber*.

Minimum operating concentration: ______ ppm
Maximum operating concentration: ______ ppm

Approved: May 20, 2010

CBI?
☐ Yes

B4-3. Provide the maximum design chlorides concentration for the FGD system and indicate which specific equipment unit(s) of the FGD system determine this concentration (e.g., FGD scrubber absorber, piping). Also provide the materials of construction for the specific FGD equipment that determine the maximum design chlorides concentration. If multiple materials are used in the construction of the FGD equipment that determines the maximum design chlorides concentration, identify the component that is the most vulnerable to corrosion due to chlorides concentrations. If the material of construction is not provided in the drop down menu, select "other" and provide the name in the yellow box provided.

FGD system maximum design chlorides concentration: ______ ppm

FGD equipment that determines maximum design concentration: ______ Materials of Construction ______

FGD equipment that determines maximum design concentration: ______ Materials of Construction ______

FGD equipment that determines maximum design concentration: ______ Materials of Construction ______

FGD equipment that determines maximum design concentration: ______ Materials of Construction ______

CBI?
☐ Yes

B4-4. Indicate the FGD system parameter(s) that are used to determine when the FGD slurry is blown down from the FGD system. [Check all boxes that apply.]

☐ Chlorides concentration, maintained less than ______ ppm

☐ Solids percentage, maintained between ______ and ______ %

☐ Other, explain: ______

CBI?
☐ Yes

B4-5. For water sources that may be used as a source of FGD reagent preparation water or absorber make-up water (e.g., fresh intake, recycled process water), indicate the maximum chlorides concentration and maximum solids percentage that is acceptable for the water to be used for those purposes. Identify any other criteria that the source water must meet.

☐ Chlorides concentration: ______ ppm

☐ Solids percentage: ______ %

☐ Other, explain: ______

CBI?
☐ Yes

B4-6. Provide the typical flow rate, duration, and frequency of the mist eliminator wash water for the FGD system for calendar year 2009. Provide 2010 data for systems that were not operating in 2009.

______ gpm

______ hpd

______ dpy

CBI?
☐ Yes

B4-7. Provide the typical flow rate, duration, and frequency of the FGD reagent preparation water for the FGD system for calendar year 2009. Provide 2010 data for systems that were not operating in 2009.

________ gpm
________ hpd
________ dpy

CBI?
☐ Yes

B4-8. Provide the typical flow rate, duration, and frequency of the FGD reagent slurry for the FGD system for calendar year 2009. Provide 2010 data for systems that were not operating in 2009.

________ gpm
________ hpd
________ dpy

CBI?
☐ Yes

B4-9. Provide the typical flow rate, duration, and frequency of the absorber make-up water for the FGD system for calendar year 2009. Provide 2010 data for systems that were not operating in 2009.

________ gpm
________ hpd
________ dpy

CBI?
☐ Yes

B4-10. Provide the source of the mist eliminator wash water used. [Check all boxes that apply.] If the source is a *process wastewater* not provided in the dropdown box, select other and provide in the yellow box the name of the process wastewater and a short description.

☐ Raw intake water
☐ Intake water that has been treated on site prior to use
☐ Process wastewater   Process Wastewater ▼ ________
☐ Other, explain: ________

CBI?
☐ Yes

B4-11. Provide the source of the FGD reagent preparation water used. [Check all boxes that apply.] If the source is a *process wastewater* not provided in the dropdown box, select other and provide in the yellow box the name of the process wastewater and a short description.

☐ Raw intake water
☐ Intake water that has been treated on site prior to use
☐ Process wastewater Process Wastewater
☐ Other, explain:

CBI?
☐ Yes

B4-12. Provide the source of the absorber make-up water used. [Check all boxes that apply.] If the source is a *process wastewater* not provided in the dropdown box, select other and provide in the yellow box the name of the process wastewater and a short description.

☐ Raw intake water
☐ Intake water that has been treated on site prior to use
☐ Process wastewater Process Wastewater
☐ Other, explain:

CBI?
☐ Yes

B4-13. Indicate the type of solids that are generated within the FGD scrubber system. Also provide the approximate percent of the total FGD solids generated within the FGD system for each type (e.g., 85% calcium sulfate, 15% calcium sulfite).

☐ Calcium sulfate (gypsum) % FGD solids generated
☐ Calcium sulfite % FGD solids generated
☐ Other, explain: % FGD solids generated
☐ Other, explain: % FGD solids generated

CBI?
☐ Yes

B4-14. Are the *FGD solids* combined with *fly ash*, *bottom ash*, or other material?

○ Yes (Continue)
○ No (Skip to Question B4-16)

CBI?
☐ Yes

B4-15. Is a cementitious/pozzolanic material produced with the FGD solids at the plant?

○ Yes
○ No

CBI?
☐ Yes

B4-16. Indicate the methods of *FGD solids separation* used by the plant for FGD slurry blowdown (or slurry discharge). Refer to Figure B-1 for an example of a FGD solids separation system. Note that FGD solids separation and FGD *solids dewatering* are separate processes. [Check all boxes that apply.]

☐ Hydrocyclones
☐ Centrifuge
☐ Thickener
☐ Other, explain: ______
☐ Blowdown sent directly to a pond system reported in Table D-1 (no FGD solids separation process)
☐ Blowdown sent directly to wastewater treatment system reported in Table D-2 (no FGD solids separation process)

CBI?
☐ Yes

B4-17. Indicate the method of FGD *solids dewatering* used by the plant for the FGD solids. [Check all boxes that apply.]

☐ Vacuum drum filter
☐ Vacuum belt filter
☐ Gypsum stacking
☐ Other, explain: ______

CBI?
☐ Yes

B4-18. Provide the typical, maximum, and minimum chlorides concentration of the FGD solids produced by the FGD system in calendar year 2009. The chlorides concentration should be given on a wet basis (i.e., analysis of the FGD with the moisture content included); however, if the chlorides concentration is not known on a wet basis, provide the dry-basis concentration and note that it is a dry-basis concentration in the comments.

Typical concentration: ______ ppm
Minimum concentration: ______ ppm
Maximum concentration: ______ ppm

CBI?
☐ Yes

B4-19. What parameters affect the ability of the FGD solids to be marketed, sold and/or given away? [Check all boxes that apply.]

☐ Chlorides content: ______ ppm

☐ Moisture content: ______ %

☐ Other, specify: ______ ______ ppm

☐ None – Industry(ies) to which the FGD solids are marketed has not specified standards for the solids.

☐ N/A – FGD solids are not marketed, sold, or given away.

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name
FGD System ID: Insert System ID

Part: B
Section Title: 4. FGD Solids Disposition and Marketing for Wet FGD Systems

Instructions: Throughout this section, you will be required to provide information on *FGD solids* disposition for each *wet FGD system* that the plant operates, reported in Table B-1. This section does not need to be completed for planned systems. Please provide all free response answers in the highlighted yellow areas.

CBI?
☐ Yes

B4-20. In Table B-4, indicate the ultimate destination of FGD solids from the FGD system and provide the tonnage for each type of storage/handling technique for calendar years 2005, 2007, and 2009. If the FGD solids are stored in an on-site *landfill* or *pond/impoundment*, including those located on non-adjoining property, provide the amount of FGD solids stored permanently and/or temporarily.

For example, a plant may operate a *gypsum stacking* operation using a pond/impoundment, and some amount of FGD solids that are transferred to the pond/impoundment are dewatered and sold for use in wallboard manufacturing. In this case, the amount of FGD solids sold for wallboard manufacturing should be identified in BOTH the "Sent to Pond/Impoundment reported in Table A-4: Stored temporarily" category AND the "Marketed and Sold" category. In this same example, all the FGD solids that are transferred to the pond/impoundment and either left settling at the bottom of the pond/impoundment or used in increase the banks of the pond/impoundment should be identified as "Sent to Pond/Impoundment reported in Table A-4: Stored permanently."

Table B-4. FGD Solids Disposition for 2005, 2007, and 2009

Ultimate Destination of FGD Solids		Amount Disposed in 2005 (tons)	Amount Disposed in 2007 (tons)	Amount Disposed in 2009 (tons)
Sent to Landfills reported in Table A-6	Stored permanently			
	Stored temporarily (later hauled off-site/marketed)			
Sent to Pond/Impoundment reported in Table A-4	Stored permanently			
	Stored temporarily (later hauled off-site/marketed)			
Sent to Landfills <u>not</u> reported in Table A-6				
Sent to Pond/Impoundment <u>not</u> reported in Table A-4				
Marketed and sold				
Given away				
Other, explain:				
Other, explain:				

CBI?
☐ Yes

B4-21. Complete Table B-5 if the plant markets, sells, and/or gives away the FGD solids from this FGD system. For each destination, provide the tons of FGD solids for which the FGD solids are marketed, sold, and/or given away. Also provide the gross revenue generated from marketing/selling the FGD solids for each destination.

Table B-5. FGD Solids Marketed/Sold in 2005, 2007, and 2009

Destination		2005		2007		2009	
		Tons	Gross Revenue Generated ($)	Tons	Gross Revenue Generated ($)	Tons	Gross Revenue Generated ($)
FGD Solids Marketing							
FGD Solids Marketing							
FGD Solids Marketing							
FGD Solids Marketing							
FGD Solids Marketing							
FGD Solids Marketing							

CBI?
☐ Yes

B4-22. In Table B-6, provide the total cost incurred to remove or dispose of FGD solids from 2005 to 2009 including the cost for labor, materials, transportation, and energy. Also provide the cost by component. Include other components not provided in the list of processes in the yellow box provided.

Table B-6. Cost Incurred to Remove or Dispose of FGD Solids in 2005, 2007, and 2009

Process		2005	2007	2009
		Total Costs Incurred	Total Costs Incurred	Total Costs Incurred
Solids separation		$	$	$
Solids dewatering		$	$	$
Hauling FGD solids		$	$	$
Cost of on site disposal		$	$	$
Cost of off site disposal		$	$	$
Other:		$	$	$
Other:		$	$	$
Other:		$	$	$
Total		**$**	**$**	**$**

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: B
Section Title: 5. FGD Wastewater Generation

Instructions: Throughout this section, you will be required to provide information for all *wet FGD systems* that the plant operates, reported in Table B-1. This section does not need to be completed for planned systems. Please provide all free response answers in the highlighted yellow areas.

CBI?
☐ Yes

B5-1. In Table B-7, provide information for each wet FGD system that the plant operates reported in Table B-1. For the source of FGD reagent preparation water, absorber make-up water, and mist eliminator wash water, you may enter more than one source. Select a source from the dropdown menu. For the percent contribution of the flow rates, provide the percentage based on the total flow rate for all these sources entering the FGD system.

Table B-7. FGD System Water Sources and Flow Rates

FGD System ID	FGD Reagent Preparation Water, Absorber Make-Up Water, and Mist Eliminator Wash Water (Sources, Percent Contribution, and Flow Rate) Source(s)	Percent	Flow Rate (gpd)
Example:	***FGDB***	***80%***	***48,000***
FGD System ID (no pl	***CTB***	***20%***	***12,000***
	Other		
FGD System ID (no pl	FGD System Water Source		
	FGD System Water Source		
	FGD System Water Source		
	Other		
FGD System ID (no pl	FGD System Water Source		
	FGD System Water Source		
	FGD System Water Source		
	Other		
FGD System ID (no pl	FGD System Water Source		
	FGD System Water Source		
	FGD System Water Source		
	Other		
FGD System ID (no pl	FGD System Water Source		
	FGD System Water Source		
	FGD System Water Source		
	Other		
FGD System ID (no pl	FGD System Water Source		
	FGD System Water Source		
	FGD System Water Source		
	Other		
FGD System ID (no pl	FGD System Water Source		
	FGD System Water Source		
	FGD System Water Source		
	Other		

CBI?
☐ Yes

B5-2. In Table B-8, provide information for each wet FGD system that the plant operates reported in Table B-1.

Table B-8. Water Generated from Wet FGD Systems

FGD System ID	Absorber Type	Typical FGD Slurry Blowdown (or Slurry Discharge) Flow Rate Exiting the Absorber (gpd)	Typical Range of Percent Solids of FGD Slurry Blowdown (or Slurry Discharge) Exiting the Absorber (%)	Typical Amount of Solids Separation Recycle Returned to Absorber (gpd)	Typical Amount of FGD Scrubber Purge (or Slurry Discharge) Sent to Wastewater Treatment or Discharge (gpm AND gpd)	Typical Duration AND Frequency of FGD Scrubber Purge (or Slurry Discharge) Generation (hpd AND dpy)
Example: FGD-1	Recirculation	240,000	12 to 16	180,000	200 gpm 120,000 gpd	10 hpd 365 dpy
FGD System ID (no pla	Recirculation/Single Pass		to		gpm gpd	hpd dpy
FGD System ID (no pla	Recirculation/Single Pass		to		gpm gpd	hpd dpy
FGD System ID (no pla	Recirculation/Single Pass		to		gpm gpd	hpd dpy
FGD System ID (no pla	Recirculation/Single Pass		to		gpm gpd	hpd dpy
FGD System ID (no pla	Recirculation/Single Pass		to		gpm gpd	hpd dpy
FGD System ID (no pla	Recirculation/Single Pass		to		gpm gpd	hpd dpy

CBI?
☐ Yes

B5-3. Provide the typical chlorides and solids concentrations of the untreated *FGD scrubber purge* (or *slurry discharge*) transferred to the *wastewater treatment system* (after the *FGD solids separation* process, but prior to commingling with other process wastewater).

☐ Chlorides content: ________ ppm

☐ Total suspended solids (TSS): ________ ppm

Plant ID: Insert Plant ID

Plant Name: Insert Plant Name

Part: B

Section Title: 6. FGD Monitoring Data Instructions

Instructions: Throughout this section, you will be required to provide monitoring data for all *wet FGD systems* that the plant operates, reported in Table B-1. This section does not need to be completed for planned systems. Please provide all free response answers in the highlighted yellow areas.

CBI?
☐ Yes

B6-1. Has your plant collected monitoring data (for any reason) for untreated *FGD scrubber purge* (or *slurry discharge*) in the 12 months prior to receiving the ICR for any of the following analytes:

- Metals (including monitoring data for total recoverable or dissolved metals analyses, or trace metals analyses);
- Ammonia;
- Nitrate/nitrite;
- Total Kjeldahl nitrogen (TKN); and
- Total cyanide.

Note: The untreated FGD scrubber purge (or slurry discharge) stream is the *FGD wastewater* stream leaving the solids separation process prior to commingling with other water streams (see Figures B-1 and B-2).

○ Yes (Provide the monitoring data as instructed below)

○ No (Skip to Section 7)

Note: You are not required to perform non-routine tests or measurements solely for the purpose of responding to this question.

Provide the monitoring data in Table B-9 in the tab labeled "Part B Section 6 Table" for each different FGD scrubber purge stream for which the plant collected monitoring data. Report all results. Identify results that are less than the method detection limit (MDL), and results that are between the detection and reporting limits. For example, if the MDL is equal to 5 ng/L, the reporting limit is equal to 15 ng/L, and the value reported by the laboratory is 12 ng/L, report 12 ng/L as the measured value and identify and describe any qualifiers on the data in the corresponding column. Copy Table B-9 as many times as needed using the "Copy Table B-9" button below.

Copy Table B-9

Note: If you operate multiple *FGD solids separation* processes (e.g., two sets of hydroclones), only provide monitoring data collected after the last solid separation process. If necessary, you may provide additional information regarding the sample collection techniques or analytical methods in the Comments section (e.g., sample collection followed EPA Method 1669 protocols, dynamic reaction cell was used in conjunction with analytical method).

The following information should be provided for each data point:

- Name of analyte and CAS Number;
- Measured value, including those reported below the laboratory reporting limit, including units (if not detected, list the *detection limit* value and select the less than (<) symbol in the non-detect indicator column);
- Analytical method used;
- Sample-specific detection limit for the method used;
- Sample-specific nominal quantitation limit stipulated for the method used;
- Date the sample was collected;
- Location where the sample was collected (e.g., purge tank which collects secondary hydroclone overflow)
- Whether the sample was collected as a grab or as a composite (and note the compositing period used)
- Description of any qualifiers for the measurement;
- For metals, whether the sample was analyzed as total recoverable or dissolved
- Identification of FGD system(s) and steam electric generating unit(s) that the sample represents (report FGD System IDs and associated steam electric generating units from Table B-1); and
- Flow rate (only if flow rate data were recorded at the sampling point during the sampling period)

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: B
Section Title: 6. FGD Monitoring Data

Instructions: Throughout this section, you will be required to provide information on monitoring data for untreated *FGD scrubber purge* (or *slurry discharge*) for all *wet FGD systems* that the plant operates, reported in Table B-1. This section does not need to be completed for planned systems. Please provide all free response answers in the highlighted yellow areas.

CBI?
☐ Yes

B6-2. Complete Table B-9 for all monitoring data for untreated FGD scrubber purge (or slurry discharge) collected by the plant (for any reason) in the 12 months prior to receiving the ICR for any of the following analytes: metals (including monitoring data for total recoverable or dissolved metals analyses), ammonia, nitrate/nitrite, total Kjeldahl nitrogen (TKN), and total cyanide. Complete a separate table for each different FGD scrubber purge (or slurry discharge) stream for which the plant is providing monitoring data. Report all results. Identify results that are less than the method detection limit (MDL), and results that are between the detection and reporting limits. For Question B6-2, identify the FGD systems and steam electric generating units associated with the FGD scrubber purge data provided in the table. Refer to the instructions in Part B Section 6 if you need assistance completing Table B-9.

Identify the FGD systems and steam electric generating units associated with the FGD scrubber purge (or slurry discharge) monitoring data provided in the table below. Use the FGD system IDs identified in Table B-1 and the SE unit IDs identified in Table A-8. [Check all that apply.]

☐ FGD-1 ☐ FGD-4 ☐ SE Unit-1 ☐ SE Unit-4 ☐ SE Unit-7 ☐ SE Unit-10
☐ FGD-2 ☐ FGD-5 ☐ SE Unit-2 ☐ SE Unit-5 ☐ SE Unit-8
☐ FGD-3 ☐ FGD-6 ☐ SE Unit-3 ☐ SE Unit-6 ☐ SE Unit-9

Table B-9. Monitoring Data for Untreated FGD Scrubber Purge (or Slurry Discharge)

Analyte	CAS Number	Measured Value Including Units*			Analytical method	Method Detection Limit		Reporting Limit		Date Sample Collected	Location Collected	Collected as a Grab or Composite	Description of Qualifiers	Analyzed as Total Recoverable or Dissolved**	Flow Rate of FGD Scrubber Purge (or Slurry Discharge) at Time of Sampling (gpm)
		Non-Detect Indicator	Value	Units		Value	Units	Value	Units						
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	

Approved: May 20, 2010

		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	
		Non Detec		Units			Units		Units			Grab/Composit		Total Recoverable/D	

*If not detected, list the detection limit value and select the less than (<) symbol in the non-detect indicator column.

**Only answer for metals

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: B
Section Title: 7. FGD Wastewater Treatment

Instructions: Throughout this section, you will be required to provide information for all *wet FGD systems* that the plant operates, reported in Table B-1. This section does not need to be completed for planned systems. Please provide all free response answers in the highlighted yellow areas.

CBI?
☐ Yes

B7-1. Does the plant transfer the *FGD scrubber purge* (or *slurry discharge*) to a *settling pond*?

○ Yes (Continue)
○ No (Skip to Question B7-4)

CBI?
☐ Yes

B7-2. Indicate which *process wastewaters* are commingled with the FGD scrubber purge (or slurry discharge) in the settling pond. [Check all boxes that apply.]

☐ Fly ash sluice	☐ Bottom ash sluice
☐ Metal cleaning waste	☐ Boiler blowdown
☐ Mill reject sluice	☐ Other, explain:
☐ None	☐ Other, explain:

CBI?
☐ Yes

B7-3. If the FGD scrubber purge (or slurry discharge) is commingled with *bottom ash* or *fly ash sluice* water in the pond(s), select the option below that best describes the configuration of the pond(s). If neither option applies, provide an explanation in the space provided:

☐ "True" commingling: FGD scrubber purge (or slurry discharge) and bottom ash and/or fly ash sluice water are combined in one pond dedicated to the treatment of both waters
☐ FGD scrubber purge (or slurry discharge) is treated in a FGD pond and subsequently commingled with ash water in a dedicated ash pond
☐ FGD scrubber purge (or slurry discharge) is not commingled with other wastewaters
☐ FGD scrubber purge (or slurry discharge) wastewater is treated using a wastewater treatment system other than a settling pond and subsequently commingled with ash water in a dedicated ash pond
☐ Other, explain:

CBI?
☐ Yes

B7-4. Indicate wastewater treatment technologies used to treat the FGD scrubber purge (or slurry discharge). [Check all boxes that apply.]

☐ Settling pond
☐ Chemical precipitation
☐ Biological reactor – aerobic
☐ Biological reactor – anoxic/anaerobic
☐ Mechanical vapor compression (brine concentrator)
☐ Constructed wetlands
☐ Mechanical vapor compression (brine concentrator) with spray dryer
☐ Mechanical vapor compression (brine concentrator) with crystallizer
☐ Other, explain: ______

CBI?
☐ Yes

B7-5. Indicate all intermediate and final destination(s) of the *treated* FGD scrubber purge (or slurry discharge). If the plant recycles the treated FGD scrubber purge (or slurry discharge), indicate the plant process to which this water is recycled. [Check all that apply].

☐ Immediately recycled back to plant process. Please describe how the treated FGD scrubber purge (or slurry discharge) is reused:
______
☐ Discharged to surface water. Provide NPDES permitted outfall number (from Part A Section 2.2): ______
☐ Indirect discharge to a publicly or privately owned treatment works
☐ Deep well injection
☐ Other, explain: ______

CBI?
☐ Yes

B7-6. Plants that produce gypsum from wet FGD systems may generate water from the storage and handling of gypsum. Examples of gypsum-related waters are *gypsum wash water* and *gypsum pile runoff*. Are gypsum-related waters generated at the plant? Note: gypsum-related water does <u>not</u> include *FGD slurry blowdown* or FGD scrubber purge (or slurry discharge).

○ Yes (Continue)
○ No (Skip to Section 8)

If yes, provide the typical volume of gypsum-related waters generated per day (gpd) and the frequency of water generation (dpy) for calendar year 2009.

______ gpd ______ dpy

CBI?

☐ Yes

B7-7. Indicate how the gypsum-related waters are handled. [Check all boxes that apply.]

☐ Reused in FGD process

☐ Reused in other process operations. Please describe how the gypsum-related waters are reused:

☐ Transferred to treatment system reported in Tables D-1 or D-2. Identify the type of treatment system below. [Check all that apply.]

☐ Settling pond

☐ Chemical precipitation

☐ Biological reactor – aerobic

☐ Biological reactor – anoxic/anaerobic

☐ Mechanical vapor compression (brine concentrator)

☐ Constructed wetlands

☐ Mechanical vapor compression (brine concentrator) with spray dryer

☐ Mechanical vapor compression (brine concentrator) with crystallizer

☐ Other, explain:

☐ Discharged to surface water. Provide NPDES permitted outfall number (from Part A Section 2.2):

☐ Indirect discharge to a publicly or privately owned treatment works

☐ Other, explain:

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name
FGD System ID: Insert System ID

Part: B
Section Title: 8. Dry FGD System Information

Instructions: Throughout this section, you will be required to provide information for each *dry FGD system* that the plant operates, reported in Table B-1. This section does not need to be completed for planned systems. Please provide all free response answers in the highlighted yellow areas.

Make copies of Section 8 and Section 8 tables for each dry FGD system previously defined in Table B-1 using the Copy Section 8 and Section 8 Tables button below. Please note that you will create two new tabs for these sections. You may delete unneeded tabs, if accidently created. Enter the FGD system ID in the space provided above (use FGD system IDs assigned in Table B-1).

CBI?
☐ Yes

B8-1. Did you report use of a dry FGD system in Table B-1?

○ Yes (Continue)
○ No (Skip to next Questionnaire Part)

Copy Section 8 and Section 8 Tables

CBI?
☐ Yes

B8-2. Indicate how the *FGD solid* is removed from the flue gas.

○ ESP
○ Fabric filter
○ Other, specify ____________

CBI?
☐ Yes

B8-3. Is the FGD system located upstream or downstream of the *fly ash* collection system?

◯ Upstream of fly ash collection

◯ Downstream of fly ash collection

CBI?
☐ Yes

B8-4. For water sources that may be used as a source of FGD reagent preparation water (e.g., fresh intake, recycled process water), indicate the maximum chlorides concentration and maximum solids percentage that is acceptable for the water to be used for those purposes. Identify any other criteria that the source water must meet.

☐ Chlorides concentration: ______ ppm

☐ Solids percentage: ______ %

☐ Other, explain: ______

CBI?
☐ Yes

B8-5. Provide the flow rate, duration, and frequency of the FGD reagent preparation water for the FGD system for calendar year 2009.

______ gpm

______ hpd

______ dpy

CBI?
☐ Yes

B8-6. Provide the source of the FGD reagent preparation water used. [Check all boxes that apply.]

☐ Raw intake water

☐ Intake water that has been treated on site prior to use

☐ Process wastewater, specify Process Wastewater ______

☐ Other, explain: ______

CBI?
☐ Yes

B8-7. Is any *FGD wastewater* generated from the operation of the dry FGD scrubber?

◯ Yes (Continue)

◯ No (Skip to Question B8-9)

CBI?
☐ Yes

B8-8. Indicate all intermediate and final destination(s) of the FGD wastewater. If the plant recycles the FGD wastewater, indicate the plant process to which this water is recycled. [Check all that apply].

☐ Immediately recycled back to plant process. Please describe how the FGD wastewater is reused:

☐ Transferred to treatment system reported in Tables D-1 or D-2. Identify the type of treatment system below. [Check all boxes that apply.]

- ☐ Settling pond
- ☐ Chemical precipitation
- ☐ Biological reactor – aerobic
- ☐ Biological reactor – anoxic/anaerobic
- ☐ Mechanical vapor compression (brine concentrator)
- ☐ Constructed wetlands
- ☐ Mechanical vapor compression (brine concentrator) with spray dryer
- ☐ Mechanical vapor compression (brine concentrator) with crystallizer
- ☐ Other, explain:

☐ Discharged to surface water. Provide NPDES permitted outfall number (from Part A Section 2.2):

☐ Indirect discharge to a publicly or privately owned treatment works

☐ Deep well injection

☐ Other, explain:

CBI?
☐ Yes

B8-9. Is any FGD wastewater generated from cleaning the dry FGD scrubber (e.g., power washing during *scheduled* generating unit outages)?

○ Yes (Continue)

○ No (Skip to Question B8-11)

Provide the volume and frequency of wastewater generated from the dry FGD scrubber in 2009.

______ gpd over ______ days

CBI?
☐ Yes

B8-10. Indicate all intermediate and final destination(s) of the FGD wastewater from cleaning. If the plant recycles the FGD wastewater from cleaning, indicate the plant process to which this water is recycled. [Check all that apply].

☐ Immediately recycled back to plant process. Please describe how the FGD wastewater is reused:

☐ Transferred to treatment system reported in Tables D-1 or D-2. Identify the type of treatment system below. [Check all boxes that apply.]

☐ Settling pond
☐ Chemical precipitation
☐ Biological reactor – aerobic
☐ Biological reactor – anoxic/anaerobic
☐ Mechanical vapor compression (brine concentrator)
☐ Constructed wetlands
☐ Mechanical vapor compression (brine concentrator) with spray dryer
☐ Mechanical vapor compression (brine concentrator) with crystallizer
☐ Other, explain:

☐ Discharged to surface water. Provide NPDES permitted outfall number (from Part A Section 2.2):
☐ Indirect discharge to a publicly or privately owned treatment works
☐ Deep well injection
☐ Other, explain:

CBI?
☐ Yes

B8-11. What parameters affect the ability of the FGD solids to be marketed, sold and/or given away? [Check all boxes that apply.]

☐ Chlorides content: ppm
☐ Moisture content: ppm
☐ Other, specify: ppm
☐ None – Industry(ies) to which the FGD solids are marketed has not specified standards for the solids.
☐ N/A – FGD solids are not marketed, sold, or given away.

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name
FGD System ID: Insert System ID

Part: B
Section Title: 8. FGD Solids Disposition and Marketing for Dry FGD Systems

Instructions: Throughout this section, you will be required to provide information on *FGD solids* disposition for all *dry FGD systems* that the plant operates reported in Table B-1. This section does not need to be completed for planned systems. Please provide all free response answers in the highlighted yellow areas.

CBI?
☐ Yes

B8-12. In Table B-10, indicate the ultimate destination of FGD solids from the FGD system and provide the tonnage for each type of storage/handling technique for calendar years 2005, 2007, and 2009. If the FGD solids are stored in a *landfill* or *pond/impoundment*, provide the amount of FGD solids stored permanently and/or temporarily.

For example, a plant may operate a gypsum landfill, and some amount of FGD solids that are transferred to the landfill may later be removed from the landfill and sold for use in wallboard manufacturing. In this case, the amount of FGD solids sold for wallboard manufacturing should be identified in BOTH the "Landfills reported in Table A-6: Stored temporarily" category AND the "Marketed and Sold" category. In this same example, all the FGD solids that are transferred to the landfill and left in the landfill should be identified as "Landfills reported in Table A-6: Stored permanently."

Table B-10. FGD Solids Disposition for 2005, 2007, and 2009

Ultimate Destination of FGD Solids		Amount Disposed in 2005 (tons)	Amount Disposed in 2007 (tons)	Amount Disposed in 2009 (tons)
Sent to Landfills reported in Table A-6	Stored permanently			
	Stored temporarily (later hauled off-site/marketed)			
Sent to Pond/Impoundment reported in Table A-4	Stored permanently			
	Stored temporarily (later hauled off-site/marketed)			
Sent to Landfills not reported in Table A-6				
Sent to Pond/Impoundment not reported in Table A-4				
Marketed and sold				
Given away				
Other, explain:				
Other, explain:				

CBI?
☐ Yes

B8-13. Complete Table B-11 if the plant markets, sells, and/or gives away the FGD solids from this FGD system. For each destination, provide the tons of FGD solids for which the FGD solids are marketed, sold, and/or given away. Also provide the gross revenue generated from marketing/selling the FGD solids for each destination.

Table B-11. FGD Solids Marketed/Sold in 2005, 2007, and 2009

Destination	2005		2007		2009	
	Tons	Gross Revenue Generated ($)	Tons	Gross Revenue Generated ($)	Tons	Gross Revenue Generated ($)
FGD Solids Marketing						
FGD Solids Marketing						
FGD Solids Marketing						
FGD Solids Marketing						
FGD Solids Marketing						
FGD Solids Marketing						

CBI?
☐ Yes

B8-14. In Table B-12, provide the total cost incurred to remove or dispose of FGD solids from 2005 to 2009 including the cost for labor, materials, transportation, and energy. Also provide the cost by component. Include other components not provided in the list of processes in the yellow box provided.

Table B-12. Cost Incurred to Remove or Dispose of FGD Solids

Process	2005	2007	2009
	Total Costs Incurred	Total Costs Incurred	Total Costs Incurred
Solids separation	$	$	$
Solids dewatering	$	$	$
Hauling FGD solids	$	$	$
Cost of on site disposal	$	$	$
Cost of off site disposal	$	$	$
Other:	$	$	$
Other:	$	$	$
Other:	$	$	$
Total	**$**	**$**	**$**

Plant Name: Insert Plant ID
Plant ID: Insert Plant Name

Part: B
Section Title: Part B Comments

Instructions: Cross reference your comments by question number and indicate the confidential status of your comment by checking the box next to “Yes” under "CBI?" (Confidential Business Information).

	Question Number	Comment
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		

Approved: May 20, 2010

CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		

Steam Electric Questionnaire Code Tables

Process Wastewaters	
For Use in Tables and Questions throughout Parts A, B, C, D, and F.	
Air heater cleaning water	AHCW
Ash pile runoff	APR
Boiler blowdown	BB
Boiler fireside cleaning water	BFCW
Boiler tube cleaning water	BTCW
Bottom ash sluice	BAS
Carbon capture wastewater	CCAPW
Coal pile runoff	CPR
Combined ash sluice	CAS
Combustion turbine cleaning (combustion gas portion of turbine) water	COMBCW
Combustion turbine cleaning (compressor portion of the turbine) water	COMPRCW
Combustion turbine evaporative coolers blowdown	TECB
Cooling tower blowdown	CTB
FGD scrubber purge	SCRBP
FGD slurry blowdown	FGDB
Filter Backwash	FLTBW
Floor drain wastewater	FDW
Flue gas mercury control system wastewater	FGMCW
Fly ash sluice	FAS
General runoff	GR
Gypsum pile runoff	GPR
Gypsum wash water	GYPWW
Ion exchange wastewater	IXW
Landfill runoff - capped landfill	LRC
Landfill runoff - uncapped landfill	LRUC
Leachate	LEACH
Limestone pile runoff	LPR
Mill reject sluice	MRS

Treated Wastewaters	
For Use as Effluents from Pond/Impoundment Systems and/or Wastewater Treatment Systems in Part D, Table D-4.	
Effluent - 1	EFF-1
Effluent - 2	EFF-2
Effluent - 3	EFF-3
Effluent - 4	EFF-4
Effluent - 5	EFF-5
Effluent - 6	EFF-6
Filter backwash	FltBW
Sludge	SLDG
For Use as Influents to Pond/Impoundment Systems and/or Wastewater Treatment Systems in Part D, Table D-3, AND Recycled Waters Throughout Questionnaire.	
POND-1 Effluent	POND-1-EFF
POND-2 Effluent	POND-2-EFF
POND-3 Effluent	POND-3-EFF
POND-4 Effluent	POND-4-EFF
POND-5 Effluent	POND-5-EFF
POND-6 Effluent	POND-6-EFF
POND-7 Effluent	POND-7-EFF
POND-8 Effluent	POND-8-EFF
POND-9 Effluent	POND-9-EFF
POND-10 Effluent	POND-10-EFF
POND-A Effluent	POND-A-EFF
POND-B Effluent	POND-B-EFF
POND-C Effluent	POND-C-EFF
WWT-1 Effluent	WWT-1-EFF
WWT-2 Effluent	WWT-2-EFF
WWT-3 Effluent	WWT-3-EFF
WWT-4 Effluent	WWT-4-EFF
WWT-5 Effluent	WWT-5-EFF

Steam Electric Questionnaire Code Tables

Process Wastewaters	
For Use in Tables and Questions throughout Parts A, B, C, D, and F.	
Once -through cooling water	CW
Reverse osmosis reject water	RORW
SCR catalyst regeneration wastewater	SCRRW
SCR catalyst washing wastewater	SCRWW
Soot blowing wash water	SOOTW
Steam turbine cleaning water	STCW
Yard drain wastewater	YARDW

Treated Wastewaters	
For Use as Influents to Pond/Impoundment Systems and/or Wastewater Treatment Systems in Part D, Table D-3, AND Recycled Waters Throughout Questionnaire.	
WWT-6 Effluent	WWT-6-EFF
WWT-A Effluent	WWT-A-EFF
WWT-B Effluent	WWT-B-EFF
WWT-C Effluent	WWT-C-EFF

Steam Electric Questionnaire Code Tables

Wastewater Treatment Units	
For Use in Tables and Questions Throughout Parts D and F.	
Adsorptive media	ADSORB
Aerobic Biological Reactor	AERBIO
Anaerobic Biological Reactor	ANBIO
Aerobic/Anaerobic Biological Reactor	AER/ANBIO
Chemical Precipitation Reaction Tank 1 - 1	CP-1-1
Chemical Precipitation Reaction Tank 1 - 2	CP-1-2
Chemical Precipitation Reaction Tank 2 - 1	CP-2-1
Chemical Precipitation Reaction Tank 2 - 2	CP-2-2
Chemical Precipitation Reaction Tank 3 - 1	CP-3-1
Chemical Precipitation Reaction Tank 3 - 2	CP-3-2
Clarification, Primary - 1	CL-P-1
Clarification, Primary - 2	CL-P-2
Clarification, Secondary - 1	CL-S-1
Clarification, Secondary - 2	CL-S-2
Clarification, Tertiary - 1	CL-T-1
Clarification, Tertiary - 2	CL-T-2
Constructed wetland - Cell 1	CWL -1
Constructed wetland - Cell 2	CWL -2
Constructed wetland - Cell 3	CWL -3
Constructed wetland - Cell 4	CWL -4
Constructed wetland - Cell 5	CWL -5
Constructed wetland - Cell 6	CWL -6
Constructed wetland system	CWTS
Equalization, Primary	EQ-P
Equalization, Secondary	EQ-S
Filter, Microfiltration - 1	FLT-M-1
Filter, Microfiltration - 2	FLT-M-2

Destinations	
For Use in Tables and Questions Throughout Parts A, C, D, and F.	
Burned on site	BURN
Deep-well injection	DWELL
Discharge to POTW	POTW
Discharge to PrOTW	PrOTW
Discharge to surface water	SW
Evaporation	EVAP
Hauled off site for reuse (removal fee)	HAULR - RF
Hauled off site for reuse (given away)	HAULR - GA
Hauled off site for reuse (marketed and sold)	SOLD
Hauled off site for disposal	HAUL
Mixed with fly ash for disposal	MFA
On-site landfill (as reported in Table A-6)	LANDF
POND-1	POND-1
POND-2	POND-2
POND-3	POND-3
POND-4	POND-4
POND-5	POND-5
POND-6	POND-6
POND-7	POND-7
POND-8	POND-8
POND-9	POND-9
POND-10	POND-10
POND-A	POND-A
POND-B	POND-B
POND-C	POND-C
WWT-1	WWT-1
WWT-2	WWT-2

Steam Electric Questionnaire Code Tables

Wastewater Treatment Units	
For Use in Tables and Questions Throughout Parts D and F.	
Filter, Microfiltration - 3	FLT-M-3
Filter, Microfiltration - 4	FLT-M-4
Filter, Sand/Gravity - 1	FLT-S-1
Filter, Sand/Gravity - 2	FLT-S-2
Filter, Sand/Gravity - 3	FLT-S-3
Filter, Sand/Gravity - 4	FLT-S-4
Filter, Ultrafiltration - 1	FLT-U-1
Filter, Ultrafiltration - 2	FLT-U-2
Filter, Ultrafiltration - 3	FLT-U-3
Filter, Ultrafiltration - 4	FLT-U-4
Filter press - 1	FP-1
Filter press - 2	FP-2
Holding tank	HT
Ion exchange	IX
Natural wetlands	NW
pH adjustment - 1	PH-1
pH adjustment - 2	PH-2
pH adjustment - 3	PH-3
Reverse osmosis	ROS
Pond Unit - 1	SPD-1
Pond Unit - 2	SPD-2
Pond Unit - 3	SPD-3
Pond Unit - 4	SPD-4
Pond Unit - 5	SPD-5
Pond Unit - 6	SPD-6
Pond Unit - 7	SPD-7
Pond Unit - 8	SPD-8
Pond Unit - 9	SPD-9

Destinations	
For Use in Tables and Questions Throughout Parts A, C, D, and F.	
WWT-3	WWT-3
WWT-4	WWT-4
WWT-5	WWT-5
WWT-6	WWT-6
WWT-A	WWT-A
WWT-B	WWT-B
WWT-C	WWT-C
Reuse as boiler water	RECYC - BW
Reuse as bottom ash sluice	RECYC - BAS
Reuse as combined ash sluice	RECYC - CAS
Reuse as FGD slurry preparation water	RECYC - FGDP
Reuse as FGD absorber makeup	RECYC - FGDAB
Reuse as fly ash sluice	RECYC - FAS
Reuse as mill reject sluice	RECYC - MRS
Reuse in cooling towers	RECYC - CW

Steam Electric Questionnaire Code Tables

Wastewater Treatment Units	
For Use in Tables and Questions Throughout Parts D and F.	
Pond Unit - 10	SPD-10
Pond Unit - 11	SPD-11
Pond Unit - 12	SPD-12
Pond Unit - 13	SPD-13
Pond Unit - 14	SPD-14
Settling tank - 1	ST-1
Settling tank - 2	ST-2
Settling tank - 3	ST-3
Settling tank - 4	ST-4
Settling tank - 5	ST-5
Thickener - 1	TH-1
Thickener - 2	TH-2
Vacuum drum filter - 1	VF-1
Vacuum drum filter - 2	VF-2
Vacuum filter belt - 1	VFB-1
Vacuum filter belt - 2	VFB-2

Solids Handling	
For Use as Planned Solids Handling for the FGD Slurry Blowdown in Part B Table B-2.	
Centrifuge - 1	CENT-1
Centrifuge - 2	CENT-2
Centrifuge - 3	CENT-3
Centrifuge - 4	CENT-4
Hydrocyclones - 1	HYC-1
Hydrocyclones - 2	HYC-2
Hydrocyclones - 3	HYC-3
Hydrocyclones - 4	HYC-4
Filter press - 1	FP-1
Filter press - 2	FP-2
Thickener - 1	TH-1
Thickener - 2	TH-2
Vacuum drum filter - 1	VF-1
Vacuum drum filter - 2	VF-2
Vacuum filter belt - 1	VFB-1
Vacuum filter belt - 2	VFB-2

Yes/No
Select
No
Yes

Materials of Construction
Select
2205 stainless steel
255 stainless steel
316L stainless steel
317LM stainless steel
317LMN stainless steel
625 stainless steel
Carbon Steel
Ceramic
Duplex Stainless Steel
Fiberglass
Masonry Tile Lined Carbon Steel
Masonry Tile Lined Concrete
Mild Stainless Steel
Nickel Alloy Steel
Nickel Alloy Steel Lined Carbon Steel
Plastic
Plastic Lined Carbon Steel
Rubber Lined Carbon Steel
Rubber Lined Concrete
Super Austenitic Stainless Steel
Other (specify to the right)

Grab/Composite
Select
Composite
Grab

Recirculation/Single Pass
Select
Recirculation
Single Pass

Steam Electric Generating Units
Select
SEUnit-1
SEUnit-2
SEUnit-3
SEUnit-4
SEUnit-5
SEUnit-6
SEUnit-7
SEUnit-8
SEUnit-9
SEUnit-10

Type of FGD System
Select
Circulating dry scrubber
Jet bubbling reactor
Mechanically aided
Packed
Spray
Spray/Tray
Spray Dryer
Tray
Venturi
Other (specify below)

New/Existing
Select
Existing
New

FGD System ID
Select
FGD-1
FGD-2
FGD-3
FGD-4
FGD-5
FGD-6
FGD-A
FGD-B
FGD-C

FGD System ID (no planned)
Select
FGD-1
FGD-2
FGD-3
FGD-4
FGD-5
FGD-6

Type of Sorbent
Select
Lime
Limestone
Magnesium Lime
Magnesium Oxide
Soda Ash
Sodium Hydroxide
Other (specify)
Not Applicable

FGD System ID (Planned)
Select
FGD-A
FGD-B
FGD-C

FGD System Water Source
Select
Air heater cleaning water
Ash pile runoff
Boiler blowdown
Boiler fireside cleaning water
Boiler tube cleaning water
Bottom ash sluice
Carbon capture wastewater
Coal pile runoff
Combined ash sluice
Combustion turbine cleaning (combustion gas portion of turbine) water
Combustion turbine cleaning (compressor portion of the turbine) water
Combustion turbine evaporative coolers blowdown
Cooling tower blowdown
FGD scrubber purge (or slurry discharge)
FGD slurry blowdown
Filter Backwash
Floor drain wastewater
Flue gas mercury control system wastewater
Fly ash sluice
General runoff
Gypsum pile runoff
Gypsum wash water
Ion exchange wastewater
Landfill runoff - capped landfill
Landfill runoff - uncapped landfill
Leachate
Limestone pile runoff
Mill reject sluice
Once -through cooling water
Raw intake water
Raw intake water as makeup
Reverse osmosis reject water
SCR catalyst regeneration wastewater
SCR catalyst washing wastewater
Soot blowing wash water
Steam turbine cleaning water
Treated intake water
Treated intake water as makeup
Yard drain wastewater

Process Wastewater
Select
Air heater cleaning water
Ash pile runoff
Boiler blowdown
Boiler fireside cleaning water
Boiler tube cleaning water
Bottom ash sluice
Carbon capture wastewater
Coal pile runoff
Combined ash sluice
Combustion turbine cleaning (combustion gas portion of turbine) water
Combustion turbine cleaning (compressor portion of the turbine) water
Combustion turbine evaporative coolers blowdown
Cooling tower blowdown
FGD scrubber purge (or slurry discharge)
FGD slurry blowdown
Filter Backwash
Floor drain wastewater
Flue gas mercury control system wastewater
Fly ash sluice
General runoff
Gypsum pile runoff
Gypsum wash water
Ion exchange wastewater
Landfill runoff - capped landfill
Landfill runoff - uncapped landfill
Leachate
Limestone pile runoff
Mill reject sluice
Once -through cooling water
Reverse osmosis reject water
SCR catalyst regeneration wastewater
SCR catalyst washing wastewater
Soot blowing wash water
Steam turbine cleaning water
Yard drain wastewater
Other (specify to the right)

FGD Solids Marketing
Select
Agriculture
Blended cement/raw feed for clinker
Concrete/concrete products
Flowable fill
Gypsum panel products (not wallboard)
Mining applications
Soil modification/stabilization
Structural fills/embankments
Wallboard manufacturing
Waste stabilization/solidification
Other (specify):

Total Recoverable/Dissolved
Select
Dissolved
Total Recoverable
N/A

Units
Select
mg/L
ug/L
ng/L

Non Detect Indicators
Select
<

Electronic Filing - Received, Clerk's Office : 04/09/2014

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Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Steam Electric Questionnaire

PART C - ASH HANDLING

Table of Contents

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

PART C. ASH HANDLING

INSTRUCTIONS

Part C requests information about ash handling operations at your plant. Complete Part C if ash is generated in any fossil-fueled steam electric generating units at your plant. See Part A Section 8 for steam electric generating unit fuel classifications.

As you are completing the electronic form, note the following: When you enter your plant name and plant ID on the Part C TOC tab, all name and ID fields throughout Part C will automatically populate. Refer to the overall questionnaire instructions, the glossary, and the acronym list for assistance with completing Part C.

Please provide all free response answers in the highlighted yellow areas. Throughout Part C, you may need to make copies of certain sections/questions. Instructions are provided throughout Part C regarding making copies. Note that Steam Electric Unit IDs or Storage IDs must be populated on the copied tab or section, located in the upper right corner under "Plant ID" and "Plant Name", in order to correlate the requested information with the steam electric unit or ash handling system.

Where the questionnaire indicates to provide an attachment, an electronic format (e.g., PDF) is preferred; however, hardcopies are also acceptable.

Use the Part C Comments tab to do the following: provide additional information as requested in certain questions within Part C; indicate atypical data (e.g., if 2009 information is not representative of normal operations); and note methods used to make best engineering estimates in the event that exact data are not available.

Refer to the following definitions throughout Part C:

"Fly ash collection" is the separation of fly ash from the flue gas. Examples of fly ash collection equipment include ESPs and baghouses. Fly ash may also be collected by wet scrubbers.

"Fly ash conveyance" is the conveyance of fly ash from the fly ash collection equipment (ESP or baghouse) of one or more generating units to intermediate or final storage (e.g., storage silos or ponds/impoundments). Common dry fly ash conveyance components include filter/separators, vacuum/pressure transfer stations, high pressure blowers, and associated high pressure piping (note that conveyance does NOT include the storage/loading silos). Wet fly ash conveyance equipment is used to sluice fly ash and pump it to wet ash storage (e.g., ash ponds/impoundments).

"Bottom ash conveyance" is the conveyance of bottom ash from the boiler(s) of one or more generating units to the intermediate or final storage of the bottom ash. Dry bottom ash conveyance does not use water to convey bottom ash to intermediate/final storage. Dry bottom ash conveyance includes systems that collect and convey the bottom ash without any use of water, as well as systems in which bottom ash is conveyed mechanically or pneumatically away from a quench water bath (e.g., submerged chain conveyor systems). Wet bottom ash conveyance uses water (i.e., a sluice) to convey bottom ash away from the boiler to intermediate/final storage (e.g., ponds/impoundments). Note that dewatering bins are considered part of bottom ash conveyance.

"Intermediate storage" refers to a facility or site where collected fly ash or bottom ash is stored after conveyance and prior to being transported to final disposal. Dry fly ash intermediate storage typically consists of storage silos. Dry bottom ash intermediate storage typically consists of stackout piles for the bottom ash collected from mechanical drag systems. Wet fly ash or bottom ash intermediate storage typically consists of ponds/impoundments.

"Ash transport/disposal" refers to the transportation of ash from intermediate storage to final disposal. Examples of ash transport/disposal include transportation used to haul ash off site (e.g., ash that is marketed and shipped off site to a reuse application). Ash transport typically consists of roads and vehicles that are used to transport the ash.

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: C
Section Title: 1. Ash Generation

CBI?
☐ Yes

C1-1. Is ash generated in any fossil-fueled steam electric generating units at the plant? See Part A Section 8 for steam electric generating unit fuel classifications.

○ Yes (Continue)
○ No (Skip to next Questionnaire Part)

CBI?
☐ Yes

C1-2. In Table C-1, indicate the total acreage of the *plant* for each of the following categories, including all contiguous and non-adjoining property within 20 miles under the operational control of the plant or operated by the same ultimate parent, and receiving the plant's waste.

Table C-1. Plant Acreage Breakdown

Category	Acreage
Total Plant Area	
Parking lots	
Buildings and Other Developed Areas	
Active/Inactive/Open ash ponds	
Active/Inactive/Open landfills	
Closed ponds/impoundments and landfills	
Unusable land (e.g., wetlands, cooling reservoir) Specify type(s):	
Other:	
Other:	

CBI?
☐ Yes

C1-3. Is fly ash generated in any fossil-fueled steam electric generating units at the plant? See Part A Section 8 for steam electric generating unit fuel classifications.

○ Yes (Continue)
○ No (Skip to Section 3.1)

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name
SE Unit ID: Insert Unit ID

Part: C
Section Title: 2.1. Fly Ash Handling - Generating Unit Level Information

Instructions: Throughout Section 2.1 (Questions C2-1 through C2-24), provide ash handling information for each steam electric generating unit operated at any time in 2009, including units that may have been idle for an extended period of time. Make copies of Section 2.1 for each steam electric generating unit using the "Copy Section 2.1" button below. Enter the steam electric generating Unit ID (use Unit IDs assigned in Table A-8) in the space above titled "SE Unit ID".

Copy Section 2.1

CBI?
☐ Yes

C2-1. Provide fly ash handling information in Table C-2, for each steam electric generating unit reported in Table A-8, following these instructions:

- Provide fly ash handling information at the steam electric generating unit level. For the purpose of this questionnaire, more than one type of fly ash handling (e.g., wet sluicing, mechanical system) may be selected for one generating unit. Check all types of fly ash handling that apply to this steam electric generating unit.
- For the "Type of Fly Ash Collection", only mark "Wet scrubber" if it is the ONLY means of collection. **Note: For any fly ash handling systems marked as "Wet scrubber", do NOT complete the remainder of Part C, Section 2 AND proceed to Part C, Section 3.1.**
- Provide the wet conveyed "Typical Amount of Fly Ash Produced in 2009 (Dry weight basis)" as tons of ash produced per day prior to sluicing from this steam electric generating unit.

Table C-2. Fly Ash Handling Systems Operated in 2009 by Generating Unit

Type of Fly Ash Collection	Type of Fly Ash Handling	Typical Amount of Fly Ash Produced in 2009 (Dry weight basis)		Design Ash Handling Rate (Dry weight basis)		Number of Days Ash was Conveyed in 2009		Loss on Ignition of Fly Ash Produced (Provide typical range for 2009)	
		Wet Conveyed	Dry Conveyed	Wet Conveyed	Dry Conveyed	Wet Conveyed	Dry Conveyed	Wet Conveyed	Dry Conveyed
○ ESP(s), dry, hot side ○ ESP(s), dry, cold side ○ ESP(s), wet ○ Baghouse(s) (fabric filter) ○ Wet scrubber(s) (only) ○ Other: ______	☑ Wet sluicing (hydraulic) ☐ Wet vacuum system (pneumatic) ☑ Dry vacuum system ☐ Pressure system ☐ Combined vacuum/pressure system ☐ Mechanical system ☐ Other: ______	*1,500* tpd *165* dpy	*1,500* tpd *200* dpy	*2,000* tpd *365* dpy	*2,000* tpd *365* dpy	*165* days	*200* days	*1* to *2* %	*1* to *2* %
○ ESP(s), dry, hot side ○ ESP(s), dry, cold side ○ ESP(s), wet ○ Baghouse(s) (fabric filter) ○ Wet scrubber(s) (only) ○ Other: ______	☐ Wet sluicing (hydraulic) ☐ Wet vacuum system (pneumatic) ☐ Dry vacuum system ☐ Pressure system ☐ Combined vacuum/pressure system ☐ Mechanical system ☐ Other: ______	____ tpd ____ dpy	____ tpd ____ dpy	____ tpd ____ dpy	____ tpd ____ dpy	____ days	____ days	____ to ____ %	____ to ____ %

Approved: May 20, 2010

CBI?
☐ Yes

C2-2. Is wet sluicing a type of fly ash handling for this steam electric generating unit?

○ Yes (Continue)

○ No (Skip to Question C2-6)

Provide information for *wet fly ash handling* in Table C-3. For the source of sluice water, you may enter more than one source from the following options:

- "IN" if *raw intake water* is used;
- "IN-Makeup" if raw intake water is only used as makeup;
- "TR" for use of *intake water* that has been *treated* on site prior to use;
- "TR-Makeup" if treated intake water is used only as makeup; and/or
- Process wastewater and/or treated wastewater described in the code tables on the "Code Tables" tab provided at the end of this workbook.

An example is provided in Table C-3 for a plant that uses the effluent from its ash pond (WWT-1, as would be defined in Part A) for fly ash sluicing and also makes up for losses with untreated river water (which is code IN-Makeup as shown above).

Table C-3. Process Wastewater Generated from Wet Fly Ash Handling in 2009

Average Sluice Water Flow Rate (gpd)	Typical Duration AND Frequency of Sluicing (hpd AND dpy)	Source(s) of Sluice Water	Percent Contribution of Source to Sluice Water Flow
EXAMPLE:		WWT-1 Effluent	*90* %
14,400,000 gpd	*24* hpd	IN-Makeup	*10* %
	365 dpy	Sluice Water Source	%
		Other:	%
		Sluice Water Source	%
gpd	hpd	Sluice Water Source	%
	dpy	Sluice Water Source	%
		Other:	%

CBI?
☐ Yes

C2-3. For water sources that may be used as a source of *fly ash sluice* water (e.g., fresh intake, recycled process water), indicate the maximum chlorides concentration and the maximum solids percentage that is acceptable for the water to be used for those purposes. [Check all boxes that apply.]

☐ Chlorides concentration, less than: ______ ppm

☐ Solids percentage, less than: ______ %

☐ Other: ______ ______ ppm

CBI?
☐ Yes

C2-4. Is any of the wet *fly ash sluice* water immediately recycled (e.g., without treatment such as a pond) back to the plant process?

○ Yes (Continue)

○ No (Skip to Question C2-5)

Describe how the wet *fly ash sluice* is reused:

______

CBI? ☐ Yes

C2-5. Is any of the wet *fly ash sluice* indirectly discharged to a publicly or privately owned treatment works, either with or without pretreatment?

○ Yes

○ No

CBI? ☐ Yes

C2-6. Is a wet vacuum system (pneumatic) a type of fly ash handling for this steam electric generating unit?

○ Yes (Continue)

○ No (Skip to Question C2-9)

CBI? ☐ Yes

C2-7. Provide the typical volume of the vacuum water of the *wet vacuum system* generated annually (gpy) and the number of days during which this process wastewater is generated.

________ gpy ________ dpy

CBI? ☐ Yes

C2-8. What is the destination(s) of the vacuum water for the dry fly ash handling system? If the plant recycles the process wastewater, indicate the plant process to which this process wastewater is recycled. [Check all boxes that apply.]

☐ Immediately recycled back to plant process. Please describe how the process wastewater is reused:

☐ Transferred to on-site treatment system. Identify the type of treatment system below. [Check all boxes that apply.

☐ Settling pond ☐ Constructed wetlands
☐ pH adjustment ☐ Other, specify:
☐ Chemical precipitation

☐ Discharged to surface water. Provide NPDES permitted outfall number (from Part A Section 2.2):

☐ Indirect discharge to a publicly or privately owned treatment works

☐ Other, explain:

CBI? ☐ Yes

C2-9. In Table C-4, identify the destination(s) for fly ash from this steam electric generating unit. Provide the distribution of the wet and dry fly ash by destination and whether the storage identified is an intermediate or final destination.

Note: The sum of the percentage of ash distribution should equal 100% for the dry and wet fly ash, separately.

Table C-4. Storage Destinations that Receive Fly Ash

Dry Conveyed Fly Ash			Wet Conveyed Fly Ash		
Storage Destination(s)	**Percent of Dry Conveyed Fly Ash to this Destination**	**Destination Type**	**Storage Destination(s)**	**Percent of Wet Conveyed Fly Ash to this Destination**	**Destination Type**
Storage Destination Table If other, explain:	%	○ Intermediate ○ Final	Storage Destination Table If other, explain:	%	○ Intermediate ○ Final
Storage Destination Table If other, explain:	%	○ Intermediate ○ Final	Storage Destination Table If other, explain:	%	○ Intermediate ○ Final
Storage Destination Table If other, explain:	%	○ Intermediate ○ Final	Storage Destination Table If other, explain:	%	○ Intermediate ○ Final
Storage Destination Table If other, explain:	%	○ Intermediate ○ Final	Storage Destination Table If other, explain:	%	○ Intermediate ○ Final
Storage Destination Table If other, explain:	%	○ Intermediate ○ Final	Storage Destination Table If other, explain:	%	○ Intermediate ○ Final
Total Dry	**100 %**		**Total Wet**	**100 %**	

CBI? ☐ Yes

C2-10. Was the fly ash from this steam electric generating unit conveyed both *wet and dry* in 2009?

○ Yes (Continue)
○ No (Skip to Question C2-13)

CBI? ☐ Yes

C2-11. Indicate why fly ash from the steam electric generating unit was conveyed both wet and dry in 2009. [Check all boxes that apply.] For each selection, identify the number of days in 2009 the wet system was operated for this reason.

☐ Wet fly ash handling system operated during times in which the dry fly ash was not marketable. ____ days
☐ Wet fly ash handling system operated when the dry fly ash collection system was not operational due to maintenance issues. ____ days
☐ Wet fly ash handling system operated in order to maintain its function as a backup to the dry system (i.e., wet system operated to ensure that it is still functional.) ____ days
☐ Wet fly ash handling system operated because the dry fly ash handling system does not have the capacity to handle all of the fly ash. ____ days
☐ Other, explain: ____ ____ days

CBI? ☐ Yes

C2-12. What modifications would be required to handle all the fly ash with the dry fly ash handling system? [Check all boxes that apply.]

☐ No system modifications necessary. Procedural changes would be sufficient.
☐ Increase the capacity of the silo(s).
☐ Increase the number of silos.
☐ Modify the loading silos to have the ability to moisture condition the ash.
☐ Install/increase the capacity of landfills.
☐ Increase the capacity of the dry fly ash conveying equipment.
☐ Design/develop new infrastructure to dispose of dry ash. Specify new infrastructure needed: ____
☐ Other, explain: ____

CBI? ☐ Yes

C2-13. If the current fly ash handling operations for the steam electric generating unit are expected to significantly change by December 31, 2020, indicate how (i.e., convert to or add dry handling capability). [Check all boxes that apply.]

☐ Expand capacity (handling and/or storage).
☐ Decreased use of wet fly ash handling system. ____ (expected operating days per year for wet system)
☐ End use of wet fly ash handling system. ____ (expected end date)
☐ No change expected in fly ash handling operations.
☐ Other, explain: ____

CBI? ☐ Yes

C2-14. Was dry fly ash handling installed as a retrofit to the steam electric generating unit?

○ NA, this unit does not use dry fly ash handling (Skip to Question C2-17)
○ No (Skip to Question C2-17)
○ Yes (Continue)

Year Built: ____

Shutdown time (days) required to bring dry fly ash handling system on line: ____

Was a generating unit outage(s), outside of regularly scheduled outages, required to bring the dry fly ash handling system on line?

○ Yes
○ No

CBI? ☐ Yes

C2-15. What type of retrofit was the dry fly ash handling system?

○ The retrofit was made to an existing dry system.	(Skip to Question C2-23)
○ A dry fly ash handling system was installed (for operation in addition to the wet fly ash handling system).	(Continue)
○ The retrofit was a complete conversion from a wet to dry fly ash handling system.	(Continue)

CBI? ☐ Yes

C2-16. Describe the changes that were required to retrofit (for a retrofit to an existing dry system, an installation of a dry system, or a complete conversion from wet to dry). [Check all boxes that apply.]

- ☐ Physical changes to facility
  - ☐ Installation of pressure/vacuum system and piping
  - ☐ Expansion of pressure/vacuum system and piping
  - ☐ Installation of storage silos
  - ☐ Modification of the silos to moisture-condition the ash
  - ☐ Modification of the silos for ash transfer to rail cars
  - ☐ Modification of the silos for marketable ash
  - ☐ Construction of haul roads
  - ☐ Construction of rail track
  - ☐ Construction of landfill. Provide the landfill ID(s) from Table A-6: ________
  - ☐ Increasing landfill capacity. Provide the landfill ID(s) from Table A-6: ________
  - ☐ Changes to air permit
  - ☐ Other, explain: ________
- ☐ Changes in personnel/training, explain: ________
- ☐ Changes in ash disposal practices
  - ☐ Storage of ash in landfills. Provide the landfill ID(s) from Table A-6: ________
  - ☐ Marketing of ash
  - ☐ Hauling ash to off-site storage
  - ☐ Dust suppression activities
  - ☐ Other, explain: ________

CBI? ☐ Yes

C2-17. Is the plant in the process of installing a dry fly ash handling system to handle some or all of the ash currently handled by the wet fly ash handling system?

○ Yes Estimated shutdown time (days) required to bring dry fly ash handling system online: ________ (Skip to Question C2-19)

○ No (Continue to Question C2-18)

CBI? ☐ Yes

C2-18. Is the plant planning to install a dry fly ash handling system by December 31, 2020 to handle some or all of the ash currently handled by the wet fly ash handling system?

○ Yes Estimated shutdown time (days) required to bring dry fly ash handling system online: ________ (Continue to Question C2-19)

○ No (Skip to Question C2-22)

CBI? ☐ Yes

C2-19. If the plant is in the process of installing, or planning to install, a dry fly ash handing system by December 31, 2020, provide the cost estimates that have been developed for such a conversion/installation.

○ Yes (Provide documentation/costs, for example, bid proposals or internal plant engineering estimates.)

○ No (Skip to Question C2-22)

Note: All bid proposals and/or other documentation/costs originally submitted to the plant as CBI, should be marked CBI for the purpose of this collection request.

○ I have attached documentation/costs.

○ I did not attach documentation/costs. Below, explain why:

CBI? ☐ Yes

C2-20. Describe the modifications that will be required to install the dry fly ash handling system. [Check all boxes that apply.]

- ☐ Physical changes to facility
  - ☐ Installation of pressure/vacuum system and piping
  - ☐ Expansion of pressure/vacuum system and piping
  - ☐ Installation of storage silos
  - ☐ Modification of the silos to moisture-condition the ash
  - ☐ Modification of the silos for ash transfer to railcars
  - ☐ Modification of the silos for marketable ash
  - ☐ Construction of haul roads
  - ☐ Construction of rail track
  - ☐ Construction of landfill. Provide the landfill ID(s) from Table A-6:
  - ☐ Increasing landfill capacity. Provide the landfill ID(s) from Table A-6:
  - ☐ Changes to air permit
  - ☐ Other, explain:
- ☐ Changes in personnel/training, explain:
- ☐ Changes in ash disposal practices
  - ☐ Storage of ash in landfills. Provide the landfill ID(s) from Table A-6:
  - ☐ Marketing of ash
  - ☐ Hauling ash to off-site storage
  - ☐ Dust suppression activities
  - ☐ Other, explain:

CBI?
☐ Yes

C2-21. Indicate the types of destinations expected for the dry fly ash from the planned system and the percentage of the dry fly ash that is expected to go to each destination. [Check all boxes that apply.]

☐ Marketed, sold, and/or given away

Market Destinations ____ % of the dry fly ash

If other, specify: ____

Market Destinations ____ % of the dry fly ash

If other, specify: ____

Market Destinations ____ % of the dry fly ash

If other, specify: ____

☐ Stored in landfills reported in Table A-6 ____ % of the dry fly ash

☐ Stored in landfills NOT reported in Table A-6 ____ % of the dry fly ash

☐ Other, specify:
____ ____ % of the dry fly ash

CBI?
☐ Yes

C2-22. If the plant is not in the process of installing or planning to install a dry fly ash handling system, have cost estimates been obtained/developed since January 1, 1995, for such a conversion/installation?

○ Yes (Provide documentation/costs, for example, bid proposals or internal plant engineering estimates.)

○ No (Skip to Question C2-23)

Note: All bid proposals and/or other documentation/costs originally submitted to the plant as CBI, should be marked CBI for the purpose of this collection request.

○ I have attached documentation/costs.

○ I did not attach documentation/costs. Below, explain why:

____

CBI?
☐ Yes

C2-23. Has the plant encountered any unscheduled outages on this generating unit caused by the fly ash handling system in the last five years?

○ Yes (Continue)

○ No (Skip to Section 2.2)

Approved: May 20, 2010

CBI?
☐ Yes

C2-24. In Table C-5, provide information on unscheduled generating unit outages caused by fly ash handling for each of the last five years.

Table C-5. Unscheduled Generating Unit Outages Caused by Fly Ash Handling

Year	Ash Handling	Total Days of Outage	Reason(s) for outage(s)	Method(s) Used to Resolve Outage(s)
2005	Dry			
	Wet			
2006	Dry			
	Wet			
2007	Dry			
	Wet			
2008	Dry			
	Wet			
2009	Dry			
	Wet			

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: C
Section Title: 2.2. Fly Ash Handling - Storage and Use Data

Instructions: Complete Section 2.2 (Questions C2-25 through C2-29). Provide information for fly ash handling and fly ash storage at the plant.

CBI?
☐ Yes

C2-25. For each storage destination reported in Table C-4, provide the distance the fly ash is transported from the generating unit to intermediate storage or from intermediate storage to the final disposal/destination, the amount of fly ash transported in 2009, and the percent moisture of the fly ash entering storage, if transported dry. Additionally, for each destination indicate how the fly ash is transported by entering one of the following options: conveyor belt, pipe, truck, barge, rail, or other (provide a description). If the fly ash is sold to more than one destination (e.g., some fly ash is sold for cement manufacturing and some is sold for structural fill) enter the average percent moisture for all fly ash sold in Table C-6. Tables C-8 and C-9 will request information by market.

Table C-6. Fly Ash Storage Information

Storage Destination ID	Distance from the Generating Unit to Intermediate Storage or from the Intermediate Storage to the Final Disposal/Destination	Tons of Fly Ash Transported to Destination in 2009 (dry weight basis)	How is Fly Ash Transported to Destination?	Percent Moisture of the Fly Ash Entering Destination (if transported dry)
Storage Destination Table Other:	miles	tons	Storage Transport If other, explain:	% ☐ NA, transported wet
Storage Destination Table Other:	miles	tons	Storage Transport If other, explain:	% ☐ NA, transported wet
Storage Destination Table Other:	miles	tons	Storage Transport If other, explain:	% ☐ NA, transported wet
Storage Destination Table Other:	miles	tons	Storage Transport If other, explain:	% ☐ NA, transported wet
Storage Destination Table Other:	miles	tons	Storage Transport If other, explain:	% ☐ NA, transported wet
Storage Destination Table Other:	miles	tons	Storage Transport If other, explain:	% ☐ NA, transported wet
Storage Destination Table Other:	miles	tons	Storage Transport If other, explain:	% ☐ NA, transported wet
Storage Destination Table Other:	miles	tons	Storage Transport If other, explain:	% ☐ NA, transported wet
Storage Destination Table Other:	miles	tons	Storage Transport If other, explain:	% ☐ NA, transported wet

CBI?
☐ Yes

C2-26. Is water used to moisten the fly ash?

○ Yes (Continue)

○ No (Skip to Question C2-28)

For each storage destination reported in Table C-4, provide information on water used to moisten the fly ash.

Table C-7. Water Used to Moisten the Fly Ash

Storage Destination ID	Source of the Water Used	Maximum Chlorides Concentration of Water Used to Moisten the Ash (ppm)	Maximum Solids Percentage of Water Used to Moisten the Ash (%)	Other Criteria
Storage Destination Table Other:	☐ Raw Intake Water ☐ Intake water that has been treated on site prior to use ☐ Process Wastewaters Other: ☐ Process Wastewaters Other:	ppm	%	
Storage Destination Table Other:	☐ Raw Intake Water ☐ Intake water that has been treated on site prior to use ☐ Process Wastewaters Other: ☐ Process Wastewaters Other:	ppm	%	
Storage Destination Table Other:	☐ Raw Intake Water ☐ Intake water that has been treated on site prior to use ☐ Process Wastewaters Other: ☐ Process Wastewaters Other:	ppm	%	
Storage Destination Table Other:	☐ Raw Intake Water ☐ Intake water that has been treated on site prior to use ☐ Process Wastewaters Other: ☐ Process Wastewaters Other:	ppm	%	

Storage Destination Table Other:	☐ Raw Intake Water ☐ Intake water that has been treated on site prior to use ☐ Process Wastewaters Other: ☐ Process Wastewaters Other:	ppm	%	
Storage Destination Table Other:	☐ Raw Intake Water ☐ Intake water that has been treated on site prior to use ☐ Process Wastewaters Other: ☐ Process Wastewaters Other:	ppm	%	
Storage Destination Table Other:	☐ Raw Intake Water ☐ Intake water that has been treated on site prior to use ☐ Process Wastewaters Other: ☐ Process Wastewaters Other:	ppm	%	
Storage Destination Table Other:	☐ Raw Intake Water ☐ Intake water that has been treated on site prior to use ☐ Process Wastewaters Other: ☐ Process Wastewaters Other:	ppm	%	
Storage Destination Table Other:	☐ Raw Intake Water ☐ Intake water that has been treated on site prior to use ☐ Process Wastewaters Other: ☐ Process Wastewaters Other:	ppm	%	

CBI?
☐ Yes

C2-27. Indicate the criteria that the plant uses to determine if a water source is unacceptable for use (*recycle/reuse*) to moisten the ash. If the criteria are dictated by engineering design, provide specific elements of the design that dictate use.

CBI?
☐ Yes

C2-28. Does the plant market, sell, and/or give away fly ash from the dry ash handling system?

○ Yes (Continue)

○ No (Skip to Question C2-29)

Complete Table C-8 if the plant markets, sells, and/or gives away fly ash from the dry fly ash handling system. For each destination, provide the tons of fly ash marketed, sold, and/or given away, the gross revenue generated from marketing/selling the dry fly ash for calendar years 2005, 2007, and 2009. Additionally, provide the typical percent moisture of the fly ash during calendar years 2005, 2007, and 2009. If the typical percent moisture of the fly ash was not constant during calendar years 2005, 2007, and 2009, note this information (include all typical percent moisture values for each year) in the Comments page.

Table C-8. Fly Ash from the Dry Fly Ash Handling System Marketed/Sold in Calendar Years 2005, 2007, and 2009

Destination	Typical Percent Moisture of Fly Ash	2005		2007		2009	
		Tons (dry basis)	Gross Revenue Generated $	Tons (dry basis)	Gross Revenue Generated $	Tons (dry basis)	Gross Revenue Generated $
Concrete/Concrete Products/Grout	%						
Blended Cement/Raw Feed for Clinker	%						
Flowable Fill	%						
Structural Fills/Embankments	%						
Road Base/Sub-base	%						
Soil Modification/ Stabilization	%						
Mineral Filler in Asphalt	%						
Snow and Ice Control	%						
Blasting Grit/Roofing Granules	%						
Mining Applications	%						
Waste Stabilization/ Solidification	%						
Agriculture	%						
Aggregate	%						
Other:	%						
Other:	%						

CBI?
☐ Yes

C2-29. Does the plant market, sell, and/or give away fly ash from the wet ash handling system?

○ Yes (Continue)

○ No (Skip to Section 2.3)

Complete Table C-9 if the plant currently markets, sells, and/or gives away fly ash transported by wet sluicing from the fly ash handling system. For each destination, provide the tons, on a dry basis, of fly ash transported by wet sluicing that is marketed, sold, and/or given away. Also provide the gross revenue generated from marketing/selling the fly ash transported by wet sluicing for each destination.

Table C-9. Fly Ash Transported by Wet Sluicing from the Fly Ash Handling System Marketed/Sold in Calendar Years 2005, 2007, and 2009

Destination	Typical Percent Moisture of Fly Ash	2005		2007		2009	
		Tons (dry basis)	Gross Revenue Generated $	Tons (dry basis)	Gross Revenue Generated $	Tons (dry basis)	Gross Revenue Generated $
Concrete/Concrete Products/Grout	%						
Blended Cement/Raw Feed for Clinker	%						
Flowable Fill	%						
Structural Fills/Embankments	%						
Road Base/Sub-base	%						
Soil Modification/ Stabilization	%						
Mineral Filler in Asphalt	%						
Snow and Ice Control	%						
Blasting Grit/Roofing Granules	%						
Mining Applications	%						
Waste Stabilization/ Solidification	%						
Agriculture	%						
Aggregate	%						
Other:	%						
Other:	%						

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name
Unit ID: Insert Unit ID

Part: C
Section Title: 2.3. Fly Ash Cost Information - Conveyance

Instructions: Complete Section 2.3 (Questions C2-30 through C2-36) for the conveyance of fly ash (wet or dry) from each unit identified in Table A-8. Provide these data for each fly ash handling system that began operating or was converted after January 1, 2000. Enter the Unit ID (use Unit IDs assigned in Table A-8) in the space provided above.

If you indicated in Question C2-17 or C2-18 that the plant is either installing or planning to install dry fly ash handling for this unit, complete Section 2.3, and check the "Planned" checkbox below.

☐ Planned

Make copies of Section 2.3 for each wet and dry fly ash handling system conveying ash from this unit that was operated in 2009, that began operating on or after January 1, 2000, is being installed, or planned to be installed by December 31, 2020 using the "Copy Section 2.3" button below.

The conveyance portion of the fly ash handling system refers to the part of the system that conveys fly ash from the fly ash collection equipment (ESP or baghouse) of the generating unit to intermediate or final storage (e.g., storage silos or ponds/impoundments). Common dry fly ash conveyance components include filter/separators, vacuum/pressure transfer stations, blowers, and associated high pressure piping (note that conveyance does NOT include storage or loading silos nor does it include movement between intermediate and final storage). Common wet fly ash conveyance components include sluicing equipment, associated piping, and pumps (note that conveyance does NOT include ponds/impoundments).

Note: If any components of the conveyance portion of the fly ash handling system are shared with one or more other generating units, only report those components and corresponding costs once.

Copy Section 2.3

CBI?
☐ Yes

C2-30. Identify the major components of the conveyance portion of the fly ash handling system, in particular those components that represent a <u>significant</u> portion of the capital or O&M costs for the system. Provide the type of component and the number of each type of component in the system. Additionally, provide the total system capacity of each type of unit component (i.e., volume of clarifying tanks). Total system capacity should equal the sum of the capacity of each individual component within that type.

Table C-10. Fly Ash System Components - Conveyance

Type of Component	Number of Components in the System	Total System Capacity of Components	
Fly Ash Conveyance Components			Component Units
Other:			If other, specify:
Fly Ash Conveyance Components			Component Units
Other:			If other, specify:
Fly Ash Conveyance Components			Component Units
Other:			If other, specify:
Fly Ash Conveyance Components			Component Units
Other:			If other, specify:
Fly Ash Conveyance Components			Component Units
Other:			If other, specify:
Fly Ash Conveyance Components			Component Units
Other:			If other, specify:
Fly Ash Conveyance Components			Component Units
Other:			If other, specify:
Fly Ash Conveyance Components			Component Units
Other:			If other, specify:

CBI?
☐ Yes

C2-31. Attach a block diagram that shows the entire fly ash handling system operations for this generating unit. Label the conveyance, intermediate storage (see Part C Section 2.4) and transport/disposal (see Part C Section 2.5) portions of the system. The diagram should include all major components indicated in Tables C-10 and C-13, if applicable, and identify all intermediate and final ash storage destinations. Indicate the movement of ash as well as water through the system. If ash from other generating units is combined with ash from this unit, indicate where the ash is combined and the portions of the ash handling system involved. Provide as many diagrams as necessary to convey this information. Include the plant name, plant ID, and unit ID in the upper right hand corner of the diagram.

Note: If the respondent indicates that the ash is transported to a pond/impoundment, in Question C2-38, the intermediate storage and disposal information will be provided in Part D. Therefore, the block diagram should only include the conveyance system(s).

☐ Diagram attached.

CBI?
☐ Yes

C2-32. List all of the major components of this fly ash conveyance system that a contractor(s) constructed/installed (or will construct/install, for planned systems) at the contractor's expense (i.e., not at the plant's expense).

☐ Contractor installed/will install ALL components identified in Table C-10 at the contractor's expense.

CBI?
☐ Yes

C2-33. List all of the operation and maintenance activities of this fly ash conveyance system that a contractor(s) oversees (or will oversee, for planned systems) at the contractor's expense (i.e., not at the plant's expense).

☐ Contractor oversees/will oversee ALL operation and maintenance activities dealing with the conveyance portion of the fly ash handling system at the contractor's expense .

CBI?

☐ Yes

C2-34. In Table C-11, provide costs incurred for this fly ash conveyance system since January 1, 2000, both for the conveyance as originally installed and for any modifications to the conveyance. Include all conveyance costs including costs for components in Table C-10 as well as control systems, pads, and foundations, and all other ancillary equipment. For planned fly ash conveyance systems, provide expected costs. Provide the best engineering estimates when actual data are not readily available. For all costs, do not adjust for inflation. For example, if the plant incurred a land cost in 2002, enter the cost in the "Cost" column and enter "2002" in the "Year on which Cost is Based" column.

Note: Provide only the costs incurred by the PLANT, not the costs paid for by the contractor. For example, if an outside contractor purchased and installed all equipment for the conveyance portion of the fly ash handling system at the contractor's expense, the plant should fill out "$ 0" for the cost of "Purchased Equipment". Any contractor costs/fees incurred by the plant should be accounted for in the "Engineering Contract Firm Costs" and "Other Contractor's Fees" categories.

Table C-11. Capital Cost for Conveyance of Fly Ash Handling

Project	Cost for System as Originally Installed	Cost for Modifications to System	Year on Which Cost is Based	
			Original Cost	Modification Cost
Direct Costs				
Purchased equipment (including all equipment for the installation or the upgrade: mechanical equipment; piping; instrumentation; electrical equipment; spare parts; freight charges; taxes; insurance; and duties)	$	$		
Purchased equipment installation (including installation of all equipment; piping; instrumentation/calibration; electrical equipment; mechanical equipment; structural supports, insulation, and paint)	$	$		
Buildings (including buildings constructed to house ash handling system components, operator rooms, or other operations associated with the system; as well as plumbing, heating, ventilation, dust collection, air conditioning, lighting, telephones, intercoms, painting, sprinklers, fire alarms)	$	$		
Site preparation (including site clearing, all demolition, grading, roads, walking areas, fences)	$	$		
Land (including property costs and survey fees)	$	$		
Total Direct Costs	**$**	**$**		
Indirect Costs				
Engineering Costs (including process design and general engineering, cost engineering, consulting fees, supervision, inspection for each category below)				
a. Engineering Contract Firm Costs	$	$		
b. Owner's Overhead Engineering Costs	$	$		
☐ Hired outside engineering firm to oversee design and/or installation of the system.				
Construction expenses (including temporary construction offices, roads, communications, fencing; construction tools and equipment; permits, taxes, insurance)	$	$		
Other Contractor's Fees	$	$		
Contingency actually expended (to compensate for unpredictable events such as storms, floods, strikes, price changes, errors in estimates, design changes, etc.)	$	$		
Total Indirect Costs	**$**	**$**		
Total Capital Cost	**$**	**$**		

CBI?
☐ Yes

C2-35. Are all major components of the conveyance portion of the fly ash handling system included in the capital costs reported in Table C-11?

○ Yes (Skip to Question C2-36)
○ No (Continue)

Please explain what system components are included in the capital costs listed in Table C-11. Additionally, identify the key components of the conveyance portion of the fly ash handling system that are not included in the capital costs reported in Table C-11.

CBI?
☐ Yes

C2-36. Provide annual (2009) O&M costs data in Table C-12 for this fly ash conveyance system, if it began operating or was converted on or after January 1, 2000. Provide best engineering estimates when actual data are not readily available. If you provide an estimate, note the methods that were used to make the estimates in the Comments page.

Note: Provide only the cost data incurred by the PLANT, not the costs paid for by the contractor. For example, if an outside contractor operates and maintains the intermediate storage portion of the fly ash handling system at the contractor's expense, the plant should fill out "$ 0" for O&M costs. Any contractor costs/fees incurred by the plant should be accounted for in the Table C-11 "Engineering Contract Firm Costs" and "Other Contractor's Fees" categories.

Table C-12. O&M Cost for Conveyance of Fly Ash Handling for 2009

O&M Cost Category	2009 Annual Cost	2009 Rate	2009 Staffing/Consumption
Operating Labor	$	$ Per hour (average rate of labor)	No. of workers hpd dpy
Maintenance Labor	$	$ Per hour (average rate of labor)	No. of workers hpd dpy
Maintenance Materials	$		
Energy	$	$ per kWh	kWh/hr
Other:	$		
Other:	$		
Total O&M Cost (2009)	$		

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name
Storage ID Insert Storage ID

Part: C
Section Title: 2.4. Fly Ash Cost Information - Intermediate Storage

Instructions: Complete Section 2.4 (Questions C2-37 through C2-44) for each intermediate storage destination identified in Table C-6 that began operating or was modified after January 1, 2000. Enter the storage ID in the space provided above (use the storage IDs assigned in Table C-6).

If you indicated in Question C2-17 or C2-18 that the plant is either installing or planning to install dry fly ash handling for this unit, complete Section 2.4, and check the "Planned" checkbox below.

☐ Planned

Make copies of Section 2.4 for each fly ash handling system operated in 2009, that began operating on or after January 1, 2000, is being installed, or planned to be installed by December 31, 2020 using the "Copy Section 2.4" button below.

If you are instructed to skip forward to another section while completing this section for one fly ash storage destination, be sure to complete this section for all other fly ash storage destinations operated in 2009, being installed, or planned to be installed by December 31, 2020.

The intermediate storage portion of the fly ash handling system refers to the facility/site where collected fly ash is stored after conveyance, prior to the ash being transported to final disposal. Dry fly ash intermediate storage typically consists of storage silos. Wet fly ash intermediate storage typically consists of ponds/impoundments.

Note that intermediate storage includes all equipment and operations associated with loading dry or moisture-conditioned ash into trucks or rail cars for transport (but does not include the actual transport). Intermediate storage also includes all ash dust suppression activities at the plant, expect those at a pond/impoundment or landfill.

Copy Section 2.4

CBI? ☐ Yes

C2-37. Does this storage component store both fly and bottom ash together? For example, if bottom ash and fly ash are conveyed separately but stored in a common silo, the silo is considered a shared component.

○ Yes Provide unit IDs, as assigned in A-8, contributing bottom ash to this storage component. ____________

○ No

CBI? ☐ Yes

C2-38. Is this storage destination a *pond/impoundment*?

○ Yes (Skip to Section 2.5)

○ No (Continue)

CBI? ☐ Yes

C2-39. Identify the major components of the intermediate storage portion of the fly ash handling system, in particular those components that represent a significant portion of the capital or O&M costs for the system. Provide the type of component and the number of each type of component in the system. Additionally, provide the total system capacity of each component (i.e., volume of silos). Total system capacity should equal the sum of the capacity of each individual component within that type.

Table C-13. Fly Ash Handling System Components - Intermediate Storage

Type of Component	Number of Components in the System	Total System Capacity of Components	
Fly Ash Intermediate Storage Components			Component Units
Other:			If other, specify:
Fly Ash Intermediate Storage Components			Component Units
Other:			If other, specify:
Fly Ash Intermediate Storage Components			Component Units
Other:			If other, specify:
Fly Ash Intermediate Storage Components			Component Units
Other:			If other, specify:
Fly Ash Intermediate Storage Components			Component Units
Other:			If other, specify:
Fly Ash Intermediate Storage Components			Component Units
Other:			If other, specify:
Fly Ash Intermediate Storage Components			Component Units
Other:			If other, specify:
Fly Ash Intermediate Storage Components			Component Units
Other:			If other, specify:

CBI? ☐ Yes

C2-40. List all of the major components of this intermediate storage destination that a contractor(s) constructed/installed (or will construct/install, for planned systems) at the contractor's expense (i.e., not at the plant's expense).

☐ Contractor installed/will install ALL components identified in Table C-13 at the contractor's expense.

CBI? ☐ Yes

C2-41. List all of the operation and maintenance activities associated with this intermediate storage destination that a contractor(s) oversees (or will oversee, for planned systems) at the contractor's expense (i.e., not at the plant's expense).

☐ Contractor oversees/will oversee ALL operation and maintenance activities dealing with the intermediate storage portion of the fly ash handling system at the contractor's expense .

CBI?
☐ Yes

C2-42. Provide cost data in Table C-14 for this intermediate storage destination, both for the storage as originally installed and for any modifications to the storage system, since January 1, 2000. Include all intermediate storage costs including costs for components in Table C-13 as well as control systems, pads and foundations, and all other ancillary equipment. For planned storage systems, provide expected costs. Provide the best engineering estimates when actual data are not readily available. For all costs, do not adjust for inflation. For example, if the plant incurred a land cost in 2002, enter the cost in the "Cost" column and enter "2002" in the "Year on which Cost is Based" column.

Note: Capital costs associated with ponds/impoundments are requested in Part D and capital costs associated with landfills/landfilling are requested in Part F. Do NOT include the costs for ponds and landfills in Table C-14.

Note: Provide only the cost data incurred by the PLANT, not the costs paid for by the contractor. For example, if an outside contractor purchased all rail cars and/or trucks for the transportation of the fly ash at the contractor's expense, the plant should fill out "$ 0" for the cost of "Purchased Equipment". Any contractor costs/fees incurred by the plant should be accounted for in the "Engineering Contract Firm Costs" and "Other Contractor's Fees" categories.

Table C-14. Capital Cost for Intermediate Storage of Fly Ash Handling

Project	Cost for System as Originally Installed	Cost for Modifications to System	Year on Which Cost is Based	
			Original Cost	Modification Cost
Direct Costs				
Purchased equipment (including all equipment for the installation or the upgrade: mechanical equipment; piping; instrumentation; electrical equipment; spare parts; freight charges; taxes; insurance; and duties)	$	$		
Purchased equipment installation (including installation of all equipment; piping; instrumentation/calibration; electrical equipment; mechanical equipment; structural supports, insulation, and paint)	$	$		
Buildings (including buildings constructed to house ash handling system components, operator rooms, or other operations associated with the system; as well as plumbing, heating, ventilation, dust collection, air conditioning, lighting, telephones, intercoms, painting, sprinklers, fire alarms)	$	$		
Site preparation (includes site clearing, all demolition, grading, roads, walking areas, fences)	$	$		
Land (includes property costs and survey fees)	$	$		
Total Direct Costs	**$**	**$**		
Indirect Costs				
Engineering Costs (including process design and general engineering, cost engineering, consulting fees, supervision, inspection for each category below)				
a. Engineering Contract Firm Costs	$	$		
b. Owner's Overhead Engineering Costs	$	$		
☐ Hired outside engineering firm to oversee design and/or installation of the system.				
Construction expenses (including temporary construction offices, roads, communications, fencing; construction tools and equipment; permits, taxes, insurance)	$	$		
Other Contractor's Fees	$	$		
Contingency actually expended (to compensate for unpredictable events such as storms, floods, strikes, price changes, errors in estimates, design changes, etc.)	$	$		
Total Indirect Costs	**$**	**$**		
Total Capital Cost	**$**	**$**		

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CBI?
☐ Yes

C2-43. Are all major components of the intermediate storage destination included in the capital costs reported in Table C-14?

○ Yes (Skip to Question C2-44)
○ No (Continue)

Please explain what system components are included in the capital costs listed in Table C-14. Additionally, identify the key components intermediate storage destination that are not included in the capital costs reported in Table C-14.

CBI?
☐ Yes

C2-44. Provide annual O&M costs data in Table C-15 for this intermediate storage destination, if it began operating or was modified on or after January 1, 2000. Provide best engineering estimates when actual data are not readily available. If you provide an estimate, note the methods that were used to make the estimates in the Comments page.

Note: O&M costs associated with ponds/impoundments are requested in Part D and O&M costs associated with landfills/landfilling are requested in Part F. Do NOT include the costs for ponds and landfills costs in Table C-15.

Note: Provide only the cost data incurred by the PLANT, not the costs paid for by the contractor. For example, if an outside contractor operates and maintains the intermediate storage portion of the fly ash handling system at the contractor's expense, the plant should fill out "$ 0" for O&M costs. Any contractor costs/fees incurred by the plant should be accounted for in the Table C-14 "Engineering Contract Firm Costs" and "Other Contractor's Fees" categories.

Table C-15. O&M Cost for Intermediate Storage of Fly Ash Handling for 2009

O&M Cost Category	2009 Annual Cost	2009 Rate	2009 Staffing/Consumption
Operating Labor (Water Trucks Only)	$	$ Per hour (average rate of labor)	No. of workers hpd dpy
Operating Labor (All other operating costs)	$	$ Per hour (average rate of labor)	No. of workers hpd dpy
Maintenance Labor	$	$ Per hour (average rate of labor)	No. of workers hpd dpy
Maintenance Materials	$		
Energy	$	$ per kWh	kWh/hr
Other:	$		
Other:	$		
Total O&M Cost (2009)	$		

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: C
Section Title: 2.5. Fly Ash Cost Information - Transport/Disposal

Instructions: Complete Section 2.5 (Questions C2-45 through C2-52) for all transport/disposal of fly ash from fly ash handling systems that began operating or was modified after January 1, 2000, and those systems being installed, or planned to be installed by December 31, 2020.

The transport/disposal portion of the fly ash handling system refers to the transportation of fly ash from intermediate storage to final disposal.

An example of ash transport/disposal is transportation used to haul ash off site (e.g., ash that is marketed and shipped off site to a reuse application). Ash transport typically consists of roads and vehicles that are used to transport the ash. The capital and O&M costs for ash transport/disposal may include the road or rail infrastructure (roads, tracks, lights), the trucks and rail cars, the operation and maintenance costs associated with the trucks and rail cars, and ash disposal fees.

Note that capital and operation and maintenance costs associated with ponds/impoundments and landfills/landfilling are requested in Parts D and F, respectively, and they should not be provided here in Section 2.5.

CBI? ☐ Yes

C2-45. Does the plant use the same transport and disposal equipment for both fly and bottom ash? For example, if fly ash and bottom ash are transported using the same trucks, the trucks are considered a shared component.

○ Yes — Provide unit IDs, as assigned in A-8, and storage IDs, provided in Table C-6, contributing bottom ash to the transport and disposal system.

○ No — (Continue)

CBI? ☐ Yes

C2-46. Is a *pond/impoundment* unit or *pond/impoundment system* the final destination of all fly ash collected by the plant?

○ Yes — (Skip to Section 3.1)

○ No — (Continue)

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CBI?
☐ Yes

C2-47. What methods are used to transport the collected fly ash to the final disposal? [Check all boxes that apply.]

☐ Trucks

How many trucks does the plant use for the transportation and disposal of dry fly ash?

Indicate whether the trucks were bought, leased or contracted out.

☐ Bought
☐ Leased
☐ Contracted out

☐ Rail cars

How many rail cars does the plant use for the transportation and disposal of dry fly ash?

Indicate whether the rail cars were bought, leased or contracted out.

☐ Bought
☐ Leased
☐ Contracted out

☐ Other, specify (e.g., barge):

CBI?
☐ Yes

C2-48. List all of the major components for transport/disposal of fly ash that a contractor(s) constructed/installed (or will construct/install, for planned systems) at the contractor's expense (i.e., not at the plant's expense).

☐ Contractor installed/will install ALL ash transport/disposal equipment and/or infrastructure at the contractor's expense.

CBI?
☐ Yes

C2-49. List all of the operation and maintenance activities for transport/disposal of fly ash that a contractor(s) oversees (or will oversee, for planned systems) at the contractor's expense (i.e., not at the plant's expense).

☐ Contractor oversees/will oversee ALL transport/disposal activities at the contractor's expense.

CBI?
☐ Yes

C2-50. Provide cost data in Table C-16 for the transport/disposal of the collected fly ash, both for the transport/disposal as originally installed and for any modifications, since January 1, 2000. For planned transport/disposal systems, provide expected costs. Provide the best engineering estimates when actual data are not readily available. For all costs, do not adjust for inflation. For example, if the plant incurred a land cost in 2002, enter the cost in the "Cost" column and enter "2002" in the "Year on which Cost is Based" column.

Note: Capital costs associated with ponds/impoundments are requested in Part D and capital costs associated with landfills/landfilling are requested in Part F. Do NOT include the costs for ponds and landfills in Table C-16.

Note: Provide only the cost data incurred by the PLANT, not the costs paid for by the contractor. For example, if an outside contractor purchased all rail cars and/or trucks for the transportation of the fly ash at the contractor's expense, the plant should fill out "$ 0" for the cost of "Purchased Equipment". Any contractor costs/fees incurred by the plant should be accounted for in the "Engineering Contract Firm Costs" and "Other Contractor's Fees" categories.

Table C-16. Capital Cost for Transport/Disposal of Collected Fly Ash

Project	Cost for System as Originally Installed	Cost for Modifications to System	Year on Which Cost is Based	
			Original Cost	Modification Cost
Direct Costs				
Purchased equipment (including all equipment for the installation or the upgrade: mechanical equipment; piping; instrumentation; electrical equipment; spare parts; freight charges; taxes; insurance; and duties)	$	$		
Purchased equipment installation (including installation of all equipment; piping; instrumentation/calibration; electrical equipment; mechanical equipment; structural supports, insulation, and paint)	$	$		
Buildings (including buildings constructed to house ash handling system components, operator rooms, or other operations associated with the system; as well as plumbing, heating, ventilation, dust collection, air conditioning, lighting, telephones, intercoms, painting, sprinklers, fire alarms)	$	$		
Site preparation (including site clearing, all demolition, grading, roads, walking areas, fences)	$	$		
Land (includes property costs and survey fees)	$	$		
Total Direct Costs	**$**	**$**		
Indirect Costs				
Engineering Costs (including process design and general engineering, cost engineering, consulting fees, supervision, inspection for each category below:				
a. Engineering Contract Firm Costs	$	$		
b. Owner's Overhead Engineering Costs	$	$		
☐ Hired outside engineering firm to oversee design and/or installation of the system.				
Construction expenses (includes temporary construction offices, roads, communications, fencing; construction tools and equipment; permits, taxes, insurance)	$	$		
Other Contractor's Fees	$	$		
Contingency actually expended (to compensate for unpredictable events such as storms, floods, strikes, price changes, errors in estimates, design changes, etc.)	$	$		
Total Indirect Costs	**$**	**$**		
Total Capital Cost	**$**	**$**		

CBI?
☐ Yes

C2-51. Are all major components of transport/disposal for the fly ash handling system included in the capital costs reported in Table C-16?

○ Yes　(Skip to Question C2-52)
○ No　(Continue)

Please explain what system components are included in the capital costs listed in Table C-16. Additionally, identify the key components of transport/disposal for the fly ash handling system that are not included in the capital costs reported in Table C-16.

CBI?
☐ Yes

C2-52. Provide annual O&M costs data in Table C-17 for the transport/disposal of the collected fly ash from ash handling systems that began operating on or after January 1, 2000. Provide best engineering estimates when actual data are not readily available. If you provide an estimate, note the methods that were used to make the estimates in the Comments page.

Note: O&M costs associated with ponds/impoundments are requested in Part D and O&M costs associated with landfills/landfilling are requested in Part F. Do NOT include the costs for ponds and landfills in Table C-17.

Note: Provide only the cost data incurred by the PLANT, not the costs paid for by the contractor. For example, if an outside contractor operates the transportation and disposal of the ash at the contractor's expense, the plant should fill out "$ 0" for the cost of all operating O&M costs. Any contractor costs/fees incurred by the plant should be accounted for in the Table C-16 "Engineering Contract Firm Costs" and "Other Contractor's Fees" categories.

Table C-17. O&M Cost for Transport/Disposal of the Fly Ash for 2009

O&M Cost Category	2009 Annual Cost	2009 Rate	2009 Staffing/Consumption	Transport Rate
Operating Labor (Trucks/Rail Cars/Other Transport)	$	$ Per hour (average rate of labor)	No. of workers hpd dpy	Loads per day dpy
Operating Labor (All other operating costs)	$	$ Per hour (average rate of labor)	No. of workers hpd dpy	
Maintenance Labor	$	$ Per hour (average rate of labor)	No. of workers hpd dpy	
Maintenance Materials	$			
Energy	$	$ per kWh	kWh/hr	
Ash Removal/Disposal Fees	$			
Other:	$			
Other:	$			
Total O&M Cost (2009)	$			

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name
SE Unit ID: Insert Unit ID

Part: C
Section Title: 3.1. Bottom Ash Handling - Generating Unit Level Information

Instructions: Throughout Section 3.1 (Questions C3-1 through C3-31), provide ash handling information for each steam electric generating unit operated at any time in 2009, including units that may have been idle for an extended period of time. Make copies of Section 3.1 for each steam electric generating unit using the "Copy Section 3.1" button below. Enter the steam electric generating Unit ID (use Unit IDs assigned in Table A-8) in the space above titled "SE Unit ID".

CBI? ☐ Yes

C3-1. Is bottom ash generated in any fossil-fueled steam electric generating units at the plant? See Part A Section 8 for steam electric generating unit fuel classifications.

○ Yes (Continue)
○ No (Skip to Section 4)

CBI? ☐ Yes

C3-2. Provide bottom ash handling information in Table C-18, for each steam electric generating unit reported in Table A-8, following these instructions:

- Provide bottom ash handling information at the steam electric generating unit level. For the purpose of this questionnaire, more than one type of bottom ash handling (e.g., wet sluicing, SCC) may be selected for one generating unit. Check all types of bottom ash handling that apply to this steam electric generating unit.
- Refer to the glossary and the "Part C Instructions" tab for definitions related to wet and dry bottom ash handling systems.

Table C-18. Bottom Ash Handling Systems Operated in 2009 by Generating Unit

Type of Boiler	Type of Bottom Ash Handling System	Typical Amount of Bottom Ash Produced in 2009 (Dry weight basis)		Typical Percent Moisture of Bottom Ash in 2009		Design Ash Handling Rate (Dry weight basis)		Number of Days Ash was Handled by the Bottom Ash Handling System in 2009		Loss on Ignition of Bottom Ash Produced (Provide typical range for 2009)	
		Wet Conveyed	Dry Conveyed	Wet Conveyed	Dry Conveyed	Wet Conveyed	Dry Conveyed	Wet Conveyed	Dry Conveyed	Wet Conveyed	Dry Conveyed
Wet-bottom Other:	☑ Wet sluicing ☐ Mechanical drag system ☐ Dry vacuum ☐ Dry pressure ☐ Other:	*1,500* tpd *365* dpy	*0* tpd *0* dpy	*30* % ☐ NA	% ☑ NA	*5* tpd *5* dpy	*0* tpd *0* dpy	*365* days	*0* days	*1* to *2* % ☐ Not monitored ☐ NA	to % ☐ Not monitored ☑ NA
Type of Boiler Other:	☐ Wet sluicing ☐ Mechanical drag system ☐ Dry vacuum ☐ Dry pressure ☐ Other:	tpd dpy	tpd dpy	% ☐ NA	% ☐ NA	tpd dpy	tpd dpy	days	days	to % ☐ Not monitored ☐ NA	to % ☐ Not monitored ☐ NA

CBI?
☐ Yes

C3-3. Is wet sluicing used to collect bottom ash for this steam electric generating unit?

○ Yes (Continue)

○ No (Skip to Question C3-11)

Provide information for the wet bottom ash handling system in Table C-19. For the source of sluice water, you may enter more than one source from the following options:

- "IN" if *raw intake water* is used;
- "IN-Makeup" if raw intake water is only used as makeup;
- "TR" for use of *intake water* that has been *treated* on site prior to use;
- "TR-Makeup" if treated intake water is used only as makeup; and/or
- Process wastewater and/or treated wastewater described the code tables on the "Code Tables" tab provided at the end of this workbook.

An example is provided in Table C-19 for a plant that uses the effluent from its ash pond (WWT-1, as would be defined in Part A) for bottom ash sluicing and also makes up for losses with untreated river water (which is code IN-Makeup as shown above).

Table C-19. Process Wastewater Generated from Wet Bottom Ash Handling in 2009

Average Sluice Water Flow Rate (gpd)	Typical Duration AND Frequency of Sluicing (hpd AND dpy)	Source(s) of Sluice Water	Percent Contribution of Source to Sluice Water Flow
EXAMPLE:		WWT-1 Effluent	*90* %
14,400,000 gpd	*24* hpd	IN-Makeup	*10* %
	365 dpy	Sluice Water Source	%
		Other:	%
		Sluice Water Source	%
gpd	hpd	Sluice Water Source	%
	dpy	Sluice Water Source	%
		Other:	%

CBI?
☐ Yes

C3-4. For water sources that may be used as a source of *bottom ash sluice* water (e.g., fresh intake, recycled process water), indicate the maximum chlorides concentration and the maximum solids percentage that is acceptable for the water to be used for those purposes. [Check all boxes that apply.]

☐ Chlorides concentration, less than: ______ ppm

☐ Solids percentage, less than: ______ %

☐ Other: ______ ______ ppm

CBI?
☐ Yes

C3-5. Is any of the wet *bottom ash sluice* water immediately recycled (e.g., without treatment such as a pond) back to plant process?

○ Yes (Continue)

○ No (Skip to Question C3-6)

Describe how the wet *bottom ash sluice* is reused:

CBI?
☐ Yes

C3-6. Is any of the wet *bottom ash sluice* indirectly discharged to a publicly or privately owned treatment works?

○ Yes

○ No

CBI?
☐ Yes

C3-7. Does solids removal (other than in pond(s)/impoundment(s)) occur at the plant?

○ Yes (Continue)

○ No (Skip to Question C3-11)

CBI?
☐ Yes

C3-8. In Table C-20 provide solids removal information, on a dry ton basis, for the wet ash sluice system. For the purpose of Table C-20, solids removal does NOT include ash ponds.

Table C-20. Wet Ash Sluice Systems Operated in 2009

Solids Removal [Check all boxes that apply]	Bottom Ash Disposal [Check all boxes that apply]	Amount (tons) of Solids Disposed (Dry weight basis)	Typical Percent Moisture of Bottom Ash Disposed
☐ Dewatering bin	☐ Sold or given away without further treatment	tons	%
☐ Hydrocyclones	☐ Sold or given away after further treatment	tons	%
☐ Centrifuges	☐ Stored in/transferred to a pond/impoundment reported in Table A-4	tons	%
☐ Filters	☐ Stored in landfills reported in Table A-6	tons	%
☐ Other:	☐ Stored in landfills NOT reported in Table A-6	tons	%
	☐ Other:	tons	%

CBI?
☐ Yes

C3-9. Provide the amount of wastewater overflow from solids removal (e.g., dewatering bins) for the wet ash sluice system.

gpd

CBI?
☐ Yes

C3-10. What is the destination(s) of the wastewater overflow from solids removal? If the plant recycles the wastewater, indicate the amount and the plant process to which this waste is recycled. [Check all boxes that apply.]

☐ Immediately recycled back to plant process.

Provide the amount of wastewater overflow that is recycled.

gpd

Describe how the wastewater overflow is reused:

☐ Transferred to on-site treatment system. Identify the type of treatment system below. [Check all boxes that apply.

☐ Settling pond ☐ Constructed wetlands

☐ pH adjustment ☐ Other, specify:

☐ Discharged to surface water. Provide NPDES permitted outfall number (from Part A Section 2.2):

☐ Indirect discharge to a publicly or privately owned treatment works

☐ Other, explain:

CBI? ☐ Yes

C3-11. Does the plant use a mechanical drag system (e.g., submerged chain conveyor (SCC)) to remove bottom ash from this generating unit boiler?

○ Yes (Continue)

○ No (Skip to Question C3-15)

Name the type and describe the process of removing bottom ash from the generating unit boiler(s).

CBI? ☐ Yes

C3-12. Is any process wastewater generated from overflow, or other means, from the mechanical drag system?

○ Yes (Continue)

○ No (Skip to Question C3-15)

CBI? ☐ Yes

C3-13. Provide the amount of wastewater overflow from the mechanical drag system.

gpd

CBI? ☐ Yes

C3-14. What is the destination(s) of the wastewater overflow from the mechanical drag system? If the plant recycles the wastewater, indicate the amount and the plant process to which this waste is recycled. [Check all boxes that apply.]

☐ Immediately recycled back to plant process.

Provide the amount of wastewater overflow that is recycled.

gpd

Describe how the wastewater overflow is reused:

☐ Transferred to on-site treatment system. Identify the type of treatment system below. [Check all boxes that apply.

☐ Settling pond ☐ Constructed wetlands

☐ pH adjustment ☐ Other, specify:

☐ Discharged to surface water. Provide NPDES permitted outfall number (from Part A Section 2.2):

☐ Indirect discharge to a publicly or privately owned treatment works

☐ Other, explain:

CBI?
☐ Yes

C3-15. In Table C-21, identify the destination(s) for wet and dry bottom ash transferred from the hopper(s) of this steam electric generating unit. Provide the distribution of the wet and dry ash by destination and whether the storage indentified is an intermediate or final destination.

Note: The sum of the percentage of ash distribution should equal 100% for the dry and wet bottom ash, separately.

Table C-21. Storage Destinations that Receive Bottom Ash

Dry Conveyed Bottom Ash			Wet Conveyed Bottom Ash		
Storage Destination(s)	**Percent of Dry Conveyed Bottom Ash to this Destination**	**Destination Type**	**Storage Destination(s)**	**Percent of Wet Conveyed Bottom Ash to this Destination**	**Destination Type**
Storage Destination Table If other, explain:	%	○ Intermediate ○ Final	Storage Destination Table If other, explain:	%	○ Intermediate ○ Final
Storage Destination Table If other, explain:	%	○ Intermediate ○ Final	Storage Destination Table If other, explain:	%	○ Intermediate ○ Final
Storage Destination Table If other, explain:	%	○ Intermediate ○ Final	Storage Destination Table If other, explain:	%	○ Intermediate ○ Final
Storage Destination Table If other, explain:	%	○ Intermediate ○ Final	Storage Destination Table If other, explain:	%	○ Intermediate ○ Final
Storage Destination Table If other, explain:	%	○ Intermediate ○ Final	Storage Destination Table If other, explain:	%	○ Intermediate ○ Final
Total Dry	**100 %**		**Total Wet**	**100 %**	

CBI?
☐ Yes

C3-16. Was the bottom ash from this steam electric generating unit conveyed both *wet and dry* in 2009?

○ Yes (Continue)
○ No (Skip to Question C3-19)

CBI?
☐ Yes

C3-17. Indicate why bottom ash from the steam electric generating unit was conveyed both wet and dry in 2009. [Check all boxes that apply.] For each selection, identify the number of days in 2009 the wet system was operated for this reason.

☐ Wet bottom ash handling system operated during times in which the dry collected bottom ash was not marketable. ______ days
☐ Wet bottom ash handling system operated when the dry bottom ash collection system was not operational due to maintenance issues. ______ days
☐ Wet bottom ash handling system operated in order to maintain its function as a backup to the dry system (i.e., wet system operated to ensure that it is still functional.) ______ days
☐ Wet bottom ash handling system operated because the dry bottom ash handling system does not have the capacity to handle all of the bottom ash. ______ days
☐ Other, explain: ______ ______ days

CBI?
☐ Yes

C3-18. What modifications would be required to handle all the bottom ash with a dry bottom ash handling system? [Check all boxes that apply.]

☐ No system modifications necessary. Procedural changes would be sufficient.
☐ Increase the capacity of the silo(s).
☐ Increase the number of silos.
☐ Modify the loading silos to have the ability to moisture condition the ash.
☐ Install/increase the capacity of landfills.
☐ Increase the capacity of the dry bottom ash conveying equipment.
☐ Design/develop new infrastructure to dispose of dry ash. Specify the new infrastructure needed: ______
☐ Other, explain: ______

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CBI?
☐ Yes

C3-19. If the current bottom ash handling operations for the steam electric generating unit are expected to significantly change by December 31, 2020, indicate how (i.e., convert to or add dry handling capability). [Check all boxes that apply.]

☐ Expand capacity (handling and/or storage).
☐ Decreased use of wet bottom ash handling system. ______ (expected operating days per year for wet system)
☐ End use of wet bottom ash handling system. ______ (expected end date)
☐ No change expected in bottom ash handling operations.
☐ Other, explain: ______

CBI?
☐ Yes

C3-20. Was the dry bottom ash handling installed as a retrofit to the steam electric generating unit?

○ NA, this unit does not use dry bottom ash handling (Skip to Question C3-24)
○ No (Skip to Question C3-24)
○ Yes (Continue)

Year Built: ______

Shutdown time (days) required to bring dry bottom ash handling system on line: ______

Was a generating unit outage(s), outside of regularly scheduled outages, required to bring the dry bottom ash handling system on line?

○ Yes
○ No

CBI?
☐ Yes

C3-21. What type of retrofit was the dry bottom ash handling system?

○ The retrofit was made to an existing dry system. (Skip to Question 3-29)
○ A dry bottom ash handling system was installed (for operation in addition to the wet fly ash handling system). (Continue)
○ The retrofit was a complete conversion from a wet to dry bottom ash handling system. (Continue)

CBI?
☐ Yes

C3-22. Describe the changes that were required to retrofit (for a retrofit to an existing dry system, an installation of a dry system, or a complete conversion from wet to dry). [Check all boxes that apply.]

☐ Physical changes to facility
- ☐ Installation of pressure/vacuum system and piping
- ☐ Boiler alteration to accommodate the mechanical drag system
- ☐ Expansion of pressure/vacuum system and piping
- ☐ Installation of storage silos
- ☐ Modification of the silos to moisture-condition the ash
- ☐ Modification of the silos for ash transfer to rail cars
- ☐ Modification of the silos for marketable ash
- ☐ Construction of haul roads
- ☐ Construction of rail track
- ☐ Construction of landfill. Provide the landfill ID(s) from Table A-6: ______
- ☐ Increasing landfill capacity. Provide the landfill ID(s) from Table A-6: ______
- ☐ Changes to air permit
- ☐ Other, explain: ______

☐ Changes in personnel/training, explain: ______
☐ Changes in ash disposal practices
- ☐ Storage of ash in landfills. Provide the landfill ID(s) from Table A-6: ______
- ☐ Marketing of ash
- ☐ Hauling ash to off-site storage
- ☐ Dust suppression activities
- ☐ Other, explain: ______

CBI? ☐ Yes

C3-23. Attach an engineering process diagram(s) for the dry bottom ash handling system retrofit that depicts (with dimensions) the conveyance portion of the system (e.g., a diagram(s) that depicts how the dry bottom ash system is configured within the building to convey bottom ash from the boiler(s) to the building exit).

☐ Diagram attached.

CBI? ☐ Yes

C3-24. Is the plant in the process of installing a dry bottom ash handling system to handle some or all of the ash currently handled by the wet bottom ash handling system?

○ Yes Estimated shutdown time (days) required to bring dry bottom ash handling system online: ________ (Skip to Question C3-26)

○ No (Continue to Question C3-25)

CBI? ☐ Yes

C3-25. Is the plant planning to install a dry bottom ash handling system to handle some or all of the ash currently handled by the wet bottom ash handling system?

○ Yes Estimated shutdown time (days) required to bring dry bottom ash handling system online: ________ (Continue to Question C3-26)

○ No (Skip to Question C3-29)

CBI? ☐ Yes

C3-26. If the plant is in the process of installing, or planning to install, a dry bottom ash handing system by December 31, 2020, provide the cost estimates that have been developed for such a conversion/installation.

○ Yes (Provide documentation/costs, for example, bid proposals or internal plant engineering estimates.)

○ No (Skip to Question C3-29)

Note: All bid proposals and/or other documentation/costs originally submitted to the plant as CBI, should be marked CBI for the purpose of this collection request.

○ I have attached documentation/costs.

○ I did not attach documentation/costs. Below, explain why:

____

CBI? ☐ Yes

C3-27. Describe the modifications that will be required to install the dry bottom ash handling system. [Check all boxes that apply.]

☐ Physical changes to facility

- ☐ Installation of mechanical drag system
- ☐ Boiler alteration to accommodate the mechanical drag system
- ☐ Installation of completely dry bottom ash handling system
- ☐ Installation of storage silos
- ☐ Modification of the silos to moisture-condition the ash
- ☐ Modification of the silos for ash transfer to rail cars
- ☐ Modification of the silos for marketable ash
- ☐ Construction of haul roads
- ☐ Construction of rail track
- ☐ Construction of landfill. Provide the landfill ID(s) from Table A-6: ________
- ☐ Increasing landfill capacity. Provide the landfill ID(s) from Table A-6: ________
- ☐ Changes to air permit
- ☐ Other, explain: ________

☐ Changes in personnel/training, explain: ________

☐ Changes in ash disposal practices

- ☐ Storage of ash in landfill. Provide the landfill ID(s) from Table A-6: ________
- ☐ Marketing of ash
- ☐ Hauling ash to off-site storage
- ☐ Dust suppression activities
- ☐ Other, explain: ________

CBI?
☐ Yes

C3-28. Indicate the types of destinations expected for the dry bottom ash from the planned system and the percentage of the dry bottom ash that is expected to go to each destination. [Check all boxes that apply.]

☐ Marketed, sold, and/or given away

Market Destinations ▾ ______ % of the dry bottom ash

If other, specify: ______

Market Destinations ▾ ______ % of the dry bottom ash

If other, specify: ______

Market Destinations ▾ ______ % of the dry bottom ash

If other, specify: ______

☐ Stored in landfills reported in Table A-6 ______ % of the dry bottom ash

☐ Stored in landfills NOT reported in Table A-6 ______ % of the dry bottom ash

☐ Other, specify:

______ ______ % of the dry bottom ash

CBI?
☐ Yes

C3-29. If the plant is not in the process of installing or planning to install a dry bottom ash handling system, have cost estimates been obtained/developed since January 1, 1995, for such a conversion/installation?

○ Yes (Provide documentation/costs, for example, bid proposals or internal plant engineering estimates.)

○ No (Skip to Question C3-30)

Note: All bid proposals and/or other documentation/costs originally submitted to the plant as CBI, should be marked CBI for the purpose of this collection request.

○ I have attached documentation/costs.

○ I did not attach documentation/costs. Below, explain why:

______

CBI?
☐ Yes

C3-30. Has the plant encountered any unscheduled outages on this generating unit caused by the bottom ash handling system in the last five years?

○ Yes (Continue)

○ No (Skip to Section 3.2)

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CBI?
☐ Yes

C3-31. In Table C-22, provide information on unscheduled generating unit outages caused by bottom ash handling for each of the last five years.

Table C-22. Unscheduled Generating Unit Outages Caused by Bottom Ash Handling

Year	Ash Handling	Total Days of Outage	Reason(s) for outage(s)	Method(s) Used to Resolve Outage(s)
2005	Dry			
	Wet			
2006	Dry			
	Wet			
2007	Dry			
	Wet			
2008	Dry			
	Wet			
2009	Dry			
	Wet			

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: C
Section Title: 3.2 Bottom Ash Handling - Storage and Use Data

Instructions: Complete Section 3.2 (Questions C3-32 through C3-34). Provide information for bottom ash handling and bottom ash storage at the plant.

CBI?
☐ Yes

C3-32. For each storage destination reported in Table C-21, provide the distance the bottom ash is transported from the generating unit to intermediate storage or from intermediate storage to the final disposal/destination, the amount of bottom ash transported in 2009, and the percent moisture of the bottom ash entering storage, if transported dry. Additionally, for each destination indicate how the bottom ash is transported by entering one of the following options: conveyor belt, pipe, truck, barge, rail, or other (provide a description). If the bottom ash is sold to more than one destination (e.g., some bottom ash is sold for cement manufacturing and some is sold for structural fill) enter the average percent moisture for all bottom ash sold in Table C-23. Tables C-24 and C-25 will request information by market.

Table C-23. Bottom Ash Storage Information

Storage Destination ID	Distance from the Generating Unit to Intermediate Storage or from the Intermediate Storage to the Final Disposal/Destination	Tons of Bottom Ash Transported to Destination in 2009 (dry weight basis)	How is Bottom Ash Transported to Destination?	Percent Moisture of the Bottom Ash Entering Destination
Storage Destination Table Other:	miles	tons	Storage Transport If other, explain:	%
Storage Destination Table Other:	miles	tons	Storage Transport If other, explain:	%
Storage Destination Table Other:	miles	tons	Storage Transport If other, explain:	%
Storage Destination Table Other:	miles	tons	Storage Transport If other, explain:	%
Storage Destination Table Other:	miles	tons	Storage Transport If other, explain:	%
Storage Destination Table Other:	miles	tons	Storage Transport If other, explain:	%
Storage Destination Table Other:	miles	tons	Storage Transport If other, explain:	%
Storage Destination Table Other:	miles	tons	Storage Transport If other, explain:	%
Storage Destination Table Other:	miles	tons	Storage Transport If other, explain:	%

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CBI?
☐ Yes

C3-33. Does the plant market, sell, and/or give away dry bottom ash from the <u>dry</u> ash handling system?

○ Yes (Continue)

○ No (Skip to Question C3-34)

Complete Table C-24 if the plant markets, sells, and/or gives away dry bottom ash from the bottom ash handling system. For each destination, provide the tons of dry bottom ash marketed, sold, and/or given away, the gross revenue generated from marketing/selling the dry bottom ash for calendar years 2005, 2007, and 2009. Additionally, provide the typical percent moisture of the bottom ash during calendar years 2005, 2007, and 2009. If the typical percent moisture of the bottom ash was not constant during calendar years 2005, 2007, and 2009, note this information (include all typical percent moisture values for each year) in the Comments page.

Table C-24. Dry Bottom Ash from the Bottom Ash Handling System Marketed/Sold in Calendar Years 2005, 2007, and 2009

Destination	Typical Percent Moisture of Bottom Ash	2005		2007		2009	
		Tons (dry basis)	Gross Revenue Generated $	Tons (dry basis)	Gross Revenue Generated $	Tons (dry basis)	Gross Revenue Generated $
Concrete/Concrete Products/Grout	%						
Blended Cement/Raw Feed for Clinker	%						
Flowable Fill	%						
Structural Fills/Embankments	%						
Road Base/Sub-base	%						
Soil Modification/ Stabilization	%						
Mineral Filler in Asphalt	%						
Snow and Ice Control	%						
Blasting Grit/Roofing Granules	%						
Mining Applications	%						
Waste Stabilization/ Solidification	%						
Agriculture	%						
Aggregate	%						
Other:	%						
Other:	%						

CBI?
☐ Yes

C3-34. Does the plant market, sell, and/or give away wet bottom ash from the wet ash handling system?

○ Yes (Continue)

○ No (Skip to Section 3.3)

Complete Table C-25 if the plant currently markets, sells, and/or gives away bottom ash transported by wet sluicing from the bottom ash handling system. For each destination, provide the tons, on a dry basis, of bottom ash transported by wet sluicing that is marketed, sold, and/or given away. Also provide the gross revenue generated from marketing/selling the bottom ash transported by wet sluicing for each destination.

Table C-25. Bottom Ash Transported by Wet Sluicing from the Bottom Ash Handling System Marketed/Sold in Calendar Years 2005, 2007, and 2009

Destination	Typical Percent Moisture of Bottom Ash	2005		2007		2009	
		Tons (dry basis)	Gross Revenue Generated	Tons (dry basis)	Gross Revenue Generated $	Tons (dry basis)	Gross Revenue Generated $
Concrete/Concrete Products/Grout	%						
Blended Cement/Raw Feed for Clinker	%						
Flowable Fill	%						
Structural Fills/Embankments	%						
Road Base/Sub-base	%						
Soil Modification/ Stabilization	%						
Mineral Filler in Asphalt	%						
Snow and Ice Control	%						
Blasting Grit/Roofing Granules	%						
Mining Applications	%						
Waste Stabilization/ Solidification	%						
Agriculture	%						
Aggregate	%						
Other:	%						
Other:	%						

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name
Unit ID: Insert Unit ID

Part: C
Section Title: 3.3. Bottom Ash Cost Information - Conveyance

Instructions: Complete Section 3.3 (Questions C3-35 through C3-41) for the conveyance of bottom ash (wet or dry) from each unit identified in Table A-8. Provide these data for each bottom ash handling system that began operating or was converted after January 1, 2000. Enter the Unit ID in the space provided above.

If you indicated in Question C3-24 or C3-25 that the plant is either installing or planning to install dry bottom ash handling for this unit, complete Section 3.3, and check the "Planned" checkbox below.

☐ Planned

Make copies of Section 3.3 for each bottom ash handling system operated in 2009, that began operating on or after January 1, 2000, is being installed, or planned to be installed by December 31, 2020 using the "Copy Section 3.3" button below.

The conveyance portion of the bottom ash handling system refers to the part of the system that conveys bottom ash from the boiler(s) of the unit to the intermediate or final storage of the bottom ash. Dry bottom ash handling includes systems that collect and convey the bottom ash without any use of water, as well as systems in which bottom ash is conveyed mechanically or pneumatically away from a quench water bath (e.g., submerged chain conveyor systems). Wet bottom ash conveyance uses water (i.e., a sluice) to convey bottom ash away from the boiler to intermediate/final storage (e.g., ponds/impoundments). Note that dewatering bins are considered part of bottom ash conveyance.

Note: Bottom ash conveyance includes all capital and O&M costs required to dredge or empty ponds, dewatering bins, and/or surge tanks to intermediate storage.

Note: If any components of the conveyance portion of the bottom ash handling system are shared with one or more other generating units, only report those components and corresponding costs once.

Copy Section 3.3

CBI? ☐ Yes

C3-35. Identify the major components of the conveyance portion of the bottom ash handling system, in particular those components that represent a significant portion of the capital or O&M costs for the system. Provide the type of component and the number of each type of component in the system. Additionally, provide the total system capacity of each type of component (i.e., volume of clarifying tanks). Total system capacity should equal the sum of the capacity of each individual component within that type.

Table C-26. Bottom Ash Handling System Components - Conveyance

Type of Components	Number of Components in the System	Total System Capacity of Components	
Bottom Ash Conveyance Components			Component Units
Other:			If other, specify:
Bottom Ash Conveyance Components			Component Units
Other:			If other, specify:
Bottom Ash Conveyance Components			Component Units
Other:			If other, specify:
Bottom Ash Conveyance Components			Component Units
Other:			If other, specify:
Bottom Ash Conveyance Components			Component Units
Other:			If other, specify:
Bottom Ash Conveyance Components			Component Units
Other:			If other, specify:
Bottom Ash Conveyance Components			Component Units
Other:			If other, specify:
Bottom Ash Conveyance Components			Component Units
Other:			If other, specify:

CBI?
☐ Yes

C3-36. Attach a block diagram that shows the entire bottom ash handling system operations for this generating unit. Label the conveyance, intermediate storage (see Part C Section 3.4) and transport/disposal (see Part C Section 3.5) portions of the system. The diagram should include all key components indicated in Tables C-26 and C-29 and identify all intermediate and final ash storage destinations. Indicate the movement of ash as well as water through the system. If ash from other generating units is combined with ash from this unit, indicate where the ash is combined and the portions of the ash handling system involved. Provide as many diagrams as necessary to convey this information. Include the plant name, plant ID, and the unit ID in the upper right hand corner of the diagram.

Note: If the respondent indicates that the ash is transported to a pond/impoundment, in Question C3-43, the intermediate storage and disposal information will be provided in Part D. Therefore, the block diagram should only include the conveyance system(s).

☐ Diagram attached.

CBI?
☐ Yes

C3-37. List all of the major components of this bottom ash conveyance system that a contractor(s) constructed/installed (or will construct/install, for planned systems) at the contractor's expense (i.e., not at the plant's expense).

☐ Contractor installed/will install ALL components identified in Table C-26 at the contractor's expense.

CBI?
☐ Yes

C3-38. List all of the operation and maintenance activities of this bottom ash conveyance system that a contractor(s) oversees (or will oversee, for planned systems) at the contractor's expense (i.e., not at the plant's expense).

☐ Contractor oversees/will oversee ALL operation and maintenance activities dealing with the conveyance portion of the bottom ash handling system at the contractor's expense.

CBI?
☐ Yes

C3-39. In Table C-27, provide capital costs incurred since January 1, 2000, for this bottom ash conveyance system, both for the conveyance as originally installed and for any modifications to the conveyance. Include all conveyance costs including costs for components in Table C-26 as well as control systems, pads and foundations, and all other ancillary equipment. For planned bottom ash conveyance systems, provide expected costs. Provide the best engineering estimates when actual data are not readily available. For all costs, do not adjust for inflation. For example, if the plant incurred a land cost in 2002, enter the cost in the "Cost" column and enter "2002" in the "Year on which Cost is Based" column.

Note: Provide only the costs incurred by the PLANT, not the costs paid for by the contractor. For example, if an outside contractor purchased and installed all equipment for the conveyance portion of the bottom ash handling system at the contractor's expense, the plant should fill out "$ 0" for the cost of "Purchased Equipment". Any contractor costs/fees incurred by the plant should be accounted for in the "Engineering Contract Firm Costs" and "Other Contractor's Fees" categories.

Table C-27. Capital Cost for Conveyance of Bottom Ash Handling

Project	Cost for System as Originally Installed	Cost for Modifications to System	Year on Which Cost is Based	
			Original Cost	Modification Cost
Direct Costs				
Purchased equipment (including all equipment for the installation or the upgrade: mechanical equipment; piping; instrumentation; electrical equipment; spare parts; freight charges; taxes; insurance; and duties)	$	$		
Purchased equipment installation (including installation of all equipment; piping; instrumentation/calibration; electrical equipment; mechanical equipment; structural supports, insulation, and paint)	$	$		
Buildings (including buildings constructed to house ash handling system components, operator rooms, or other operations associated with the system; as well as plumbing, heating, ventilation, dust collection, air conditioning, lighting, telephones, intercoms, painting, sprinklers, fire alarms)	$	$		
Site preparation (includes site clearing, all demolition, grading, roads, walking areas, fences)	$	$		
Land (includes property costs and survey fees)	$	$		
Total Direct Costs	**$**	**$**		
Indirect Costs				
Engineering Costs (includes process design and general engineering, cost engineering, consulting fees, supervision, inspection for each category below)				
a. Engineering Contract Firm Costs	$	$		
b. Owner's Overhead Engineering Costs	$	$		
☐ Hired outside engineering firm to oversee design and/or installation of the system.				
Construction expenses (includes temporary construction offices, roads, communications, fencing; construction tools and equipment; permits, taxes, insurance)	$	$		
Other Contractor's Fees	$	$		
Contingency actually expended (to compensate for unpredictable events such as storms, floods, strikes, price changes, errors in estimates, design changes, etc.)	$	$		
Total Indirect Costs	**$**	**$**		
Total Capital Cost	**$**	**$**		

CBI? ☐ Yes

C3-40. Are all major components of the conveyance portion of the bottom ash handling system included in the capital costs reported in Table C-27?

○ Yes (Skip to Question C3-41)

○ No (Continue)

Please explain what system components are included in the capital costs listed in Table C-27. Additionally, identify the key components of the conveyance portion of the bottom ash handling system that are not included in the capital costs reported in Table C-27.

CBI? ☐ Yes

C3-41. Provide annual (2009) O&M costs data in Table C-28 for this bottom ash conveyance system, if it began operating or was converted on or after January 1, 2000. Provide best engineering estimates when actual data are not readily available. If you provide an estimate, note the methods that were used to make the estimates in the Comments page.

Note: Provide only the cost data incurred by the PLANT, not the costs paid for by the contractor. For example, if an outside contractor operates and maintains the conveyance portion of the bottom ash handling system at the contractor's expense, the plant should fill out "$ 0" for O&M costs. Any contractor costs/fees incurred by the plant should be accounted for in the Table C-27 "Engineering Contract Firm Costs" and "Other Contractor's Fees" categories.

Table C-28. O&M Cost for Conveyance of Bottom Ash Handling for 2009

O&M Cost Category	2009 Annual Cost	2009 Rate	2009 Staffing/Consumption
Operating Labor	$	$ Per hour (average rate of labor)	No. of workers hpd dpy
Maintenance Labor	$	$ Per hour (average rate of labor)	No. of workers hpd dpy
Maintenance Materials	$		
Energy	$	$ per kWh	kWh/hr
Other:	$		
Other:	$		
Total O&M Cost (2009)	$		

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name
Storage ID: Insert Storage ID

Part: C
Section Title: 3.4. Bottom Ash Cost Information - Intermediate Storage

Instructions: Complete Section 3.4 (Questions C3-42 through C3-49) for each intermediate storage destination identified in Table C-23 that began operating or was modified after January 1, 2000. Enter the storage ID in the space provided above (use the storage IDs assigned in Table C-23).

If you indicated in Question C3-25 or C3-26 that the plant is either installing or planning to install dry bottom ash handling for this unit, complete Section 3.4, and check the "Planned" checkbox below.

☐ Planned

Make copies of Section 3.4 for each bottom ash handling system operated in 2009, that began operating on or after January 1, 2000, is being installed, or planned to be installed by December 31, 2020 using the "Copy Section 3.4" button below.

If you are instructed to skip forward to another section while completing this section for one bottom ash storage destination, be sure to complete this section for all other bottom ash storage destinations operated in 2009, being installed, or planned to be installed by December 31, 2020.

The intermediate storage of bottom ash handling refers to the facility/site where collected bottom ash is stored after conveyance, prior to the ash being transported to final disposal. Dry bottom ash intermediate storage typically consists of storage silos. Wet bottom ash intermediate storage typically consists of ponds/impoundments.

Note that intermediate storage includes all equipment and operations associated with loading dry or moisture-conditioned ash into trucks or rail cars for transport.
Intermediate storage also includes all ash dust suppression activities at the plant.

Copy Section 3.4

CBI? ☐ Yes

C3-42. Does this storage component store both fly and bottom ash together? For example, if bottom ash and fly ash are conveyed separately but stored in a common silo, the silo is considered a shared component.

○ Yes Provide unit IDs, as assigned in A-8, contributing fly ash to this storage component. ______ (Skip to Section 3.5)

○ No (Continue)

CBI? ☐ Yes

C3-43. Is this storage destination a pond/impoundment?

○ Yes (Skip to Section 4)

○ No (Continue)

CBI? ☐ Yes

C3-44. Identify the major components of the intermediate storage portion of the bottom ash handling system, in particular those components that represent a significant portion of the capital or O&M costs for the system. Provide the type of component and the number of each type of component in the system. Additionally, provide the total capacity of each component (i.e., volume of silos). Total system capacity should equal the sum of the capacity of each individual component within that type.

Table C-29. Bottom Ash Handling System Components - Intermediate Storage

Individual Components		Number of Components in the System	Total System Capacity of Components	
Bottom Ash Intermediate Storage Components				Component Units
Other:				If other, specify:
Bottom Ash Intermediate Storage Components				Component Units
Other:				If other, specify:
Bottom Ash Intermediate Storage Components				Component Units
Other:				If other, specify:
Bottom Ash Intermediate Storage Components				Component Units
Other:				If other, specify:
Bottom Ash Intermediate Storage Components				Component Units
Other:				If other, specify:
Bottom Ash Intermediate Storage Components				Component Units
Other:				If other, specify:
Bottom Ash Intermediate Storage Components				Component Units
Other:				If other, specify:
Bottom Ash Intermediate Storage Components				Component Units
Other:				If other, specify:

CBI? ☐ Yes

C3-45. List all of the major components of this intermediate storage destination that a contractor(s) constructed/installed (or will construct/install, for planned systems) at the contractor's expense (i.e., not at the plant's expense).

☐ Contractor installed/will install ALL components identified in Table C-29 at the contractor's expense.

CBI? ☐ Yes

C3-46. List all of the operation and maintenance activities of this intermediate storage destination that a contractor(s) oversees (or will oversee, for planned systems) at the contractor's expense (i.e., not at the plant's expense).

☐ Contractor oversees/will oversee ALL operation and maintenance activities dealing with the intermediate storage portion of the bottom ash handling system at the contractor's expense.

CBI?
☐ Yes

C3-47. Provide cost data in Table C-30 for this intermediate storage destination, both for the storage as originally installed and for any modifications to the storage system. Include all intermediate storage costs including costs for components in Table C-29 as well as control systems, pads and foundations, and all other ancillary equipment. For planned storage, provide expected costs. Provide the best engineering estimates when actual data are not readily available. For all costs, do not adjust for inflation. For example, if the plant incurred a land cost in 2002, enter the cost in the "Cost" column and enter "2002" in the "Year on which Cost is Based" column.

Note: Capital costs associated with ponds/impoundments are requested in Part D and capital costs associated with landfills/landfilling are requested in Part F. Do NOT include the costs for ponds and landfills in Table C-30.

Note: Provide only the cost data incurred by the PLANT, not the costs paid for by the contractor. For example, if an outside contractor purchased all rail cars and/or trucks for the transportation of the bottom ash at the contractor's expense, the plant should fill out "$ 0" for the cost of "Purchased Equipment". Any contractor costs/fees incurred by the plant should be accounted for in the "Engineering Contract Firm Costs" and "Other Contractor's Fees" categories.

Table C-30. Capital Cost for Intermediate Storage of Bottom Ash Handling

Project	Cost for System as Originally Installed	Cost for Modifications to System	Year on Which Cost is Based	
			Original Cost	Modification Cost
Direct Costs				
Purchased equipment (including all equipment for the installation or the upgrade: mechanical equipment; piping; instrumentation; electrical equipment; spare parts; freight charges; taxes; insurance; and duties)	$	$		
Purchased equipment installation (including installation of all equipment; piping; instrumentation/calibration; electrical equipment; mechanical equipment; structural supports, insulation, and paint)	$	$		
Buildings (including buildings constructed to house ash handling system components, operator rooms, or other operations associated with the system; as well as plumbing, heating, ventilation, dust collection, air conditioning, lighting, telephones, intercoms, painting, sprinklers, fire alarms)	$	$		
Site preparation (including site clearing, all demolition, grading, roads, walking areas, fences)	$	$		
Land (including property costs and survey fees)	$	$		
Total Direct Costs	**$**	**$**		
Indirect Costs				
Engineering Costs (including process design and general engineering, cost engineering, consulting fees, supervision, inspection for each category below)				
a. Engineering Contract Firm Costs	$	$		
b. Owner's Overhead Engineering Costs	$	$		
☐ Hired outside engineering firm to oversee design and/or installation of the system.				
Construction expenses (including temporary construction offices, roads, communications, fencing; construction tools and equipment; permits, taxes, insurance)	$	$		
Other Contractor's Fees	$	$		
Contingency actually expended (to compensate for unpredictable events such as storms, floods, strikes, price changes, errors in estimates, design changes, etc.)	$	$		
Total Indirect Costs	**$**	**$**		
Total Capital Cost	**$**	**$**		

CBI?
☐ Yes

C3-48. Are all major components of the intermediate storage destination included in the capital costs reported in Table C-30?

○ Yes (Skip to Question C3-49)
○ No (Continue)

Please explain what system components are included in the capital costs listed in Table C-30. Additionally, identify the key components intermediate storage destination that are not included in the capital costs reported in Table C-30.

CBI?
☐ Yes

C3-49. Provide annual O&M costs data in Table C-31 for this intermediate storage destination, if it began operating or was modified on or after January 1, 2000. Provide best engineering estimates when actual data are not readily available. If you provide an estimate, note the methods that were used to make the estimates in the Comments page.

Note: O&M costs associated with ponds/impoundments are requested in Part D and O&M costs associated with landfills/landfilling are requested in Part F. Do NOT include the costs for ponds and landfills costs in Table C-31.

Note: Provide only the cost data incurred by the PLANT, not the costs paid for by the contractor. For example, if an outside contractor operates and maintains the intermediate storage portion of the bottom ash handling system at the contractor's expense, the plant should fill out "$ 0" for O&M costs. Any contractor costs/fees incurred by the plant should be accounted for in the Table C-30 "Engineering Contract Firm Costs" and "Other Contractor's Fees" categories.

Table C-31. O&M Cost for Intermediate Storage of Bottom Ash Handling for 2009

O&M Cost Category	2009 Annual Cost	2009 Rate	2009 Staffing/Consumption
Operating Labor (Water Trucks Only)	$	$ Per hour (average rate of labor)	No. of workers hpd dpy
Operating Labor (All other operating costs)	$	$ Per hour (average rate of labor)	No. of workers hpd dpy
Maintenance Labor	$	$ Per hour (average rate of labor)	No. of workers hpd dpy
Maintenance Materials	$		
Energy	$	$ per kWh	kWh/hr
Other:	$		
Other:	$		
Total O&M Cost (2009)	$		

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: C
Section Title: 3.5. Bottom Ash Cost Information - Transport/Disposal

Instructions: Complete Section 3.5 (Questions C3-50 through C3-57) for all transport and disposal of bottom ash from ash handling systems that began operating or was modified after January 1, 2000, and those systems being installed, or planned to be installed by December 31, 2020.

The transport/disposal portion of the bottom ash handling system refers to the transportation of bottom ash from intermediate storage to final disposal.

An example of ash transport/disposal is transportation used to haul ash off site (e.g., ash that is marketed and shipped off site to a reuse application). Ash transport typically consists of roads and vehicles that are used to transport the ash. The capital and O&M costs for ash transport/disposal may include the road or rail infrastructure (roads, tracks, lights), the trucks and rail cars, the operation and maintenance costs associated with the trucks and rail cars, and ash disposal fees.

Note that capital and operation and maintenance costs associated with ponds/impoundments and landfills/landfilling are requested in Parts D and F, respectively, and they should not be provided here in Section 3.5.

CBI? ☐ Yes

C3-50. Does the plant use the same transport and disposal methods for both fly and bottom ash? For example, if fly ash and bottom ash are transported using the same trucks, the trucks are considered a shared component.

○ Yes — Provide unit IDs, as assigned in A-8, and storage IDs, provided in Table 6, contributing fly ash to the transport and disposal system.
____________________ (Skip to Section 4)

○ No — (Continue)

CBI? ☐ Yes

C3-51. Is a *pond/impoundment* unit or *pond/impoundment system* the final destination of all bottom ash collected by the plant?

○ Yes — (Skip to Section 4)

○ No — (Continue)

Approved: May 20, 2010

CBI?
☐ Yes

C3-52. What methods are used to transport the collected bottom ash to the final disposal? [Check all boxes that apply.]

☐ Trucks

How many trucks does the plant use for the transportation and disposal of dry bottom ash?

Indicate whether the trucks were bought, leased or contracted out.

☐ Bought
☐ Leased
☐ Contracted out

☐ Rail cars

How many rail cars does the plant use for the transportation and disposal of dry bottom ash?

Indicate whether the rail cars were bought, leased or contracted out.

☐ Bought
☐ Leased
☐ Contracted out

☐ Other, specify (e.g., barge):

CBI?
☐ Yes

C3-53. List all of the major components for transport/disposal of the bottom ash that a contractor(s) constructed/installed (or will construct/install, for planned systems) at the contractor's expense (i.e., not at the plant's expense).

☐ Contractor installed/will install ALL ash transport/disposal equipment and/or infrastructure at the contractor's expense.

CBI?
☐ Yes

C3-54. List all of the operation and maintenance activities for transport/disposal of the bottom ash that a contractor(s) oversees (or will oversee, for planned systems) at the contractor's expense (i.e., not at the plant's expense).

☐ Contractor oversees/will oversee ALL transport/disposal activities at the contractor's expense.

CBI?
☐ Yes

C3-55. Provide cost data in Table C-32 for the transport/disposal of the collected bottom ash, both for the transport/disposal as originally installed and for any modifications. For transport/disposal systems, provide expected costs. Provide the best engineering estimates when actual data are not readily available. For all costs, do not adjust for inflation. For example, if the plant incurred a land cost in 2002, enter the cost in the "Cost" column and enter "2002" in the "Year on which Cost is Based" column.

Note: Capital costs associated with ponds/impoundments are requested in Part D and capital costs associated with landfills/landfilling are requested in Part F. Do NOT include the costs for ponds and landfills in Table C-32.

Note: Provide only the cost data incurred by the PLANT, not the costs paid for by the contractor. For example, if an outside contractor purchased all rail cars and/or trucks for the transportation of the fly ash at the contractor's expense, the plant should fill out "$ 0" for the cost of "Purchased Equipment". Any contractor costs/fees incurred by the plant should be accounted for in the "Engineering Contract Firm Costs" and "Other Contractor's Fees" categories.

Table C-32. Capital Cost for Transport/Disposal of Collected Bottom Ash

Project	**Cost for System as Originally Installed**	**Cost for Modifications to System**	**Year on Which Cost is Based**	
			Original Cost	**Modification Cost**
Direct Costs				
Purchased equipment (including all equipment for the installation or the upgrade: mechanical equipment; piping; instrumentation; electrical equipment; spare parts; freight charges; taxes; insurance; and duties)	$	$		
Purchased equipment installation (including installation of all equipment; piping; instrumentation/calibration; electrical equipment; mechanical equipment; structural supports, insulation, and paint)	$	$		
Buildings (including buildings constructed to house ash handling system components, operator rooms, or other operations associated with the system; as well as plumbing, heating, ventilation, dust collection, air conditioning, lighting, telephones, intercoms, painting, sprinklers, fire alarms)	$	$		
Site preparation (including site clearing, all demolition, grading, roads, walking areas, fences)	$	$		
Land (includes property costs and survey fees)	$	$		
Total Direct Costs	**$**	**$**		
Indirect Costs				
Engineering Costs (including process design and general engineering, cost engineering, consulting fees, supervision, inspection for each category below)				
a. Engineering Contract Firm Costs	$	$		
b. Owner's Overhead Engineering Costs	$	$		
☐ Hired outside engineering firm to oversee design and/or installation of the system.				
Construction expenses (including temporary construction offices, roads, communications, fencing; construction tools and equipment; permits, taxes, insurance)	$	$		
Other Contractor's Fees	$	$		
Contingency actually expended (to compensate for unpredictable events such as storms, floods, strikes, price changes, errors in estimates, design changes, etc.)	$	$		
Total Indirect Costs	**$**	**$**		
Total Capital Cost	**$**	**$**		

CBI? ☐ Yes

C3-56. Are all major components of transport/disposal for the bottom ash handling system included in the capital costs reported in Table C-32?

○ Yes (Skip to Question C3-57)
○ No (Continue)

Please explain what system components are included in the capital costs listed in Table C-32. Additionally, identify the key components of transport/disposal for the bottom ash handling system that are not included in the capital costs reported in Table C-32.

CBI? ☐ Yes

C3-57. Provide annual O&M costs data in Table C-33 for the transport/disposal of the collected bottom ash from ash handling systems that began operating on or after January 1, 2000. Provide best engineering estimates when actual data are not readily available. If you provide an estimate, note the methods that were used to make the estimates in the Comments page.

Note: O&M costs associated with ponds/impoundments are requested in Part D and O&M costs associated with landfills/landfilling are requested in Part F. Do NOT include the costs for ponds and landfills in Table C-33.

Note: Provide only the cost data incurred by the PLANT, not the costs paid for by the contractor. For example, if an outside contractor operates the transportation and disposal of the ash at the contractor's expense, the plant should fill out "$ 0" for the cost of all operating O&M costs. Any contractor costs/fees incurred by the plant should be accounted for in the Table C-32 "Engineering Contract Firm Costs" and "Other Contractor's Fees" categories.

Table C-33. O&M Cost for Transport/Disposal of the Bottom Ash for 2009

O&M Cost Category	2009 Annual Cost	2009 Rate	2009 Staffing/Consumption	Transport Rate
Operating Labor (Trucks/Rail Cars/Other Transport)	$	$ Per hour (average rate of labor)	No. of workers hpd dpy	Loads per day dpy
Operating Labor (All other operating costs)	$	$ Per hour (average rate of labor)	No. of workers hpd dpy	
Maintenance Labor	$	$ Per hour (average rate of labor)	No. of workers hpd dpy	
Maintenance Materials	$			
Energy	$	$ per kWh	kWh/hr	
Ash Removal/Disposal Fee	$			
Other:	$			
Other:	$			
Total O&M Cost (2009)	$			

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name
SE Unit ID: Insert SE Unit ID

Part: C
Section Title: 4. Economizer Ash Handling Information

Instructions: Make copies of Section 4 (Questions C4-1 through C4-6) for each fossil-fueled steam electric generating unit at your plant that generates economizer ash using the "Copy Section 4" button below. See Part A Section 8 for steam electric generating unit fuel classifications. Enter the steam electric generating unit ID (use unit IDs assigned in Table A-8) in the space above titled "SE Unit ID".

Copy Section 4

CBI? ☐ Yes

C4-1. Is economizer ash from this fossil-fueled steam electric generating unit collected with air heater ash?

○ Yes (Complete the remainder of Section 4 for economizer and air heater ash together. Do NOT complete Section 5.)

○ No (Continue)

CBI? ☐ Yes

C4-2. Indicate the method of handling the economizer ash.

○ Segregated from fly and bottom ash
Describe how the segregated ash was handled: ________ (Skip to Question C4-4)

○ Combined with fly and/or bottom ash (Continue)

CBI? ☐ Yes

C4-3. Identify how the economizer ash is combined with fly ash and/or bottom ash.

○ Handled wet, with fly ash
○ Handled wet, with bottom ash
○ Handled dry, with fly ash
○ Handled dry, with bottom ash
○ Other, explain:
____

CBI? ☐ Yes

C4-4. Provide the average amount of dry economizer ash produced.

________ tpd (dry weight basis)
________ dpy

CBI?
☐ Yes

C4-5. Is process wastewater generated from the handling of economizer ash?

○ Yes (Continue)

○ No (Skip to Section 5)

Provide the volume of economizer ash wastewater generated in 2009 (gpd) and the frequency of economizer ash wastewater generation (days).

________ gpd Over ________ days

Provide the destination of the economizer ash wastewater generated: Destination Codes Table

CBI?
☐ Yes

C4-6. What is the final disposition/destination of the collected economizer ash? [Check all boxes that apply.] Indicate the percentage of economizer ash transported to each destination.

- ☐ Stored in a landfill reported in Table A-6 ________ % of economizer ash
- ☐ Stored in a pond/impoundment reported in Table A-4 ________ % of economizer ash
- ☐ Stored in a landfill NOT reported in Table A-6 ________ % of economizer ash
- ☐ Hauled off site (to be marketed) ________ % of economizer ash
- ☐ Hauled off site (to be given away) ________ % of economizer ash
- ☐ Other: ________ ________ % of economizer ash

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name
SE Unit ID: Insert SE Unit ID

Part: C
Section Title: 5. Air Heater Ash Handling Information

Instructions: Make copies of Section 5 (Questions C5-1 through C5-5) for each fossil-fueled steam electric generating unit at your plant that generates air heater ash using the "Copy Section 5" button below. See Part A Section 8 for steam electric generating unit fuel classifications. Enter the steam electric generating unit ID (use unit IDs assigned in Table A-8) in the space above titled "SE Unit ID".

Copy Section 5

CBI? ☐ Yes

C5-1. Indicate the method of handling the air heater ash.

○ Segregated from fly and bottom ash
Describe how the segregated ash was handled: ______ (Skip to Question C5-3)

○ Combined with fly and/or bottom ash (Continue)

CBI? ☐ Yes

C5-2. Identify how the air heater ash is combined with fly ash and/or bottom ash.

○ Handled wet, with fly ash
○ Handled wet, with bottom ash
○ Handled dry, with fly ash
○ Handled dry, with bottom ash
○ Other, explain:
______

CBI? ☐ Yes

C5-3. Provide the average amount of dry air heater ash produced.

______ tpd (dry weight basis)
______ dpy

CBI?
☐ Yes

C5-4. Is process wastewater generated from the handling of air heater ash?

○ Yes (Continue)

○ No (Skip to next Questionnaire Part)

Provide the volume of air heater ash wastewater generated in 2009 (gpd) and the frequency of air heater ash wastewater generation (days).

__________ gpd Over __________ days

Provide the destination of the air heater ash wastewater generated: Destination Codes Table

CBI?
☐ Yes

C5-5. What is the final disposition/destination of the collected air heater ash? [Check all boxes that apply.] Indicate the percentage of air heater ash transported to each destination.

☐ Stored in a landfill reported in Table A-6 __________ % of air heater ash

☐ Stored in a pond/impoundment reported in Table A-4 __________ % of air heater ash

☐ Stored in a landfill NOT reported in Table A-6 __________ % of air heater ash

☐ Hauled off site (to be marketed) __________ % of air heater ash

☐ Hauled off site (to be given away) __________ % of air heater ash

☐ Other: ____________________ __________ % of air heater ash

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: C
Section Title: Part C Comments

Instructions: Cross reference your comments by question number and indicate the confidential status of your comment by checking the box next to “Yes” under "CBI?" (Confidential Business Information).

	Question Number	Comment
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		

CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		

Steam Electric Questionnaire Code Tables

Process Wastewaters	
For Use in Tables and Questions throughout Parts A, B, C, D, and F.	
Air heater cleaning water	AHCW
Ash pile runoff	APR
Boiler blowdown	BB
Boiler fireside cleaning water	BFCW
Boiler tube cleaning water	BTCW
Bottom ash sluice	BAS
Carbon capture wastewater	CCAPW
Coal pile runoff	CPR
Combined ash sluice	CAS
Combustion turbine cleaning (combustion gas portion of turbine) water	COMBCW
Combustion turbine cleaning (compressor portion of the turbine) water	COMPRCW
Combustion turbine evaporative coolers blowdown	TECB
Cooling tower blowdown	CTB
FGD scrubber purge	SCRBP
FGD slurry blowdown	FGDB
Filter Backwash	FLTBW
Floor drain wastewater	FDW
Flue gas mercury control system wastewater	FGMCW
Fly ash sluice	FAS
General runoff	GR
Gypsum pile runoff	GPR
Gypsum wash water	GYPWW
Ion exchange wastewater	IXW
Landfill runoff - capped landfill	LRC
Landfill runoff - uncapped landfill	LRUC
Leachate	LEACH
Limestone pile runoff	LPR
Mill reject sluice	MRS

Treated Wastewaters	
For Use as Effluents from Pond/Impoundment Systems and/or Wastewater Treatment Systems in Part D, Table D-4.	
Effluent - 1	EFF-1
Effluent - 2	EFF-2
Effluent - 3	EFF-3
Effluent - 4	EFF-4
Effluent - 5	EFF-5
Effluent - 6	EFF-6
Filter backwash	FltBW
Sludge	SLDG
For Use as Influents to Pond/Impoundment Systems and/or Wastewater Treatment Systems in Part D, Table D-3, AND Recycled Waters Throughout Questionnaire.	
POND-1 Effluent	POND-1-EFF
POND-2 Effluent	POND-2-EFF
POND-3 Effluent	POND-3-EFF
POND-4 Effluent	POND-4-EFF
POND-5 Effluent	POND-5-EFF
POND-6 Effluent	POND-6-EFF
POND-7 Effluent	POND-7-EFF
POND-8 Effluent	POND-8-EFF
POND-9 Effluent	POND-9-EFF
POND-10 Effluent	POND-10-EFF
POND-A Effluent	POND-A-EFF
POND-B Effluent	POND-B-EFF
POND-C Effluent	POND-C-EFF
WWT-1 Effluent	WWT-1-EFF
WWT-2 Effluent	WWT-2-EFF
WWT-3 Effluent	WWT-3-EFF
WWT-4 Effluent	WWT-4-EFF
WWT-5 Effluent	WWT-5-EFF

Process Wastewaters	
For Use in Tables and Questions throughout Parts A, B, C, D, and F.	
Once -through cooling water	CW
Reverse osmosis reject water	RORW
SCR catalyst regeneration wastewater	SCRRW
SCR catalyst washing wastewater	SCRWW
Soot blowing wash water	SOOTW
Steam turbine cleaning water	STCW
Yard drain wastewater	YARDW

Treated Wastewaters	
For Use as Influents to Pond/Impoundment Systems and/or Wastewater Treatment Systems in Part D, Table D-3, AND Recycled Waters Throughout Questionnaire.	
WWT-6 Effluent	WWT-6-EFF
WWT-A Effluent	WWT-A-EFF
WWT-B Effluent	WWT-B-EFF
WWT-C Effluent	WWT-C-EFF

Wastewater Treatment Units	
For Use in Tables and Questions Throughout Parts D and F.	
Adsorptive media	ADSORB
Aerobic Biological Reactor	AERBIO
Anaerobic Biological Reactor	ANBIO
Aerobic/Anaerobic Biological Reactor	AER/ANBIO
Chemical Precipitation Reaction Tank 1 - 1	CP-1-1
Chemical Precipitation Reaction Tank 1 - 2	CP-1-2
Chemical Precipitation Reaction Tank 2 - 1	CP-2-1
Chemical Precipitation Reaction Tank 2 - 2	CP-2-2
Chemical Precipitation Reaction Tank 3 - 1	CP-3-1
Chemical Precipitation Reaction Tank 3 - 2	CP-3-2
Clarification, Primary - 1	CL-P-1
Clarification, Primary - 2	CL-P-2
Clarification, Secondary - 1	CL-S-1
Clarification, Secondary - 2	CL-S-2
Clarification, Tertiary - 1	CL-T-1
Clarification, Tertiary - 2	CL-T-2
Constructed wetland - Cell 1	CWL -1
Constructed wetland - Cell 2	CWL -2
Constructed wetland - Cell 3	CWL -3
Constructed wetland - Cell 4	CWL -4
Constructed wetland - Cell 5	CWL -5
Constructed wetland - Cell 6	CWL -6
Constructed wetland system	CWTS
Equalization, Primary	EQ-P
Equalization, Secondary	EQ-S
Filter, Microfiltration - 1	FLT-M-1
Filter, Microfiltration - 2	FLT-M-2

Destinations	
For Use in Tables and Questions Throughout Parts A, C, D, and F.	
Burned on site	BURN
Deep-well injection	DWELL
Discharge to POTW	POTW
Discharge to PrOTW	PrOTW
Discharge to surface water	SW
Evaporation	EVAP
Hauled off site for reuse (removal fee)	HAULR - RF
Hauled off site for reuse (given away)	HAULR - GA
Hauled off site for reuse (marketed and sold)	SOLD
Hauled off site for disposal	HAUL
Mixed with fly ash for disposal	MFA
On-site landfill (as reported in Table A-6)	LANDF
POND-1	POND-1
POND-2	POND-2
POND-3	POND-3
POND-4	POND-4
POND-5	POND-5
POND-6	POND-6
POND-7	POND-7
POND-8	POND-8
POND-9	POND-9
POND-10	POND-10
POND-A	POND-A
POND-B	POND-B
POND-C	POND-C
WWT-1	WWT-1
WWT-2	WWT-2

Wastewater Treatment Units	
For Use in Tables and Questions Throughout Parts D and F.	
Filter, Microfiltration - 3	FLT-M-3
Filter, Microfiltration - 4	FLT-M-4
Filter, Sand/Gravity - 1	FLT-S-1
Filter, Sand/Gravity - 2	FLT-S-2
Filter, Sand/Gravity - 3	FLT-S-3
Filter, Sand/Gravity - 4	FLT-S-4
Filter, Ultrafiltration - 1	FLT-U-1
Filter, Ultrafiltration - 2	FLT-U-2
Filter, Ultrafiltration - 3	FLT-U-3
Filter, Ultrafiltration - 4	FLT-U-4
Filter press - 1	FP-1
Filter press - 2	FP-2
Holding tank	HT
Ion exchange	IX
Natural wetlands	NW
pH adjustment - 1	PH-1
pH adjustment - 2	PH-2
pH adjustment - 3	PH-3
Reverse osmosis	ROS
Pond Unit - 1	SPD-1
Pond Unit - 2	SPD-2
Pond Unit - 3	SPD-3
Pond Unit - 4	SPD-4
Pond Unit - 5	SPD-5
Pond Unit - 6	SPD-6
Pond Unit - 7	SPD-7
Pond Unit - 8	SPD-8
Pond Unit - 9	SPD-9

Destinations	
For Use in Tables and Questions Throughout Parts A, C, D, and F.	
WWT-3	WWT-3
WWT-4	WWT-4
WWT-5	WWT-5
WWT-6	WWT-6
WWT-A	WWT-A
WWT-B	WWT-B
WWT-C	WWT-C
Reuse as boiler water	RECYC - BW
Reuse as bottom ash sluice	RECYC - BAS
Reuse as combined ash sluice	RECYC - CAS
Reuse as FGD slurry preparation water	RECYC - FGDP
Reuse as FGD absorber makeup	RECYC - FGDAB
Reuse as fly ash sluice	RECYC - FAS
Reuse as mill reject sluice	RECYC - MRS
Reuse in cooling towers	RECYC - CW

Wastewater Treatment Units	
For Use in Tables and Questions Throughout Parts D and F.	
Pond Unit - 10	SPD-10
Pond Unit - 11	SPD-11
Pond Unit - 12	SPD-12
Pond Unit - 13	SPD-13
Pond Unit - 14	SPD-14
Settling tank - 1	ST-1
Settling tank - 2	ST-2
Settling tank - 3	ST-3
Settling tank - 4	ST-4
Settling tank - 5	ST-5
Thickener - 1	TH-1
Thickener - 2	TH-2
Vacuum drum filter - 1	VF-1
Vacuum drum filter - 2	VF-2
Vacuum filter belt - 1	VFB-1
Vacuum filter belt - 2	VFB-2

Solids Handling	
For Use as Planned Solids Handling for the FGD Slurry Blowdown in Part B Table B-2.	
Centrifuge - 1	CENT-1
Centrifuge - 2	CENT-2
Centrifuge - 3	CENT-3
Centrifuge - 4	CENT-4
Hydrocyclones - 1	HYC-1
Hydrocyclones - 2	HYC-2
Hydrocyclones - 3	HYC-3
Hydrocyclones - 4	HYC-4
Filter press - 1	FP-1
Filter press - 2	FP-2
Thickener - 1	TH-1
Thickener - 2	TH-2
Vacuum drum filter - 1	VF-1
Vacuum drum filter - 2	VF-2
Vacuum filter belt - 1	VFB-1
Vacuum filter belt - 2	VFB-2

Part C Drop Downs

Wet/Dry
Wet/Dry
Select
Wet
Dry

Type of Boiler
Type of Boiler
Select
Wet-bottom
Dry-bottom
Other

Storage Destination Table
Storage Destination Table
Select
Silo 1
Silo 2
Silo 3
Silo 4
Silo 5
Outdoor Pile 1
Outdoor Pile 2
Outdoor Pile 3
Outdoor Pile 4
Outdoor Pile 5
POND-1
POND-2
POND-3
POND-4
POND-5
POND-6
POND-7
POND-8
POND-9
POND-10
POND-A
POND-B
POND-C
LANDFILL-1
LANDFILL-2
LANDFILL-3
LANDFILL-4
LANDFILL-A
LANDFILL-B

LANDFILL-C
LANDFILL-D
Marketed, sold or given away
Stored in landfills NOT reported in Table A-6
Other

Destination Codes Table
Destination Codes Table
Select
Burned on site
Deep-well injection
Discharge to POTW
Discharge to PrOTW
Discharge to surface water
Evaporation
Hauled off site for reuse (removal fee)
Hauled off site for reuse (given away)
Hauled off site for reuse (marketed and sold)
Hauled off site for disposal
Mixed with fly ash for disposal
On-site landfill (as reported in Table A-6)
POND-1
POND-2
POND-3
POND-4
POND-5
POND-6
POND-7
POND-8
POND-9
POND-10
POND-A
POND-B
POND-C
WWT-1
WWT-2
WWT-3
WWT-4
WWT-5
WWT-6
WWT-A
WWT-B
WWT-C
Reuse as boiler water
Reuse as bottom ash sluice
Reuse as combined ash sluice
Reuse as FGD slurry preparation water

Reuse as FGD absorber makeup
Reuse as fly ash sluice
Reuse as mill reject sluice
Reuse in cooling towers

Sluice Water Source
Sluice Water Source
Select
IN
IN-Makeup
TR
TR-Makeup
Air heater cleaning water
Ash pile runoff
Boiler blowdown
Boiler fireside cleaning water
Boiler tube cleaning water
Bottom ash sluice
Carbon capture wastewater
Coal pile runoff
Combined ash sluice
Combustion turbine cleaning (combustion gas portion of turbine) water
Combustion turbine cleaning (compressor portion of the turbine) water
Combustion turbine evaporative coolers blowdown
Cooling tower blowdown
FGD scrubber purge
FGD slurry blowdown
Filter Backwash
Floor drain wastewater
Flue gas mercury control system wastewater
Fly ash sluice
General runoff
Gypsum pile runoff
Gypsum wash water
Ion exchange wastewater
Landfill runoff - capped landfill
Landfill runoff - uncapped landfill
Leachate
Limestone pile runoff
Mill reject sluice
Once -through cooling water
Reverse osmosis reject water
SCR catalyst regeneration wastewater
SCR catalyst washing wastewater
Soot blowing wash water

Steam turbine cleaning water
Yard drain wastewater
POND-1 Effluent
POND-2 Effluent
POND-3 Effluent
POND-4 Effluent
POND-5 Effluent
POND-6 Effluent
POND-7 Effluent
POND-8 Effluent
POND-9 Effluent
POND-10 Effluent
POND-A Effluent
POND-B Effluent
POND-C Effluent
WWT-1 Effluent
WWT-2 Effluent
WWT-3 Effluent
WWT-4 Effluent
WWT-5 Effluent
WWT-6 Effluent
WWT-A Effluent
WWT-B Effluent
WWT-C Effluent

Process Wastewaters
Process Wastewaters
Select
Air heater cleaning water
Ash pile runoff
Boiler blowdown
Boiler fireside cleaning water
Boiler tube cleaning water
Bottom ash sluice
Carbon capture wastewater
Coal pile runoff
Combined ash sluice
Combustion turbine cleaning (combustion gas portion of turbine) water
Combustion turbine cleaning (compressor portion of the turbine) water
Combustion turbine evaporative coolers blowdown
Cooling tower blowdown
FGD scrubber purge
FGD slurry blowdown
Filter Backwash
Floor drain wastewater

Flue gas mercury control system wastewater
Fly ash sluice
General runoff
Gypsum pile runoff
Gypsum wash water
Ion exchange wastewater
Landfill runoff - capped landfill
Landfill runoff - uncapped landfill
Leachate
Limestone pile runoff
Mill reject sluice
Once -through cooling water
Reverse osmosis reject water
SCR catalyst regeneration wastewater
SCR catalyst washing wastewater
Soot blowing wash water
Steam turbine cleaning water
Yard drain wastewater
Other

Fly Ash Conveyance Components
Fly Ash Conveyance Components
Select
Conveyor
Dewatering bin
Pressure blower
Transfer hopper
Wet vacuum equipment (e.g., hydroveyor)
Other

Fly Ash Intermediate Storage Components
Fly Ash Intermediate Storage Components
Select
Conveyor system (e.g., air slide, bucket conveyor)
Loading silo
Pug mill/pin mixer
Storage silo
Other

Bottom Ash Conveyance Components
Bottom Ash Conveyance Components
Select
Clarifying tank
Conveyor
Dewatering bin
Surge tank

Wet vacuum equipment (e.g., hydroveyor)
Other

Bottom Ash Intermediate Storage Components
Bottom Ash Intermediate Storage Components
Select
Conveyor system (e.g., air slide, bucket conveyor)
Loading silo
Pug mill/pin mixer
Storage silo
Other

Market Destinations
Market Destinations
Select
Aggregate
Agriculture
Blasting Grit/Roofing Granules
Blended Cement/Raw Feed for Clinker
Concrete/Concrete Products/Grout
Flowable Fill
Mineral Filler in Asphalt
Mining Applications
Road Base/Sub-base
Snow and Ice Control
Soil Modification/Stabilization
Structural Fills/Embankments
Waste Stabilization/Solidification
Other

Units
Units
Select
gpd
gpy

Component Units
Component Units
Select
gal
hp
in
Other

Combined Intermediate Storage Components
Combined Intermediate Storage Components

Select
Air slide
Baghouse for silos
Bin vent filter
Bucket conveyor
Conditioned load out spout with dust collection system
Conveyor system
Dust suppression (e.g., water truck)
Dry load out spout
Loading silo
Pug mill/pin mixer
Stackout/holding areas
Storage bin
Storage hopper
Storage silo
Vacuum loading equipment
Other

OMB Control Number: 2040-0281
Approval Expires: 05/31/2013

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Steam Electric Questionnaire

PART D - POND/IMPOUNDMENT SYSTEMS AND OTHER WASTEWATER TREATMENT OPERATIONS

Table of Contents

Approved: May 20, 2010

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

PART D. POND/IMPOUNDMENT SYSTEMS AND OTHER WASTEWATER TREATMENT OPERATIONS

INSTRUCTIONS

Part D requests information about all ponds/impoundments used (or planned to be used or under construction/installation by December 31, 2020) for the storage, treatment, and/or disposal of process wastewater, residues, or by-products (or sludges or water streams containing the residues or by-products) from the combustion of coal, petroleum coke, or oil, including but not limited to fly ash, bottom ash, boiler slag, or flue gas emission control residues. Additionally, Part D requests information about wastewater treatment systems, other than pond/impoundment systems, for the treatment of wastewaters from ash handling or FGD operations that are located at the plant or are planned to be located at the plant. Complete Part D if you operate one or more systems, or if you are currently constructing/installing, or planning to construct/install one or more systems by December 31, 2020.

Refer to the following definitions throughout Part D.

A "***pond/impoundment"*** is defined as a natural topographic depression, man-made excavation, or diked area formed from earthen materials or man-made materials or a combination of them, which is designed to hold an accumulation of liquid process wastes or process wastes containing free liquids, and which is not an injection well. Examples of ponds/impoundments include holding, storage, settling, and aeration pits, ponds, and lagoons. It does not include building sumps and outdoor collection/transfer concrete basins.

A "***pond/impoundment system***" is defined as a system consisting of one or more ponds/impoundments.

A "***wastewater treatment unit***" is defined as a unit operation used to remove pollutants from process wastewater. Wastewater treatment units include, but are not limited to: ponds/impoundments, chemical precipitation, pH adjustment, clarification, biological reactor, thickeners, filters, and constructed wetlands.

A "***wastewater treatment system***" is defined as a combination of one or more "wastewater treatment units", other than ponds/impoundments, designed to achieve wastewater treatment.

NOTE: If a pond/impoundment unit (as defined in Section 4.1) is part of a broader "wastewater treatment system" containing non-pond units (e.g., a pond/impoundment unit in a biological wastewater treatment system), it is not considered part of a pond/impoundment system.

Throughout Part D, information is requested for pond/impoundment and wastewater treatment units and systems that are under construction/installation, or planned to be under construction/installation by December 31, 2020. Provide design information, or best engineering estimates as necessary, for these planned systems/units. Additionally, indicate “NA” if the information requested is not applicable for planned systems/units (e.g., a question that requests flow rate data for year 2009).

As you are completing the electronic form, note the following: When you enter your plant name and plant ID on the Part D Table of Contents tab, all name and ID fields throughout Part D will automatically populate. Refer to the overall questionnaire instructions, the glossary, and the acronym list for assistance with completing Part D.

Please provide all free response answers in the highlighted yellow areas. Throughout Part D, you may need to make copies of certain sections/questions. Instructions are provided throughout Part D regarding making copies. Note that pond/impoundment system (and unit) and wastewater treatment system ID's must be populated on the copied tab or section, located in the upper right corner under "Plant ID" and "Plant Name", in order to correlate the requested information with the pond/impoundment or wastewater treatment system.

Use the Part D Comments tab to do the following: provide additional information as requested in certain questions within Part D; indicate atypical data (e.g., if 2009 information is not representative of normal operations); and note methods used to make best engineering estimates in the event that exact data are not available.

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: D
Section Title: 1. Plant Pond/Impoundment Systems and Wastewater Treatment Systems

CBI?
☐ Yes

D1-1. Have you used, do you use, OR do you plan to use (or begin construction/installation of) by December 31, 2020 any *ponds/impoundments* for the storage, treatment, and/or disposal of *process wastewater*, *residues*, or by-products (or *sludges* or water streams containing the residues or by-products) from the combustion of coal, petroleum coke, or oil, including but not limited to *fly ash*, *bottom ash*, boiler slag, or flue gas emission control residues?

Note: This includes ponds/impoundments located on non-adjoining property that are under the operational control of the plant.

○ Yes
○ No

CBI?
☐ Yes

D1-2. Do you operate OR plan to operate (or begin construction/installation of) by December 31, 2020 any wastewater treatment systems, other than pond/impoundment systems, for the treatment of process wastewaters from ash handling or FGD operations?

Note: This includes systems located on non-adjoining property that are under the operational control of the plant.

○ Yes
○ No

If you answered "No" to both Questions D1-1 and D1-2, do NOT complete the remainder of Part D. Skip to the next Questionnaire Part. Otherwise, continue to Part D Section 2.

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: D
Section Title: 2. Pond/Impoundment System and Wastewater Treatment System Identification

Instructions: Complete Section 2 (Questions D2-1 through D2-7) for *pond/impoundment systems* and/or *wastewater treatment systems* that the plant operates and/or plans to operate (or begin construction/installation of) by December 31, 2020, including those located on non-adjoining property, for the treatment of *process wastewaters* from ash handling or FGD operations. Please provide all free response answers in the highlighted yellow areas.

CBI? ☐ Yes

D2-1. Has the plant been involved with any ash or FGD wastewater treatment studies (pilot- or full-scale), including studies on pond/impoundment systems, since 2000?

○ Yes (Continue)
○ No (Skip to Question D2-4)

CBI? ☐ Yes

D2-2. Are any of these studies ongoing?

○ Yes
○ No

CBI? ☐ Yes

D2-3. Was a summary and/or report describing/documenting the pilot- or full-scale study prepared (including internal and published reports)?

○ Yes (Provide a copy of the summary/report)
○ No (Continue)

Provide a description of the pilot- or full-scale study. Note the types of treatment technologies studied and the analytes measured in influent to and/or effluents from the wastewater treatment system.

Approved: May 20, 2010

CBI?
☐ Yes

D2-4. List any ash or FGD wastewater treatment technologies that have been studied by the plant that are not covered by Questions D2-1 through D2-3 (e.g., those that have been studied in bench-scale studies).

CBI?
☐ Yes

D2-5. Do you operate OR plan to operate (or begin construction/installation of) by December 31, 2020 any systems, including those located on non-adjoining property, for the treatment of process wastewaters from ash handling or FGD operations?

◯ **Yes** (Continue)

◯ No (Skip to Section 4.1)

CBI?
☐ Yes

D2-6. Do you operate OR plan to operate (or begin construction/installation of) by December 31, 2020 any pond/impoundment systems, including those located on non-adjoining property, for the treatment of process wastewaters from ash handling or FGD operations?

◯ Yes (Continue)

◯ No (Skip to Question D2-7)

List these pond/impoundment systems in Table D-1. For each pond/impoundment system, EPA assigned a number (e.g., POND-1, POND-2) in Table D-1, which will be used throughout the remainder of the survey. In the "Plant Designation" column, provide the plant's name for each pond/impoundment system. In the "Individual Ponds/Impoundments Included in the Pond System" column, identify all pond/impoundment units from Table A-4 that are included in the pond system.

NOTE: Do NOT include a pond/impoundment unit in Table D-1 if the pond/impoundment unit is or is planned to be part of a broader wastewater treatment system containing *non-pond wastewater treatment units* (e.g., pond/impoundment unit in a biological wastewater treatment system).

Table D-1. Plant Pond/Impoundment Systems

Pond/ Impoundment System ID	Year Initially Brought Online	Plant Designation	Individual Pond/Impoundments (Identified in Table A-4) Included in the Pond/Impoundment System
Active/Inactive/Open Pond/Impoundment Systems			
POND-1			☐ SPD - 1 ☐ SPD - 3 ☐ SPD - 5 ☐ SPD - 7 ☐ SPD - 9 ☐ SPD - 11 ☐ SPD - 13 ☐ SPD - 2 ☐ SPD - 4 ☐ SPD - 6 ☐ SPD - 8 ☐ SPD - 10 ☐ SPD - 12 ☐ SPD - 14
POND-2			☐ SPD - 1 ☐ SPD - 3 ☐ SPD - 5 ☐ SPD - 7 ☐ SPD - 9 ☐ SPD - 11 ☐ SPD - 13 ☐ SPD - 2 ☐ SPD - 4 ☐ SPD - 6 ☐ SPD - 8 ☐ SPD - 10 ☐ SPD - 12 ☐ SPD - 14
POND-3			☐ SPD - 1 ☐ SPD - 3 ☐ SPD - 5 ☐ SPD - 7 ☐ SPD - 9 ☐ SPD - 11 ☐ SPD - 13 ☐ SPD - 2 ☐ SPD - 4 ☐ SPD - 6 ☐ SPD - 8 ☐ SPD - 10 ☐ SPD - 12 ☐ SPD - 14
POND-4			☐ SPD - 1 ☐ SPD - 3 ☐ SPD - 5 ☐ SPD - 7 ☐ SPD - 9 ☐ SPD - 11 ☐ SPD - 13 ☐ SPD - 2 ☐ SPD - 4 ☐ SPD - 6 ☐ SPD - 8 ☐ SPD - 10 ☐ SPD - 12 ☐ SPD - 14
POND-5			☐ SPD - 1 ☐ SPD - 3 ☐ SPD - 5 ☐ SPD - 7 ☐ SPD - 9 ☐ SPD - 11 ☐ SPD - 13 ☐ SPD - 2 ☐ SPD - 4 ☐ SPD - 6 ☐ SPD - 8 ☐ SPD - 10 ☐ SPD - 12 ☐ SPD - 14
POND-6			☐ SPD - 1 ☐ SPD - 3 ☐ SPD - 5 ☐ SPD - 7 ☐ SPD - 9 ☐ SPD - 11 ☐ SPD - 13 ☐ SPD - 2 ☐ SPD - 4 ☐ SPD - 6 ☐ SPD - 8 ☐ SPD - 10 ☐ SPD - 12 ☐ SPD - 14
POND-7			☐ SPD - 1 ☐ SPD - 3 ☐ SPD - 5 ☐ SPD - 7 ☐ SPD - 9 ☐ SPD - 11 ☐ SPD - 13 ☐ SPD - 2 ☐ SPD - 4 ☐ SPD - 6 ☐ SPD - 8 ☐ SPD - 10 ☐ SPD - 12 ☐ SPD - 14
POND-8			☐ SPD - 1 ☐ SPD - 3 ☐ SPD - 5 ☐ SPD - 7 ☐ SPD - 9 ☐ SPD - 11 ☐ SPD - 13 ☐ SPD - 2 ☐ SPD - 4 ☐ SPD - 6 ☐ SPD - 8 ☐ SPD - 10 ☐ SPD - 12 ☐ SPD - 14
POND-9			☐ SPD - 1 ☐ SPD - 3 ☐ SPD - 5 ☐ SPD - 7 ☐ SPD - 9 ☐ SPD - 11 ☐ SPD - 13 ☐ SPD - 2 ☐ SPD - 4 ☐ SPD - 6 ☐ SPD - 8 ☐ SPD - 10 ☐ SPD - 12 ☐ SPD - 14
POND-10			☐ SPD - 1 ☐ SPD - 3 ☐ SPD - 5 ☐ SPD - 7 ☐ SPD - 9 ☐ SPD - 11 ☐ SPD - 13 ☐ SPD - 2 ☐ SPD - 4 ☐ SPD - 6 ☐ SPD - 8 ☐ SPD - 10 ☐ SPD - 12 ☐ SPD - 14

Retired/Closed Pond/Impoundment Systems			
RET-POND-1			☐ RET SPD - 1 ☐ RET SPD - 3 ☐ RET SPD - 2 ☐ RET SPD - 4
RET-POND-2			☐ RET SPD - 1 ☐ RET SPD - 3 ☐ RET SPD - 2 ☐ RET SPD - 4
RET-POND-3			☐ RET SPD - 1 ☐ RET SPD - 3 ☐ RET SPD - 2 ☐ RET SPD - 4
RET-POND-4			☐ RET SPD - 1 ☐ RET SPD - 3 ☐ RET SPD - 2 ☐ RET SPD - 4
RET-POND-5			☐ RET SPD - 1 ☐ RET SPD - 3 ☐ RET SPD - 2 ☐ RET SPD - 4
Planned Pond/Impoundment Systems			
POND-A			☐ SPD - A ☐ SPD - C ☐ SPD - E ☐ SPD - B ☐ SPD - D
POND-B			☐ SPD - A ☐ SPD - C ☐ SPD - E ☐ SPD - B ☐ SPD - D
POND-C			☐ SPD - A ☐ SPD - C ☐ SPD - E ☐ SPD - B ☐ SPD - D

CBI?
☐ Yes

D2-7. Do you operate OR plan to operate (or begin construction/installation of) by December 31, 2020 any wastewater treatment systems, including those located on non-adjoining property, other than pond/impoundment systems for the treatment of *process wastewaters* from ash handling or FGD operations?

○ Yes (Continue)

○ No (Skip to Section 3.1)

List these wastewater treatment systems in Table D-2. For each wastewater treatment system, EPA assigned a number (e.g., WWT-1, WWT-2) in Table D-2, which will be used throughout the remainder of the survey. In the “Plant Designation” column, provide the plant’s name for each wastewater treatment system. As an example, if a plant operates a *chemical precipitation* FGD wastewater treatment system that discharges to an ash pond/impoundment system (as shown in EPA example diagrams EPA_D-1 and EPA_D-2 located at the bottom of Part D Section 3.1) the FGD wastewater treatment system should be identified in Table D-2 (e.g., as WWT-1) and the ash pond/impoundment system should have been previously identified in Table D-1 (e.g., as POND-1).

Note that "Approximate Length of Piping from FGD Scrubber System" refers to the length of piping from the *FGD solids separation* overflow storage tank (or *FGD scrubber absorber* if no FGD solids separation) to the beginning of the FGD wastewater treatment system. "Approximate Length of Piping to Subsequent Treatment or Discharge" refers to the length of piping from the end of the FGD wastewater treatment system to either the beginning of the subsequent treatment system or the wastewater discharge point,
as appropriate.

Table D-2. Plant Wastewater Treatment Systems

Wastewater Treatment System ID	Plant Designation	Treatment System Footprint (ft^2)	Year Initially Brought On Line	FGD Wastewater Treatment	
				Approximate Length of Piping from FGD Scrubber System (ft)	Approximate Length of Piping to Subsequent Treatment or Discharge (ft)
Operating Wastewater Treatment Systems					
WWT-1					
WWT-2					
WWT-3					
WWT-4					
WWT-5					
WWT-6					
Planned Wastewater Treatment Systems					
WWT-A					
WWT-B					
WWT-C					

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name
Pond/Impoundment System ID or Wastewater Treatment System ID: Insert System ID

Part: D
Section Title: 3.1. Wastewater Treatment Diagram

Instructions: Complete Section 3.1 (Question D3-1) for each *pond/impoundment system* or *wastewater treatment system* identified in Table D-1 and Table D-2, including planned systems, systems under construction/installation, or planned to be under construction/installation by December 31, 2020. Enter the pond/impoundment system ID or wastewater treatment system ID in the yellow highlighted space provided above (use the pond/impoundment system ID or wastewater treatment system ID assigned in Table D-1 and Table D-2).

Make a copy of Section 3.1 for each pond/impoundment system or wastewater treatment system identified in Table D-1 and Table D-2 using the "Copy Section 3.1" button below.

Copy Section 3.1

CBI?
☐ Yes

D3-1. Attach a block diagram that shows the pond/impoundment system or wastewater treatment system operations, the process wastewaters that currently enter or are planned to enter the pond/impoundment system or wastewater treatment system, and the ultimate destinations of the pond/impoundment system or wastewater treatment system effluent(s). Specific instructions for the diagram are provided in the checklist below. The diagram should have a similar level of detail as EPA's example diagrams, EPA_D-1 and EPA_D-2.

NOTE: You may use an existing diagram, such as a water balance diagram included in the plant's NPDES Form 2C, and mark the additional required information on the diagram by hand.

Provide as many diagrams as necessary to convey the information requested in the checklist below. Number each block diagram in the upper right corner; the first block diagram should be numbered D-1, the second D-2, etc. Include the plant name, plant ID, and pond/impoundment system ID or wastewater treatment system ID in the upper right hand corner of the diagram.

☐ Diagram attached.

Block Diagram Checklist

Mark the boxes below to verify that you have completed each checklist item…

☐ Include the block diagram number, plant name, plant ID, and pond/impoundment system ID or wastewater treatment system ID on the diagram.

☐ Include each pond/impoundment or wastewater treatment unit operation. Show all influent and effluent streams from the units and label all influent and effluent streams from the pond/impoundment system or wastewater treatment system using the code tables on the "Code Tables" tab provided at the end of this workbook. Note that the "Code Tables" tab provides codes for wastewater treatment units that are operated in series and/or in parallel (e.g., in EPA_D-1, Chemical Precipitation Reaction Tank 1-1 and Chemical Precipitation Reaction Tank 2-1 are in series). Effluent streams may include *process wastewater* and *sludges* .

☐ If applicable, use EPA-assigned numbers from Part A or B (e.g., FGD-1) to label *process operations* . If a process operation does not have an EPA-assigned number (e.g., boiler, air preheater), use the plant-designated name for the process operation. When sources or destinations are not shown on the diagram (i.e., the stream is entering from a location not shown on the diagram), describe the source or destination and add the block diagram number, when appropriate, where the stream's previous location can be seen. Use codes from the code tables on the "Code Tables" tab provided at the end of this workbook.

☐ Indicate where chemical addition occurs (i.e., into or between which wastewater treatment units). For pond/impoundment wastewater treatment units, indicate and note on the diagram where within or near the pond/impoundment the chemical is added (e.g., within the pond/impoundment near the process wastewater influent point, within the pond/impoundment near the effluent, in the effluent/discharge canal). The chemicals indicated should correspond to the chemicals listed in Table D-7 and Table D-13.

☐ Identify the final, general destination of the *treated* process wastewater and waste streams (e.g., treated process wastewater effluent to *POTW* or surface waters; solid wastes to on- or off-site destinations). Use codes from code tables on the "Code Tables" tab provided at the end of this workbook, when applicable.

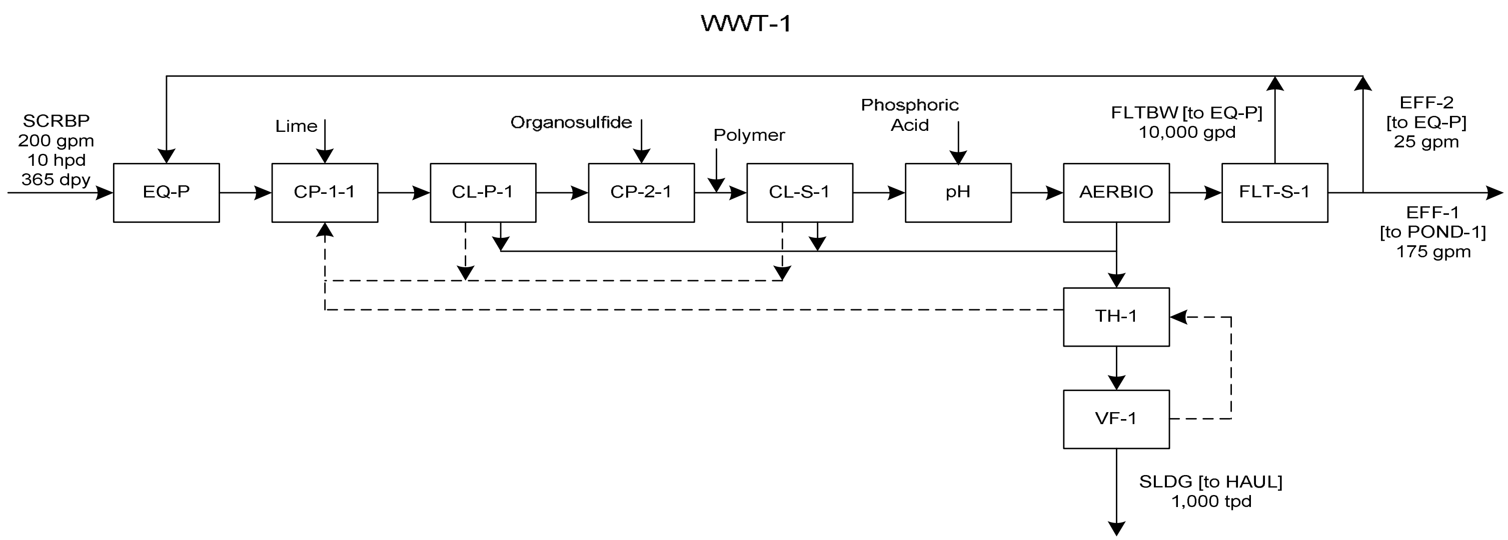
☐ Indicate, as appropriate, where treated process wastewater is *reused* or *recycled* within the plant (e.g., reuse of settling pond/impoundment water as fly ash sluice).

☐ Include the average annual (2009) flow rates for influent and effluent streams from the wastewater treatment system on the diagram (in gpm or gpd). For planned pond/impoundment systems and wastewater treatment systems, provide the design flow rates for the system. Note that these should be the same flow rates that are entered into Tables D-3 and D-4 in Questions D3-2 and D3-3. If the actual number of days of operation for 2009 is not known, the total annual flow may be divided by 365 days and a comment added to the Comments page. If the process wastewater stream is intermittent, provide amount and frequency; for example “100 gal, twice/day, 100 dpy” or “1000 gpm, 4 hpd, 365 dpy”. For sludges, provide amount in tpd.

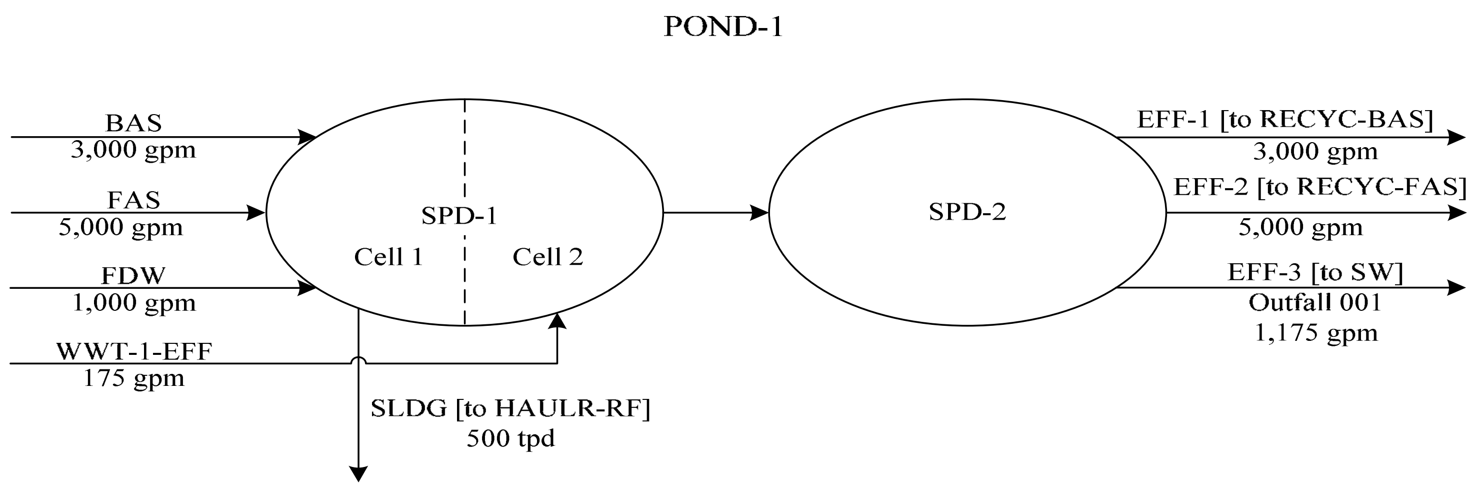
☐ Include *NPDES permit* outfall numbers, if applicable.

If you believe that the diagram should be treated as confidential, stamp it "Confidential" or write "Confidential" or "CBI" across the top. If any diagram is not marked "Confidential", it will be considered nonconfidential under 40 CFR Part 2, Subpart B.

Review:
If any of the statements above were not checked, revise the block diagram(s) and ensure all statements have been checked.



Example EPA_D-1. Block Diagram for FGD Wastewater Treatment System



Example EPA_D-2. Block Diagram for Ash Pond System

NOTE: The codes used in these diagrams correspond the code tables on the "Code Tables" tab provided at the end of this workbook.

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name
Pond/Impoundment System ID or Wastewater Treatment System ID: Insert System ID

Part: D
Section Title: 3.2. Wastewater Treatment Wastewater Flows

Instructions: Complete Section 3.2 (Question D3-2 and D3-3) for each *pond/impoundment system* or *wastewater treatment system* identified in Table D-1 and Table D-2, including planned systems, systems under construction/installation, or planned to be under construction/installation by December 31, 2020. Enter the pond/impoundment system ID or wastewater treatment system ID in the yellow highlighted space provided above (use the pond/impoundment system ID or wastewater treatment system ID assigned in Table D-1 and Table D-2).

Make a copy of Section 3.2 for each pond/impoundment system or wastewater treatment system identified in Table D-1 and Table D-2 using the "Copy Section 3.2" button below.

Copy Section 3.2

CBI?
☐ Yes

D3-2. Complete a row in Table D-3 for each *process wastewater* stream or *treated* wastewater stream that enters this pond/impoundment system or wastewater treatment system. For planned pond/impoundment systems and wastewater treatment systems, provide the design flow rates for the system. Use the process and treated wastewater terms provided in the drop down menus. Note that these terms originated from code tables on the "Code Tables" tab provided at the end of this workbook.

Note: The examples in Tables D-3 and D-4 are derived from the EPA examples diagrams, EPA_D-1 and EPA_D-2, provided at the bottom of Part D Section 3.1.

Table D-3. Pond/Impoundment System or Wastewater Treatment System Influent Flows in 2009

Process or Treated Wastewater	Average Annual (2009) Wastewater Flow Rate	Wastewater Treatment Unit ID
Example (from EPA_D-1):		
FGD scrubber purge	**200** gpm **10** hpd **365** dpy	Equalization, Primary
Other:	OR gpd dpy	Other:
Example (from EPA_D-2):		
WWT-1 Effluent	**175** gpm **24** hpd **365** dpy	Pond Unit - 1
Other:	OR gpd dpy	Other:
Process or Treated Wastewater (Influent Table D-3)	gpm hpd dpy	Wastewater Treatment Units
Other:	OR gpd dpy	Other:
Process or Treated Wastewater (Influent Table D-3)	gpm hpd dpy	Wastewater Treatment Units
Other:	OR gpd dpy	Other:
Process or Treated Wastewater (Influent Table D-3)	gpm hpd dpy	Wastewater Treatment Units
Other:	OR gpd dpy	Other:
Process or Treated Wastewater (Influent Table D-3)	gpm hpd dpy	Wastewater Treatment Units
Other:	OR gpd dpy	Other:
Process or Treated Wastewater (Influent Table D-3)	gpm hpd dpy	Wastewater Treatment Units
Other:	OR gpd dpy	Other:
Process or Treated Wastewater (Influent Table D-3)	gpm hpd dpy	Wastewater Treatment Units
Other:	OR gpd dpy	Other:
Process or Treated Wastewater (Influent Table D-3)	gpm hpd dpy	Wastewater Treatment Units
Other:	OR gpd dpy	Other:
Process or Treated Wastewater (Influent Table D-3)	gpm hpd dpy	Wastewater Treatment Units
Other:	OR gpd dpy	Other:

Process or Treated Wastewater (Influent Table D-3)	gpm	hpd	dpy	Wastewater Treatment Units
Other:	OR	gpd	dpy	Other:
Process or Treated Wastewater (Influent Table D-3)	gpm	hpd	dpy	Wastewater Treatment Units
Other:	OR	gpd	dpy	Other:
Process or Treated Wastewater (Influent Table D-3)	gpm	hpd	dpy	Wastewater Treatment Units
Other:	OR	gpd	dpy	Other:
Process or Treated Wastewater (Influent Table D-3)	gpm	hpd	dpy	Wastewater Treatment Units
Other:	OR	gpd	dpy	Other:
Process or Treated Wastewater (Influent Table D-3)	gpm	hpd	dpy	Wastewater Treatment Units
Other:	OR	gpd	dpy	Other:
Process or Treated Wastewater (Influent Table D-3)	gpm	hpd	dpy	Wastewater Treatment Units
Other:	OR	gpd	dpy	Other:
Process or Treated Wastewater (Influent Table D-3)	gpm	hpd	dpy	Wastewater Treatment Units
Other:	OR	gpd	dpy	Other:
Process or Treated Wastewater (Influent Table D-3)	gpm	hpd	dpy	Wastewater Treatment Units
Other:	OR	gpd	dpy	Other:
Process or Treated Wastewater (Influent Table D-3)	gpm	hpd	dpy	Wastewater Treatment Units
Other:	OR	gpd	dpy	Other:
Process or Treated Wastewater (Influent Table D-3)	gpm	hpd	dpy	Wastewater Treatment Units
Other:	OR	gpd	dpy	Other:
Process or Treated Wastewater (Influent Table D-3)	gpm	hpd	dpy	Wastewater Treatment Units
Other:	OR	gpd	dpy	Other:
Process or Treated Wastewater (Influent Table D-3)	gpm	hpd	dpy	Wastewater Treatment Units
Other:	OR	gpd	dpy	Other:
Process or Treated Wastewater (Influent Table D-3)	gpm	hpd	dpy	Wastewater Treatment Units
Other:	OR	gpd	dpy	Other:
Process or Treated Wastewater (Influent Table D-3)	gpm	hpd	dpy	Wastewater Treatment Units
Other:	OR	gpd	dpy	Other:
Process or Treated Wastewater (Influent Table D-3)	gpm	hpd	dpy	Wastewater Treatment Units
Other:	OR	gpd	dpy	Other:
Process or Treated Wastewater (Influent Table D-3)	gpm	hpd	dpy	Wastewater Treatment Units
Other:	OR	gpd	dpy	Other:
Process or Treated Wastewater (Influent Table D-3)	gpm	hpd	dpy	Wastewater Treatment Units
Other:	OR	gpd	dpy	Other:
Process or Treated Wastewater (Influent Table D-3)	gpm	hpd	dpy	Wastewater Treatment Units
Other:	OR	gpd	dpy	Other:
Process or Treated Wastewater (Influent Table D-3)	gpm	hpd	dpy	Wastewater Treatment Units
Other:	OR	gpd	dpy	Other:
Process or Treated Wastewater (Influent Table D-3)	gpm	hpd	dpy	Wastewater Treatment Units
Other:	OR	gpd	dpy	Other:
Process or Treated Wastewater (Influent Table D-3)	gpm	hpd	dpy	Wastewater Treatment Units
Other:	OR	gpd	dpy	Other:
Process or Treated Wastewater (Influent Table D-3)	gpm	hpd	dpy	Wastewater Treatment Units
Other:	OR	gpd	dpy	Other:

CBI?
☐ Yes

D3-3. Complete a row in Table D-4 for each treated wastewater stream or *sludge* stream that exits this pond/impoundment system or wastewater treatment system (i.e., streams that are *discharged*, *recycled*, or disposed). For planned pond/impoundment systems and wastewater treatment systems, provide the design flow rates for the system. Use the treated wastewater, wastewater treatment unit, and destination terms provided in the drop down menus. Note that these terms originated from code tables on the "Code Tables" tab provided at the end of this workbook.

*Provide the *NPDES permit* outfall number of the effluent in the last column of the table, if applicable.

Table D-4. Pond/Impoundment System or Wastewater Treatment System Effluent Flows in 2009

				Solids and Sludge			Final Destination		
Treated Wastewater	**Average Annual (2009) Wastewater Flow Rate**			**Amount (tpd or gpm)**		**% Moisture**	**Wastewater Treatment Unit ID**	**Destination**	**NPDES Permit Outfall Number***
Example (from EPA_D-1):					○ tpd				
Effluent - 1	**175** gpm	**24** hpd	**365** dpy	**NA**	○ gpm	**NA**	NA	POND-1	**NA**
Other:	OR	**NA** gpd	**NA** dpy				Other:	Other:	
Example (from EPA_D-1):					○ tpd				
Filter backwash	**NA** gpm	**NA** hpd	**NA** dpy	**NA**	○ gpm	**NA**	Equalization, Secondary	NA	**NA**
Other:	OR	**10,000** gpd	**365** dpy				Other:	Other:	
Example (from EPA_D-2):					◉ tpd				
Sludge	**NA** gpm	**NA** hpd	**NA** dpy	**500**	○ gpm	**30**	NA	Hauled off site for reuse (removal fee)	**NA**
Other:	OR	**NA** gpd	**NA** dpy				Other:	Other:	
Example (from EPA_D-2):					○ tpd				
Effluent - 2	**5,000** gpm	**24** hpd	**365** dpy	**NA**	○ gpm	**NA**	NA	Reuse as fly ash sluice	**NA**
Other:	OR	**NA** gpd	**NA** dpy				Other:	Other:	
Example (from EPA_D-2):					○ tpd				
Effluent - 3	**1,175** gpm	**24** hpd	**365** dpy	**NA**	○ gpm	**NA**	NA	Discharge to surface water	**001**
Other:	OR	gpd	dpy				Other:	Other:	
Treated Wastewater (Effluents Table D-4)	gpm	hpd	dpy		○ tpd ○ gpm		Wastewater Treatment Units	Destinations	
Other:	OR	gpd	dpy				Other:	Other:	
Treated Wastewater (Effluents Table D-4)	gpm	hpd	dpy		○ tpd ○ gpm		Wastewater Treatment Units	Destinations	
Other:	OR	gpd	dpy				Other:	Other:	
Treated Wastewater (Effluents Table D-4)	gpm	hpd	dpy		○ tpd ○ gpm		Wastewater Treatment Units	Destinations	
Other:	OR	gpd	dpy				Other:	Other:	
Treated Wastewater (Effluents Table D-4)	gpm	hpd	dpy		○ tpd ○ gpm		Wastewater Treatment Units	Destinations	
Other:	OR	gpd	dpy				Other:	Other:	
Treated Wastewater (Effluents Table D-4)	gpm	hpd	dpy		○ tpd ○ gpm		Wastewater Treatment Units	Destinations	
Other:	OR	gpd	dpy				Other:	Other:	
Treated Wastewater (Effluents Table D-4)	gpm	hpd	dpy		○ tpd ○ gpm		Wastewater Treatment Units	Destinations	
Other:	OR	gpd	dpy				Other:	Other:	
Treated Wastewater (Effluents Table D-4)	gpm	hpd	dpy		○ tpd ○ gpm		Wastewater Treatment Units	Destinations	
Other:	OR	gpd	dpy				Other:	Other:	
Treated Wastewater (Effluents Table D-4)	gpm	hpd	dpy		○ tpd ○ gpm		Wastewater Treatment Units	Destinations	
Other:	OR	gpd	dpy				Other:	Other:	
Treated Wastewater (Effluents Table D-4)	gpm	hpd	dpy		○ tpd ○ gpm		Wastewater Treatment Units	Destinations	
Other:	OR	gpd	dpy				Other:	Other:	

Treated Wastewater (Effluents Table D-4)	gpm	hpd	dpy		○ tpd		Wastewater Treatment Units	Destinations	
Other:	OR	gpd	dpy		○ gpm		Other:	Other:	
Treated Wastewater (Effluents Table D-4)	gpm	hpd	dpy		○ tpd		Wastewater Treatment Units	Destinations	
Other:	OR	gpd	dpy		○ gpm		Other:	Other:	
Treated Wastewater (Effluents Table D-4)	gpm	hpd	dpy		○ tpd		Wastewater Treatment Units	Destinations	
Other:	OR	gpd	dpy		○ gpm		Other:	Other:	
Treated Wastewater (Effluents Table D-4)	gpm	hpd	dpy		○ tpd		Wastewater Treatment Units	Destinations	
Other:	OR	gpd	dpy		○ gpm		Other:	Other:	
Treated Wastewater (Effluents Table D-4)	gpm	hpd	dpy		○ tpd		Wastewater Treatment Units	Destinations	
Other:	OR	gpd	dpy		○ gpm		Other:	Other:	
Treated Wastewater (Effluents Table D-4)	gpm	hpd	dpy		○ tpd		Wastewater Treatment Units	Destinations	
Other:	OR	gpd	dpy		○ gpm		Other:	Other:	
Treated Wastewater (Effluents Table D-4)	gpm	hpd	dpy		○ tpd		Wastewater Treatment Units	Destinations	
Other:	OR	gpd	dpy		○ gpm		Other:	Other:	
Treated Wastewater (Effluents Table D-4)	gpm	hpd	dpy		○ tpd		Wastewater Treatment Units	Destinations	
Other:	OR	gpd	dpy		○ gpm		Other:	Other:	
Treated Wastewater (Effluents Table D-4)	gpm	hpd	dpy		○ tpd		Wastewater Treatment Units	Destinations	
Other:	OR	gpd	dpy		○ gpm		Other:	Other:	
Treated Wastewater (Effluents Table D-4)	gpm	hpd	dpy		○ tpd		Wastewater Treatment Units	Destinations	
Other:	OR	gpd	dpy		○ gpm		Other:	Other:	
Treated Wastewater (Effluents Table D-4)	gpm	hpd	dpy		○ tpd		Wastewater Treatment Units	Destinations	
Other:	OR	gpd	dpy		○ gpm		Other:	Other:	
Treated Wastewater (Effluents Table D-4)	gpm	hpd	dpy		○ tpd		Wastewater Treatment Units	Destinations	
Other:	OR	gpd	dpy		○ gpm		Other:	Other:	
Treated Wastewater (Effluents Table D-4)	gpm	hpd	dpy		○ tpd		Wastewater Treatment Units	Destinations	
Other:	OR	gpd	dpy		○ gpm		Other:	Other:	
Treated Wastewater (Effluents Table D-4)	gpm	hpd	dpy		○ tpd		Wastewater Treatment Units	Destinations	
Other:	OR	gpd	dpy		○ gpm		Other:	Other:	
Treated Wastewater (Effluents Table D-4)	gpm	hpd	dpy		○ tpd		Wastewater Treatment Units	Destinations	
Other:	OR	gpd	dpy		○ gpm		Other:	Other:	
Treated Wastewater (Effluents Table D-4)	gpm	hpd	dpy		○ tpd		Wastewater Treatment Units	Destinations	
Other:	OR	gpd	dpy		○ gpm		Other:	Other:	
Treated Wastewater (Effluents Table D-4)	gpm	hpd	dpy		○ tpd		Wastewater Treatment Units	Destinations	
Other:	OR	gpd	dpy		○ gpm		Other:	Other:	
Treated Wastewater (Effluents Table D-4)	gpm	hpd	dpy		○ tpd		Wastewater Treatment Units	Destinations	
Other:	OR	gpd	dpy		○ gpm		Other:	Other:	

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Plant ID: Insert Plant ID
Plant Name: Insert Plant Name
Pond/Impoundment Unit ID: Insert Unit ID

Part: D
Section Title: 4.1. Active/Inactive/Open and Planned Pond/Impoundment Unit Information

Instructions: Complete Section 4.1 (Questions D4-1 through D4-12) for each active/inactive/open *pond/impoundment* unit used OR planned to be used (or constructed/installed), including those located on non-adjoining property, by December 31, 2020 for the storage, treatment, and/or disposal of process wastewater, *residues* , or by-products (or *sludges* or water streams containing the residues or by-products) from the combustion of coal, petroleum coke, or oil, including but not limited to fly ash, bottom ash, boiler slag, or flue gas emission control residues. Use the pond/impoundment unit IDs assigned in Table A-4.

Make a copy of Section 4.1 for each active/inactive/open and planned pond/impoundment units used (or planned to be used) for the storage, treatment, and/or disposal of process wastewater, residues, or by-products (or sludges or water streams containing the residues or by-products) from the combustion of coal, petroleum coke, or oil, including but not limited to fly ash, bottom ash, boiler slag, or flue gas emission control residues using the "Copy Section 4.1" button below.

NOTE: If a pond/impoundment unit is part of a broader wastewater treatment system containing non-pond wastewater treatment units (e.g., a pond/impoundment unit in a biological wastewater treatment system), complete questions in this section for the pond/impoundment unit.

CBI? ☐ Yes

D4-1. Do you use OR plan to use (or begin construction/installation of) by December 31, 2020, any active/inactive/open ponds/impoundments, including those located on non-adjoining property, for the storage, treatment, and/or disposal of process wastewater, residues, or by-products (or sludges or water streams containing the residues or by-products) from the combustion of coal, petroleum coke, or oil, including but not limited to fly ash, bottom ash, boiler slag, or flue gas emission control residues?

○ Yes (Continue)
○ No (Skip to Section 4.2)

Copy Section 4.1

CBI? ☐ Yes

D4-2. Provide the residence time of the process wastewater in the pond/impoundment unit, the life of the pond/impoundment unit (based on the current estimation), and the number of cells in the pond/impoundment unit.

________ Residence time, hours (as currently operated)
________ Life of pond/impoundment unit, years (based on current estimation)
________ Number of cells in pond/impoundment unit

CBI? ☐ Yes

D4-3. Complete Table D-5. Provide the pond/impoundment unit's volume, surface area, bottom and top elevation, freeboard height, maximum height of berms and dams above the surrounding grade, and the total quantity of solids placed in the pond/impoundment when it was originally built or planned/designed, at its current status, and at its expected end of life. Additionally, provide the expected year of closure/retirement in the "Expected End of Life" column. Volume should reflect the free water volume, including the stored solids. For planned pond/impoundment units, enter "NA" in all fields in the "Current" column. Figure D-1 presents an illustration of pond/impoundment dimensions.

Note: Respondents are not required to take new measurements to provide this data; however, best available information should be used to complete Table D-5.

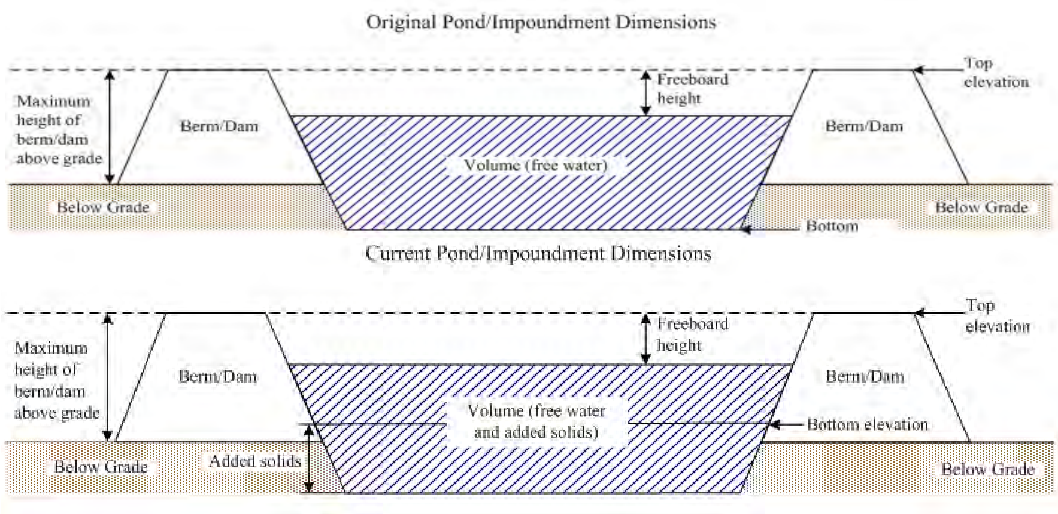

Figure D-1. Pond/Impoundment Dimensions

Table D-5. Active/Inactive/Open and Planned Pond/Impoundment Information

	Originally Built or Planned/Designed	Current	Expected End of Life
Volume, ft^3			
Surface area, ft^2			
Bottom elevation, ft			
Top elevation, ft			
Freeboard height, ft			
Maximum height of berms/dams above grade, ft			
Total solids placed in the pond/impoundment, tons			
Expected year of closure/retirement			

CBI?
☐ Yes

D4-4. Does the pond/impoundment unit have a *liner*?

- ○ Yes (Complete Table D-6)
- ○ No (Skip to Question D4-5)
- ○ NA (Pond/Impoundment is planned to be constructed. Information is currently unavailable. Skip to Question D4-10).

Table D-6. Pond/Impoundment Unit Liner

Liner Layer Number (number from inner to outer layer)	Type of Liner	Thickness of Liner Layer (cm)	Permeability of Liner Layer (cm/sec)
	○ Compacted clay ○ Geosynthetic clay ○ High density polyethylene (HDPE) ○ Other (provide below:)		
	○ Compacted clay ○ Geosynthetic clay ○ High density polyethylene (HDPE) ○ Other (provide below:)		
	○ Compacted clay ○ Geosynthetic clay ○ High density polyethylene (HDPE) ○ Other (provide below:)		
	○ Compacted clay ○ Geosynthetic clay ○ High density polyethylene (HDPE) ○ Other (provide below:)		

CBI?
☐ Yes

D4-5. Has the pond/impoundment unit ever been dredged?

○ Yes (Provide following information)

- ________ Year of last dredging
- ________ Frequency of dredging that year, dpy
- ________ Amount of material removed that year, tons
- ________ Number of times dredged in the last five years
- ________ Number of days dredged in the last five years
- ________ Amount of material removed in the last five years, tons

○ No (Skip to Question D4-7)

○ NA (Pond/Impoundment is planned to be constructed. Skip to Question D4-10)

CBI?
☐ Yes

D4-6. Indicate where the dredged solids are transferred or are planned to be transferred.

- ○ Dredged solids used in embankment construction.
- ○ Dredged solids transferred to landfill.
- ○ Dredged solids marketed/sold for reuse.
- ○ Other (Explain): ______

CBI?
☐ Yes

D4-7. Has the pond/impoundment unit been expanded since the date it was built?

- ○ Yes (Continue)
- ○ No (Skip to Question D4-10)
- ○ NA (Pond/Impoundment is planned to be constructed. Skip to Question D4-10)

CBI?
☐ Yes

D4-8. Identify the type of expansion.

- ○ Lateral expansion
- ○ Vertical expansion
- ○ Both lateral and vertical expansion

CBI?
☐ Yes

D4-9. Describe any expansion(s), since January 1, 2000, to the pond/impoundment unit, including the starting and ending dimensions.

______

Provide the total cost associated with the expansion(s). Total costs should include labor, materials, energy, hazardous and nonhazardous waste disposal, purchased equipment, installation, buildings, site preparation, land, engineering costs, construction expenses, and any other costs available.

$ ______ Total cost of expansion

CBI?
☐ Yes

D4-10. Indicate the *pollutants* targeted for removal by this pond/impoundment unit using techniques other than solely settling (e.g., adding chemicals to remove certain metals). [Check all boxes that apply.]

- ☐ Metals (specify): ______
- ☐ TSS
- ☐ Nitrogen compounds (ammonia, nitrate, nitrite)
- ☐ Organic Acids
- ☐ Chlorine or other oxidizing agents
- ☐ Oil and grease
- ☐ Other: ______
- ☐ NA (Skip to Question D4-12)

CBI?
☐ Yes

D4-11. Of the pollutants listed in D4-10, which effluent limitation(s) drives/will drive the operation of this pond/impoundment unit? Provide the pollutant and the limitation (mg/L or ug/L).

Pollutant:
Limitation: Units
Pollutant:
Limitation: Units
Pollutant:
Limitation: Units

CBI?
☐ Yes

D4-12. Did the plant add chemicals to this pond/impoundment unit in 2009?

○ Yes (Complete Table D-7)
○ No (Skip to Section 4.2)
○ NA (Pond/impoundment is planned to be constructed. Provide information in Table D-7 to the extent possible based on plans.)

Note that "Chemical Type" refers to the generic name of the chemical added to the pond/impoundment (e.g., lime, sodium hydroxide, alum, polymer). "Average Dose Concentration" refers to the average concentration of the chemical within the pond/impoundment unit just after it is added to the unit. In the "Location of Chemical Addition" column, indicate where within or near the pond/impoundment the chemical is added (e.g., within the pond/impoundment near the process wastewater influent point, within the pond/impoundment near the effluent, in the effluent/discharge canal). If chemical addition is known only on a yearly basis, divide the yearly value by the approximate number of days the plant added chemicals (which should be the same estimate for the "Frequency of Addition" column).

Table D-7. Chemicals Used in Pond/Impoundment Unit Operations

Chemical Type	Trade Name	Manufacturer	Purpose	Location of Chemical Addition	Average Dose Concentration (g/L)	Average Addition Rate (gpd or lb/day)			Frequency of Addition (dpy)
							○ gpd ○ lb/day	○ Solid ○ Liquid	
							○ gpd ○ lb/day	○ Solid ○ Liquid	
							○ gpd ○ lb/day	○ Solid ○ Liquid	
							○ gpd ○ lb/day	○ Solid ○ Liquid	
							○ gpd ○ lb/day	○ Solid ○ Liquid	

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name
Pond/Impoundment Unit ID: Insert Unit ID

Part: D
Section Title: 4.2. Closed Pond/Impoundment Unit Information

Instructions: Complete Section 4.2 (Questions D4-13 through D4-24) for all *pond/impoundment* units closed on or after January 1, 2000, including those located on non-adjoining property, that were used for the storage, treatment, and/or disposal of *process wastewater*, *residues*, or by-products (or *sludges* or water streams containing the residues or by-products) from the combustion of coal, petroleum coke, or oil, including but not limited to fly ash, bottom ash, boiler slag, or flue gas emission control residues (use pond/impoundment unit IDs assigned in Table A-4).

Make a copy of Section 4.2 for each closed pond/impoundment unit, including those located on non-adjoining property, that was used for the storage, treatment, and/or disposal of process wastewater, residues, or by-products (or sludges or water streams containing the residues or by-products) from the combustion of coal, petroleum coke, or oil, including but not limited to *fly ash*, *bottom ash*, boiler slag, or flue gas emission control residues using the "Copy Section 4.2" button below.

NOTE: If a pond/impoundment was part of a broader wastewater treatment system containing *non-pond wastewater treatment units* (e.g., a pond/impoundment unit in a biological wastewater treatment system), complete questions in this section for the pond/impoundment unit.

CBI?
☐ Yes

D4-13. Are there any ponds/impoundments closed on or after January 1, 2000, including those located on non-adjoining property, that were used for the storage, treatment, and/or disposal of residues or by-products (or sludges or water streams containing the residues or by-products) from the combustion of coal, petroleum coke, or oil, including but not limited to fly ash, bottom ash, boiler slag, or flue gas emission control residues?

○ Yes (Continue)
○ No (Skip to Section 5.1)

Copy Section 4.2

 Approved: May 20, 2010

CBI?
☐ Yes

D4-14. Provide the date the pond/impoundment unit was closed, the actual life of the pond/impoundment unit, and the number of cells in the pond/impoundment unit.

__________ Date Closed (month/day/year)

__________ Life of pond/impoundment unit (years, actual)

__________ Number of cells in pond/impoundment unit

CBI?
☐ Yes

D4-15. Complete Table D-8. Provide the pond/impoundment unit's volume, surface area, bottom and top elevation, freeboard height, maximum height of berms and dams above the surrounding grade, and the total quantity of solids placed in the pond/impoundment when it was originally built and at its end of life, prior to any solids removal/cleaning. Volume should reflect original and final (accounting for any expansions) free water volume, including the stored solids. Please refer back to Figure D-1 for an illustration of pond/impoundment dimensions.

Table D-8. Closed Pond/Impoundment Information

	Originally Built	End of Life
Volume, ft^3		
Surface area, ft^2		
Bottom elevation, ft		
Top elevation, ft		
Freeboard height, ft		
Maximum height of berms/dams above grade, ft		
Total solids placed in the pond/impoundment, tons		

CBI?
☐ Yes

D4-16. Does the pond/impoundment unit have a *liner* ?

○ Yes (Complete Table D-9)

○ No (Skip to Question D4-17)

Table D-9. Pond/Impoundment Unit Liner

Liner Layer Number (number from inner to outer layer)	Type of Liner	Thickness of Liner Layer (cm)	Permeability of Liner Layer (cm/sec)
	○ Compacted clay ○ Geosynthetic clay ○ High density polyethylene (HDPE) ○ Other (provide below:)		
	○ Compacted clay ○ Geosynthetic clay ○ High density polyethylene (HDPE) ○ Other (provide below:)		
	○ Compacted clay ○ Geosynthetic clay ○ High density polyethylene (HDPE) ○ Other (provide below:)		
	○ Compacted clay ○ Geosynthetic clay ○ High density polyethylene (HDPE) ○ Other (provide below:)		
	○ Compacted clay ○ Geosynthetic clay ○ High density polyethylene (HDPE) ○ Other (provide below:)		

CBI?
☐ Yes

D4-17. Does the pond/impoundment unit have a cap/cover?

◯ Yes (Complete Table D-10)
◯ No (Skip to Question D4-18)

Table D-10. Pond/Impoundment Unit Cap/Cover

Cap/Cover Layer Number (number from inner to outer layer)	Type of Cap/Cover Layer	Thickness of Cap/Cover Layer (cm)	Permeability of Cap/Cover Layer (cm/sec)
	◯ Compacted clay ◯ Geosynthetic clay ◯ Vegetative cover ◯ High density polyethylene (HDPE) ◯ Other (provide below:)		
	◯ Compacted clay ◯ Geosynthetic clay ◯ Vegetative cover ◯ High density polyethylene (HDPE) ◯ Other (provide below:)		
	◯ Compacted clay ◯ Geosynthetic clay ◯ Vegetative cover ◯ High density polyethylene (HDPE) ◯ Other (provide below:)		

	○ Compacted clay ○ Geosynthetic clay ○ Vegetative cover ○ High density polyethylene (HDPE) ○ Other (provide below:)		
	○ Compacted clay ○ Geosynthetic clay ○ Vegetative cover ○ High density polyethylene (HDPE) ○ Other (provide below:)		
	○ Compacted clay ○ Geosynthetic clay ○ High density polyethylene (HDPE) ○ Vegetative cover ○ Other (provide below:)		

CBI?
☐ Yes

D4-18. Was the pond/impoundment unit expanded during its life?

○ Yes (Continue)

○ No (Skip to Question 4-21)

CBI?
☐ Yes

D4-19. Identify the type of expansion.

○ Lateral expansion

○ Vertical expansion

○ Both lateral and vertical expansions

CBI?
☐ Yes

D4-20. Describe any expansion(s), since January 1, 2000, to the pond/impoundment unit, including the starting and ending dimensions.

____

Provide the total cost associated with the expansion(s). Total costs should include labor, materials, energy, hazardous and nonhazardous waste disposal, purchased equipment, installation, buildings, site preparation, land, engineering costs, construction expenses, and any other costs available.

$ ______________ Total cost of expansion

CBI?
☐ Yes

D4-21. Did the plant have a closure plan for this pond/impoundment unit?

○ Yes (Provide a copy of the closure plan)

○ No (Continue)

CBI?
☐ Yes

D4-22. Describe the closure process, the required steps, and the costs associated with the closure.

Note: Total costs should include labor, materials, energy, hazardous and nonhazardous waste disposal, purchased equipment, installation, buildings, site preparation, land, engineering costs, construction expenses, and any other costs available.

Note: If you attached a closure plan for the previous question that includes information on the required steps and associated costs of the closure, do not answer this question and indicate that the information is provided in the attached closure plan.

☐ Information provided in attached closure plan.

CBI?
☐ Yes

D4-23. Has the plant built any structures on top of the closed pond/impoundment?

○ Yes (Continue)
○ No (Skip to Question D4-24)

Provide a description of the structure(s) and any challenges that the plant faced building on top of the pond/impoundment.

CBI?
☑ Yes

D4-24. Is the plant performing or does it intend to perform long-term groundwater, soil, or overflow monitoring of this closed pond/impoundment unit?

○ Yes. Describe the monitoring plan:

○ No

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name
Wastewater Treatment System ID: Insert System ID

Part: D
Section Title: 5.1. Wastewater Treatment Unit Information - System Level

Instructions: Complete Section 5.1 (Questions D5-1 through D5-12) for each *wastewater treatment system* identified in Table D-2, including planned (under construction/installation, or planned to be under construction/installation by December 31, 2020) wastewater treatment systems. Enter the wastewater treatment system ID in the space provided above (use wastewater treatment system ID assigned in Table D-2).

Make a copy of Section 5.1 for each wastewater treatment system identified in Table D-2 using the "Copy Section 5.1" button below.

NOTE: If the wastewater treatment system includes a pond/impoundment unit, include the pond/impoundment unit in Table D-11.

CBI? ☐ Yes

D5-1. Did you identify any *wastewater treatment systems* in Table D-2?

○ Yes (Continue)
○ No (Skip to Part D Section 6.1)

Copy Section 5.1

CBI? ☐ Yes

D5-2. In Table D-11, list all *wastewater treatment units* comprising the *wastewater treatment system* including units that are under construction/installation, or planned to be under construction/installation by December 31, 2020, included in the wastewater treatment system. For each wastewater treatment unit, assign an ID using the wastewater treatment unit terms provided in the drop down menu (e.g., Clarification, Primary-1), which will be used throughout the remainder of the survey; however, if a pond/impoundment unit is included as part of the wastewater treatment system, enter the pond/impoundment unit ID assigned in Table A-4 in the space labeled "Pond ID". The drop down menu accounts for the possibility of multiple wastewater treatment units; they are numbered sequentially. Note that these terms originated from the code tables on the "Code Tables" tab, provided at the end of this workbook.

For example, if the wastewater treatment system includes two clarifiers, select Clarification, Primary-1 for the first clarifier and Clarification, Secondary-1 for the second. In the “Plant Designation” column, provide the plant’s name for each wastewater treatment unit. In the “Date Added to WWT System” column, either enter the date the unit was/will be installed if the unit is a retrofit, or enter “original” if the unit was part of the original wastewater treatment system installation.

Table D-11. Wastewater Treatment Units

Wastewater Treatment Unit ID	Plant Designation	Date Added to Wastewater Treatment System (month/day/year)	Volume (ft^3)	Footprint/ Surface Area (ft^2)	Residence Time (hours)	Materials of Construction [Check all boxes that apply.]
Wastewater Treatment Units Other: Pond ID:						☐ 316L stainless steel ☐ 255 stainless steel ☐ Carbon steel ☐ 317LM stainless steel ☐ 2205 stainless steel ☐ Fiberglass ☐ 317LMN stainless steel ☐ 625 stainless steel ☐ Titanium ☐ Carbon steel, lined with: ☐ Other:
Wastewater Treatment Units Other: Pond ID:						☐ 316L stainless steel ☐ 255 stainless steel ☐ Carbon steel ☐ 317LM stainless steel ☐ 2205 stainless steel ☐ Fiberglass ☐ 317LMN stainless steel ☐ 625 stainless steel ☐ Titanium ☐ Carbon steel, lined with: ☐ Other:
Wastewater Treatment Units Other: Pond ID:						☐ 316L stainless steel ☐ 255 stainless steel ☐ Carbon steel ☐ 317LM stainless steel ☐ 2205 stainless steel ☐ Fiberglass ☐ 317LMN stainless steel ☐ 625 stainless steel ☐ Titanium ☐ Carbon steel, lined with: ☐ Other:
Wastewater Treatment Units Other: Pond ID:						☐ 316L stainless steel ☐ 255 stainless steel ☐ Carbon steel ☐ 317LM stainless steel ☐ 2205 stainless steel ☐ Fiberglass ☐ 317LMN stainless steel ☐ 625 stainless steel ☐ Titanium ☐ Carbon steel, lined with: ☐ Other:

☐ 255 stainless steel

Wastewater Treatment Units							☐ 316L stainless steel	☐ 255 stainless steel	☐ Carbon steel
							☐ 317LM stainless steel	☐ 2205 stainless steel	☐ Fiberglass
Other:							☐ 317LMN stainless steel	☐ 625 stainless steel	☐ Titanium
Pond ID:							☐ Carbon steel, lined with:		☐ Other:
Wastewater Treatment Units							☐ 316L stainless steel	☐ 255 stainless steel	☐ Carbon steel
							☐ 317LM stainless steel	☐ 2205 stainless steel	☐ Fiberglass
Other:							☐ 317LMN stainless steel	☐ 625 stainless steel	☐ Titanium
Pond ID:							☐ Carbon steel, lined with:		☐ Other:
Wastewater Treatment Units							☐ 316L stainless steel	☐ 255 stainless steel	☐ Carbon steel
							☐ 317LM stainless steel	☐ 2205 stainless steel	☐ Fiberglass
Other:							☐ 317LMN stainless steel	☐ 625 stainless steel	☐ Titanium
Pond ID:							☐ Carbon steel, lined with:		☐ Other:
Wastewater Treatment Units							☐ 316L stainless steel	☐ 255 stainless steel	☐ Carbon steel
							☐ 317LM stainless steel	☐ 2205 stainless steel	☐ Fiberglass
Other:							☐ 317LMN stainless steel	☐ 625 stainless steel	☐ Titanium
Pond ID:							☐ Carbon steel, lined with:		☐ Other:
Wastewater Treatment Units							☐ 316L stainless steel	☐ 255 stainless steel	☐ Carbon steel
							☐ 317LM stainless steel	☐ 2205 stainless steel	☐ Fiberglass
Other:							☐ 317LMN stainless steel	☐ 625 stainless steel	☐ Titanium
Pond ID:							☐ Carbon steel, lined with:		☐ Other:
Wastewater Treatment Units							☐ 316L stainless steel	☐ 255 stainless steel	☐ Carbon steel
							☐ 317LM stainless steel	☐ 2205 stainless steel	☐ Fiberglass
Other:							☐ 317LMN stainless steel	☐ 625 stainless steel	☐ Titanium
Pond ID:							☐ Carbon steel, lined with:		☐ Other:
Wastewater Treatment Units							☐ 316L stainless steel	☐ 255 stainless steel	☐ Carbon steel
							☐ 317LM stainless steel	☐ 2205 stainless steel	☐ Fiberglass
Other:							☐ 317LMN stainless steel	☐ 625 stainless steel	☐ Titanium
Pond ID:							☐ Carbon steel, lined with:		☐ Other:
Wastewater Treatment Units							☐ 316L stainless steel	☐ 255 stainless steel	☐ Carbon steel
							☐ 317LM stainless steel	☐ 2205 stainless steel	☐ Fiberglass
Other:							☐ 317LMN stainless steel	☐ 625 stainless steel	☐ Titanium
Pond ID:							☐ Carbon steel, lined with:		☐ Other:
Wastewater Treatment Units							☐ 316L stainless steel	☐ 255 stainless steel	☐ Carbon steel
							☐ 317LM stainless steel	☐ 2205 stainless steel	☐ Fiberglass
Other:							☐ 317LMN stainless steel	☐ 625 stainless steel	☐ Titanium
Pond ID:							☐ Carbon steel, lined with:		☐ Other:
Wastewater Treatment Units							☐ 316L stainless steel	☐ 255 stainless steel	☐ Carbon steel
							☐ 317LM stainless steel	☐ 2205 stainless steel	☐ Fiberglass
Other:							☐ 317LMN stainless steel	☐ 625 stainless steel	☐ Titanium
Pond ID:							☐ Carbon steel, lined with:		☐ Other:
Wastewater Treatment Units							☐ 316L stainless steel	☐ 255 stainless steel	☐ Carbon steel
							☐ 317LM stainless steel	☐ 2205 stainless steel	☐ Fiberglass
Other:							☐ 317LMN stainless steel	☐ 625 stainless steel	☐ Titanium
Pond ID:							☐ Carbon steel, lined with:		☐ Other:
Wastewater Treatment Units							☐ 316L stainless steel	☐ 255 stainless steel	☐ Carbon steel
							☐ 317LM stainless steel	☐ 2205 stainless steel	☐ Fiberglass
Other:							☐ 317LMN stainless steel	☐ 625 stainless steel	☐ Titanium
Pond ID:							☐ Carbon steel, lined with:		☐ Other:
Wastewater Treatment Units							☐ 316L stainless steel	☐ 255 stainless steel	☐ Carbon steel
							☐ 317LM stainless steel	☐ 2205 stainless steel	☐ Fiberglass
Other:							☐ 317LMN stainless steel	☐ 625 stainless steel	☐ Titanium
Pond ID:							☐ Carbon steel, lined with:		☐ Other:
Wastewater Treatment Units							☐ 316L stainless steel	☐ 255 stainless steel	☐ Carbon steel
							☐ 317LM stainless steel	☐ 2205 stainless steel	☐ Fiberglass
Other:							☐ 317LMN stainless steel	☐ 625 stainless steel	☐ Titanium
Pond ID:							☐ Carbon steel, lined with:		☐ Other:
Wastewater Treatment Units							☐ 316L stainless steel	☐ 255 stainless steel	☐ Carbon steel
							☐ 317LM stainless steel	☐ 2205 stainless steel	☐ Fiberglass
Other:							☐ 317LMN stainless steel	☐ 625 stainless steel	☐ Titanium
Pond ID:							☐ Carbon steel, lined with:		☐ Other:

☐ 255 stainless steel

Wastewater Treatment Units						☐ 316L stainless steel ☐ 317LM stainless steel ☐ 317LMN stainless steel	☐ 255 stainless steel ☐ 2205 stainless steel ☐ 625 stainless steel	☐ Carbon steel ☐ Fiberglass ☐ Titanium
Other:						☐ Carbon steel, lined with:		☐ Other:
Pond ID:								
Wastewater Treatment Units						☐ 316L stainless steel ☐ 317LM stainless steel ☐ 317LMN stainless steel	☐ 255 stainless steel ☐ 2205 stainless steel ☐ 625 stainless steel	☐ Carbon steel ☐ Fiberglass ☐ Titanium
Other:						☐ Carbon steel, lined with:		☐ Other:
Pond ID:								
Wastewater Treatment Units						☐ 316L stainless steel ☐ 317LM stainless steel ☐ 317LMN stainless steel	☐ 255 stainless steel ☐ 2205 stainless steel ☐ 625 stainless steel	☐ Carbon steel ☐ Fiberglass ☐ Titanium
Other:						☐ Carbon steel, lined with:		☐ Other:
Pond ID:								
Wastewater Treatment Units						☐ 316L stainless steel ☐ 317LM stainless steel ☐ 317LMN stainless steel	☐ 255 stainless steel ☐ 2205 stainless steel ☐ 625 stainless steel	☐ Carbon steel ☐ Fiberglass ☐ Titanium
Other:						☐ Carbon steel, lined with:		☐ Other:
Pond ID:								

CBI?
☐ Yes

D5-3. Provide the design flow rate for the wastewater treatment system, as well as both the average and maximum flow rates for 2009. In addition, provide the duration and frequency of the effluent transfers from the wastewater treatment system in 2009. If the wastewater treatment system is planned, only provide the design flow rate and enter "NA" in all other fields.

_____ Average design flow rate, gpm
_____ Maximum design flow rate, gpm
_____ Typical flow rate in 2009, gpm
_____ Maximum daily flow rate in 2009, gpm
_____ Maximum daily flow rate in 2009, gpd
_____ Duration of effluent transfers from treatment system in 2009, hpd
_____ Frequency of effluent transfers from treatment system in 2009, dpy

CBI?
☐ Yes

D5-4. Indicate the *pollutants* targeted for removal by this wastewater treatment system using techniques other than solely settling (e.g., adding chemicals to remove certain metals). [Check all boxes that apply.]

☐ Metals (specify): _____
☐ TSS
☐ Nitrogen compounds (ammonia, nitrate, nitrite)
☐ Organic Acids
☐ Chlorine or other oxidizing agents
☐ Oil and grease
☐ Other: _____
☐ NA (Skip to Question D5-6)

CBI?
☐ Yes

D5-5. Of the pollutants listed in D5-4, which effluent limitation(s) drives/will drive the operation of this wastewater treatment system? Provide the pollutant and the limitation (mg/L or ug/L).

Pollutant: ______
Limitation: ______ Units
Pollutant: ______
Limitation: ______ Units
Pollutant: ______
Limitation: ______ Units

CBI?
☐ Yes

D5-6. Is this wastewater treatment system capable of performing sulfide addition?

○ Yes (Continue)
○ No (Skip to Question D5-8)

CBI?
☐ Yes

D5-7. Is the plant currently performing sulfide addition?

○ Yes
○ No

CBI?
☐ Yes

D5-8. Provide information on any impacts that climate had, or will have, on the installation of the wastewater treatment system (e.g., equipment had to be housed inside due to cold winters, extra insulation was necessary to protect equipment in winter, warm climate allowed all wastewater treatment to be located outdoors).

CBI?
☐ Yes

D5-9. Provide information on any impacts that space availability had, or will have, on the design and/or cost of the wastewater treatment system (e.g., cost increases due to fitting the wastewater treatment system units into tight spaces and/or moving other equipment to accommodate the treatment system units).

CBI?
☐ Yes

D5-10. Provide any bid proposals and/or engineering reports that were prepared since January 1, 1995 for the wastewater treatment system.

Note: All bid proposals and/or engineering reports originally submitted to the plant as CBI, should be marked CBI for the purpose of this collection request.

○ I have attached the bid proposals/engineering reports.
○ I did not attach the bid proposals/engineering reports. Below, explain why:

CBI?
☐ Yes

D5-11. In Table D-12, list all planned improvements (including those currently under construction/installation or those planned to be under construction/installation by December 31, 2020) to the wastewater treatment system. For each planned improvement to the wastewater treatment system, provide the WWT Unit ID the improvement pertains to (if applicable), using the terms in the drop down menu; however, if the improvement relates directly to a pond/impoundment, use the pond/impoundment ID assigned in Table A-4. Provide a description of the improvement, the expected date of the improvement, and the total capital cost related to the improvement.

Note: Total capital costs should include purchased equipment, installation, buildings, site preparation, land, engineering costs, construction expenses, and any other costs available.

Table D-12. Planned Improvements to the Wastewater Treatment System

Wastewater Treatment Unit ID		Description of Improvement	Expected Date of Improvement (month/day/year)	Total Capital Cost ($)
Wastewater Treatment Units				
Other:				
Pond ID:				
Wastewater Treatment Units				
Other:				
Pond ID:				
Wastewater Treatment Units				
Other:				
Pond ID:				
Wastewater Treatment Units				
Other:				
Pond ID:				
Wastewater Treatment Units				
Other:				
Pond ID:				

CBI?
☐ Yes

D5-12. Were any of the above planned improvements to the wastewater treatment system, or the planned wastewater treatment system, planned in preparation for potential limit changes in the future?

○ Yes (Continue)

○ No (Skip to Section 5.2)

Please identify which pollutants and/or limits, in particular, the improvements or system will target.

Approved: May 20, 2010

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name
Wastewater Treatment System ID: Insert System ID

Part: D
Section Title: 5.2. Wastewater Treatment System Chemical Addition

Instructions: Complete Section 5.2 (Question D5-13) for each *wastewater treatment system* identified in Table D-2 (including those under construction/installation or planned to be under construction/installation by December 31, 2020). Enter the wastewater treatment system ID in the spaces provided above (use wastewater treatment system IDs assigned in Table D-2).

Make a copy of Section 5.2 for each wastewater treatment system identified in Table D-2 using the "Copy Section 5.2" button below.

Copy Section 5.2

CBI? ☐ Yes

D5-13. Did the plant add chemicals to any *wastewater treatment units* in 2009?

○ Yes (Complete Table D-13)
○ No (Skip to Section 6.1)
○ NA (Wastewater treatment unit is planned to be constructed. Provide information in Table D-13 to the extent possible based on plans.)

Complete Table D-13 for each unit (as defined in Table D-11) that chemicals are added to in the wastewater treatment system. Complete a row for each chemical added to each unit in the system.

Note that "Chemical Type" refers to the generic name of the chemical added to the wastewater treatment unit (e.g., lime, organosulfide). "Average Dose Concentration" refers to the average concentration of the chemical within the wastewater treatment unit just after it is added to the unit. If chemical addition is known only on a yearly basis, divide the yearly value by the approximate number of days the plant added chemicals (which should be the same estimate for the "Frequency of Addition" column).

Table D-13. Chemicals Used in Wastewater Treatment Unit Operations

Wastewater Treatment Unit ID (Identified in Table D-11)	Chemical Type	Trade Name	Manufacturer	Purpose	Average Dose Concentration (g/L)	Average Addition Rate (gpd or lb/day)			Frequency of Addition (dpy)
Wastewater Treatment Units							○ gpd	○ Solid	
Other:							○ lb/day	○ Liquid	
Wastewater Treatment Units							○ gpd	○ Solid	
Other:							○ lb/day	○ Liquid	
Wastewater Treatment Units							○ gpd	○ Solid	
Other:							○ lb/day	○ Liquid	
Wastewater Treatment Units							○ gpd	○ Solid	
Other:							○ lb/day	○ Liquid	
Wastewater Treatment Units							○ gpd	○ Solid	
Other:							○ lb/day	○ Liquid	
Wastewater Treatment Units							○ gpd	○ Solid	
Other:							○ lb/day	○ Liquid	
Wastewater Treatment Units							○ gpd	○ Solid	
Other:							○ lb/day	○ Liquid	

Wastewater Treatment Units							○ gpd	○ Solid	
Other:							○ lb/day	○ Liquid	
Wastewater Treatment Units							○ gpd	○ Solid	
Other:							○ lb/day	○ Liquid	
Wastewater Treatment Units							○ gpd	○ Solid	
Other:							○ lb/day	○ Liquid	
Wastewater Treatment Units							○ gpd	○ Solid	
Other:							○ lb/day	○ Liquid	
Wastewater Treatment Units							○ gpd	○ Solid	
Other:							○ lb/day	○ Liquid	
Wastewater Treatment Units							○ gpd	○ Solid	
Other:							○ lb/day	○ Liquid	
Wastewater Treatment Units							○ gpd	○ Solid	
Other:							○ lb/day	○ Liquid	
Wastewater Treatment Units							○ gpd	○ Solid	
Other:							○ lb/day	○ Liquid	
Wastewater Treatment Units							○ gpd	○ Solid	
Other:							○ lb/day	○ Liquid	
Wastewater Treatment Units							○ gpd	○ Solid	
Other:							○ lb/day	○ Liquid	
Wastewater Treatment Units							○ gpd	○ Solid	
Other:							○ lb/day	○ Liquid	
Wastewater Treatment Units							○ gpd	○ Solid	
Other:							○ lb/day	○ Liquid	
Wastewater Treatment Units							○ gpd	○ Solid	
Other:							○ lb/day	○ Liquid	
Wastewater Treatment Units							○ gpd	○ Solid	
Other:							○ lb/day	○ Liquid	
Wastewater Treatment Units							○ gpd	○ Solid	
Other:							○ lb/day	○ Liquid	
Wastewater Treatment Units							○ gpd	○ Solid	
Other:							○ lb/day	○ Liquid	
Wastewater Treatment Units							○ gpd	○ Solid	
Other:							○ lb/day	○ Liquid	
Wastewater Treatment Units							○ gpd	○ Solid	
Other:							○ lb/day	○ Liquid	
Wastewater Treatment Units							○ gpd	○ Solid	
Other:							○ lb/day	○ Liquid	
Wastewater Treatment Units							○ gpd	○ Solid	
Other:							○ lb/day	○ Liquid	

Wastewater Treatment Units Other:							○ gpd ○ lb/day	○ Solid ○ Liquid	
Wastewater Treatment Units Other:							○ gpd ○ lb/day	○ Solid ○ Liquid	
Wastewater Treatment Units							○ gpd ○ lb/day	○ Solid ○ Liquid	

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name
Pond/Impoundment System ID or Wastewater Treatment System ID: Insert System ID

Part: D
Section Title: 6.1. Pond/Impoundment System and Wastewater Treatment System Costs

Instructions: Complete Sections 6.1 and 6.2 (Questions D6-1 through D6-6) for each pond/impoundment system identified in Table D-1, that includes at least one *pond/impoundment* that began operating at the plant on or after January 1, 2000. For example if a pond/impoundment system began operating in 1996, but a new pond/impoundment was added in 2002, information regarding the pond/impoundment system must be provided for this section. Also complete Sections 6.1 and 6.2 (Questions D6-1 through D6-6) for each *wastewater treatment system* identified in Table D-2 that began operating at the plant on or after January 1, 2000. These pond/impoundment systems and wastewater treatment systems also include those under construction/installation or planned to be under construction/installation by December 31, 2020. Enter the pond/impoundment system ID or wastewater treatment system ID in the space provided above (use pond/impoundment system IDs and wastewater treatment system IDs assigned in Table D-1 and Table D-2).

Make a copy of Sections 6.1 and 6.2 for each pond/impoundment system and/or wastewater treatment system identified in Table D-1 and Table D-2 using the "Copy Section 6.1 and 6.2" button below. Just pressing this button once will generate copies of both tabs.

CBI? ☐ Yes

D6-1. Did any *ponds/impoundments*, including those that are part of a pond/impoundment system identified in Table D-1, and/or *wastewater treatment systems,* identified in Table D-2, begin operating (or plan to begin operating) after January 1, 2000?

○ Yes (Continue)
○ No (Skip to next Questionnaire Part)

Copy Section 6.1 and 6.2

CBI? ☐ Yes

D6-2. Provide annual O&M cost data in Table D-14 for each pond/impoundment system identified in Table D-1, that includes at least one pond/impoundment that began operating at the plant on or after January 1, 2000, and/or wastewater treatment system, identified in Table D-2, that began operating at the plant on or after January 1, 2000, that was operated in 2009. Provide best engineering estimates when actual data are not readily available. If you provide an estimate, note the methods that were used to make the estimates in the Comments page.

Note: Do NOT include corrective actions in the O&M costs for the ponds/impoundments in the system.

Table D-14. O&M Cost for the Pond/Impoundment System or Wastewater Treatment System for 2009

O&M Cost Category	2009 Annual Cost	2009 Rate	2009 Staffing/ Consumption
Operating labor	$	$ per hour (average rate of labor)	No. of workers hpd dpy
Maintenance labor	$	$ per hour (average rate of labor)	No. of workers hpd dpy
Maintenance materials	$		
Chemicals	$		

Energy - Power for pumping	$	$ per kWh	kWh/hr
Energy - Power for operations other than pumping	$	$ per kWh	kWh/hr
Steam	$	$ per pound	pounds/hr
Hazardous Sludge Disposal - Dredging	$	$ per ○ Gallon ○ Ton	
Hazardous Sludge Disposal - Landfilling	$	$ per ○ Gallon ○ Ton	
Nonhazardous Sludge Disposal - Dredging	$	$ per ○ Gallon ○ Ton	
Nonhazardous Sludge Disposal - Landfilling	$	$ per ○ Gallon ○ Ton	
Other:	$		
Other:	$		
Total O&M Cost (2009)	$		

CBI?
☐ Yes

D6-3. Provide cost data in Table D-15 only for those ponds/impoundments, within the pond/impoundment system identified in Table D-1, that began operating on or after January 1, 2000, and/or wastewater treatment systems, identified in Table D-2, that began operating at the plant on or after January 1, 2000. These ponds/impoundments and wastewater treatment systems include retired/closed ponds/impoundments, planned ponds/impoundments, and planned wastewater treatment systems (including those under construction/installation or planned to be under construction/installation by December 31, 2020). Additionally, include any costs incurred by the pond/impoundment system since January 1, 2000. For example, if a pond/impoundment system was installed in 1996, and one new pond was added in 2002, report the capital costs for the new pond only, and any capital costs (i.e., piping, pumps) incurred for the entire pond/impoundment system since 2000.

Provide best engineering estimates when actual data are not readily available. For all costs, do not adjust for inflation. For example, if the plant incurred a land cost in 2002, enter the cost in the “Cost” column and enter “2002” in the “Year on which Cost is Based” column.

NOTE: If no records are available on this wastewater treatment system, provide an explanation in the Comments page.

Table D-15. Capital Cost for the Pond/Impoundment System or Wastewater Treatment System

Project	Cost	Year on which Cost is Based
Direct Costs		
Purchased equipment (includes all equipment for the installation or the upgrade: mechanical equipment; piping; instrumentation; electrical equipment; spare parts; freight charges; taxes; insurance; and duties)	$	
Purchased equipment installation (includes installation of all equipment; piping; instrumentation/calibration; electrical equipment; mechanical equipment; structural supports, insulation, and paint)	$	
Buildings (buildings constructed to house pond/impoundment system and/or wastewater treatment system components, operator rooms, or other operations associated with the system; also includes plumbing, heating, ventilation, dust collection, air conditioning, lighting, telephones, intercoms, painting, sprinklers, fire alarms)	$	
Site preparation (includes site clearing, all demolition, grading, roads, walking areas, fences)	$	
Land (includes property costs and survey fees)	$	
Total Direct Costs	**$**	
Indirect Costs		
Engineering Costs (includes process design and general engineering, cost engineering, consulting fees, supervision, inspection for each category below:		
a. Engineering Contract Firm Costs	$	
b. Owner's Overhead Engineering Costs	$	
☐ Hired outside engineering firm to oversee design and/or installation of the treatment system.		
Construction expenses (includes temporary construction offices, roads, communications, fencing; construction tools and equipment; permits, taxes, insurance)	$	
Other Contractor's Fees	$	
Contingency actually expended (to compensate for unpredictable events such as storms, floods, strikes, price changes, errors in estimates, design changes, etc.)	$	
Total Indirect Costs	**$**	
Total Capital Cost	**$**	

CBI?
☐ Yes

D6-4. Are all components of the pond/impoundment system and/or wastewater treatment system included in the capital costs reported in Table D-15?

○ Yes (Skip to Question D6-5)
○ No (Continue)

Please explain what system components are included in the capital costs listed in Table D-15. Additionally, identify the key components of the pond/impoundment system and/or wastewater treatment system that are not included in the capital costs reported in Table D-15.

CBI?
☐ Yes

D6-5. If applicable, indicate whether the FGD wastewater treatment system, for which the plant provided capital cost data in Table D-15, was a retrofit or was installed when the *FGD scrubber system* was installed.

○ FGD wastewater treatment system was a retrofit
○ FGD wastewater treatment system was installed when the FGD scrubber system was installed
○ NA

CBI?
☐ Yes

D6-6. If applicable, indicate whether the FGD wastewater treatment system, for which the plant provide capital cost data in Table D-15, was purchased as part of the FGD scrubber package.

○ FGD wastewater treatment system was purchased as part of the FGD scrubber package
○ FGD wastewater treatment system was not purchased as part of the FGD scrubber package
○ NA

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name
Pond/Impoundment System ID or Wastewater Treatment System ID: Insert System ID

Part: D
Section Title: 6.2. Pond/Impoundment System and Wastewater Treatment System Equipment

Instructions: Complete Section 6.2 (Question D6-7) for all ancillary pieces of equipment included in the *pond/impoundment* or *wastewater treatment system* that contribute to the capital costs provided in Table D-15.

Note: This tab will copy with every copy made for the previous tab (Part D Section 6.1) as the information is directly related.

CBI?
☐ Yes

D6-7. In Table D-16, list any ancillary pieces of equipment (i.e., equipment such as pumps and agitators) included in the pond/impoundment system or wastewater treatment system that contribute significantly to the capital costs provided in Table D-16 and provide the total number of pieces of that equipment included in the system. Refer to the examples of ancillary equipment shown below.

Examples of ancillary equipment:

Aerator
Agitator
Chemical feed system (specify chemicals)
Pump, sludge (specify purpose/location)
Pump, wastewater (specify purpose/location)

Table D-16. Ancillary Equipment of the Pond/Impoundment System or Wastewater Treatment System

Ancillary Equipment (if applicable)	Number of Ancillary Equipment Pieces in the System
Pump, sludge (serving underflow from clarifiers)	*2*

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: D
Section Title: Part D Comments

Instructions: Cross reference your comments by question number and indicate the confidential status of your comment by checking the box next to “Yes” under "CBI?" (Confidential Business Information).

	Question Number	Comments
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		

CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		

Steam Electric Questionnaire Code Tables

Process Wastewaters	
For Use in Tables and Questions throughout Parts A, B, C, D, and F.	
Air heater cleaning water	AHCW
Ash pile runoff	APR
Boiler blowdown	BB
Boiler fireside cleaning water	BFCW
Boiler tube cleaning water	BTCW
Bottom ash sluice	BAS
Carbon capture wastewater	CCAPW
Coal pile runoff	CPR
Combined ash sluice	CAS
Combustion turbine cleaning (combustion gas portion of turbine) water	COMBCW
Combustion turbine cleaning (compressor portion of the turbine) water	COMPRCW
Combustion turbine evaporative coolers blowdown	TECB
Cooling tower blowdown	CTB
FGD scrubber purge	SCRBP
FGD slurry blowdown	FGDB
Filter Backwash	FLTBW
Floor drain wastewater	FDW
Flue gas mercury control system wastewater	FGMCW
Fly ash sluice	FAS
General runoff	GR
Gypsum pile runoff	GPR
Gypsum wash water	GYPWW
Ion exchange wastewater	IXW
Landfill runoff - capped landfill	LRC
Landfill runoff - uncapped landfill	LRUC
Leachate	LEACH
Limestone pile runoff	LPR
Mill reject sluice	MRS

Treated Wastewaters	
For Use as Effluents from Pond/Impoundment Systems and/or Wastewater Treatment Systems in Part D, Table D-4.	
Effluent - 1	EFF-1
Effluent - 2	EFF-2
Effluent - 3	EFF-3
Effluent - 4	EFF-4
Effluent - 5	EFF-5
Effluent - 6	EFF-6
Filter backwash	FltBW
Sludge	SLDG
For Use as Influents to Pond/Impoundment Systems and/or Wastewater Treatment Systems in Part D, Table D-3, AND Recycled Waters Throughout Questionnaire.	
POND-1 Effluent	POND-1-EFF
POND-2 Effluent	POND-2-EFF
POND-3 Effluent	POND-3-EFF
POND-4 Effluent	POND-4-EFF
POND-5 Effluent	POND-5-EFF
POND-6 Effluent	POND-6-EFF
POND-7 Effluent	POND-7-EFF
POND-8 Effluent	POND-8-EFF
POND-9 Effluent	POND-9-EFF
POND-10 Effluent	POND-10-EFF
POND-A Effluent	POND-A-EFF
POND-B Effluent	POND-B-EFF
POND-C Effluent	POND-C-EFF
WWT-1 Effluent	WWT-1-EFF
WWT-2 Effluent	WWT-2-EFF
WWT-3 Effluent	WWT-3-EFF
WWT-4 Effluent	WWT-4-EFF
WWT-5 Effluent	WWT-5-EFF

Steam Electric Questionnaire Code Tables

Process Wastewaters	
For Use in Tables and Questions throughout Parts A, B, C, D, and F.	
Once -through cooling water	CW
Reverse osmosis reject water	RORW
SCR catalyst regeneration wastewater	SCRRW
SCR catalyst washing wastewater	SCRWW
Soot blowing wash water	SOOTW
Steam turbine cleaning water	STCW
Yard drain wastewater	YARDW

Treated Wastewaters	
For Use as Influents to Pond/Impoundment Systems and/or Wastewater Treatment Systems in Part D, Table D-3, AND Recycled Waters Throughout Questionnaire.	
WWT-6 Effluent	WWT-6-EFF
WWT-A Effluent	WWT-A-EFF
WWT-B Effluent	WWT-B-EFF
WWT-C Effluent	WWT-C-EFF

Steam Electric Questionnaire Code Tables

Wastewater Treatment Units	
For Use in Tables and Questions Throughout Parts D and F.	
Adsorptive media	ADSORB
Aerobic Biological Reactor	AERBIO
Anaerobic Biological Reactor	ANBIO
Aerobic/Anaerobic Biological Reactor	AER/ANBIO
Chemical Precipitation Reaction Tank 1 - 1	CP-1-1
Chemical Precipitation Reaction Tank 1 - 2	CP-1-2
Chemical Precipitation Reaction Tank 2 - 1	CP-2-1
Chemical Precipitation Reaction Tank 2 - 2	CP-2-2
Chemical Precipitation Reaction Tank 3 - 1	CP-3-1
Chemical Precipitation Reaction Tank 3 - 2	CP-3-2
Clarification, Primary - 1	CL-P-1
Clarification, Primary - 2	CL-P-2
Clarification, Secondary - 1	CL-S-1
Clarification, Secondary - 2	CL-S-2
Clarification, Tertiary - 1	CL-T-1
Clarification, Tertiary - 2	CL-T-2
Constructed wetland - Cell 1	CWL -1
Constructed wetland - Cell 2	CWL -2
Constructed wetland - Cell 3	CWL -3
Constructed wetland - Cell 4	CWL -4
Constructed wetland - Cell 5	CWL -5
Constructed wetland - Cell 6	CWL -6
Constructed wetland system	CWTS
Equalization, Primary	EQ-P
Equalization, Secondary	EQ-S
Filter, Microfiltration - 1	FLT-M-1
Filter, Microfiltration - 2	FLT-M-2

Destinations	
For Use in Tables and Questions Throughout Parts A, C, D, and F.	
Burned on site	BURN
Deep-well injection	DWELL
Discharge to POTW	POTW
Discharge to PrOTW	PrOTW
Discharge to surface water	SW
Evaporation	EVAP
Hauled off site for reuse (removal fee)	HAULR - RF
Hauled off site for reuse (given away)	HAULR - GA
Hauled off site for reuse (marketed and sold)	SOLD
Hauled off site for disposal	HAUL
Mixed with fly ash for disposal	MFA
On-site landfill (as reported in Table A-6)	LANDF
POND-1	POND-1
POND-2	POND-2
POND-3	POND-3
POND-4	POND-4
POND-5	POND-5
POND-6	POND-6
POND-7	POND-7
POND-8	POND-8
POND-9	POND-9
POND-10	POND-10
POND-A	POND-A
POND-B	POND-B
POND-C	POND-C
WWT-1	WWT-1
WWT-2	WWT-2

Steam Electric Questionnaire Code Tables

Wastewater Treatment Units	
For Use in Tables and Questions Throughout Parts D and F.	
Filter, Microfiltration - 3	FLT-M-3
Filter, Microfiltration - 4	FLT-M-4
Filter, Sand/Gravity - 1	FLT-S-1
Filter, Sand/Gravity - 2	FLT-S-2
Filter, Sand/Gravity - 3	FLT-S-3
Filter, Sand/Gravity - 4	FLT-S-4
Filter, Ultrafiltration - 1	FLT-U-1
Filter, Ultrafiltration - 2	FLT-U-2
Filter, Ultrafiltration - 3	FLT-U-3
Filter, Ultrafiltration - 4	FLT-U-4
Filter press - 1	FP-1
Filter press - 2	FP-2
Holding tank	HT
Ion exchange	IX
Natural wetlands	NW
pH adjustment - 1	PH-1
pH adjustment - 2	PH-2
pH adjustment - 3	PH-3
Reverse osmosis	ROS
Pond Unit - 1	SPD-1
Pond Unit - 2	SPD-2
Pond Unit - 3	SPD-3
Pond Unit - 4	SPD-4
Pond Unit - 5	SPD-5
Pond Unit - 6	SPD-6
Pond Unit - 7	SPD-7
Pond Unit - 8	SPD-8
Pond Unit - 9	SPD-9

Destinations	
For Use in Tables and Questions Throughout Parts A, C, D, and F.	
WWT-3	WWT-3
WWT-4	WWT-4
WWT-5	WWT-5
WWT-6	WWT-6
WWT-A	WWT-A
WWT-B	WWT-B
WWT-C	WWT-C
Reuse as boiler water	RECYC - BW
Reuse as bottom ash sluice	RECYC - BAS
Reuse as combined ash sluice	RECYC - CAS
Reuse as FGD slurry preparation water	RECYC - FGDP
Reuse as FGD absorber makeup	RECYC - FGDAB
Reuse as fly ash sluice	RECYC - FAS
Reuse as mill reject sluice	RECYC - MRS
Reuse in cooling towers	RECYC - CW

Steam Electric Questionnaire Code Tables

Wastewater Treatment Units	
For Use in Tables and Questions Throughout Parts D and F.	
Pond Unit - 10	SPD-10
Pond Unit - 11	SPD-11
Pond Unit - 12	SPD-12
Pond Unit - 13	SPD-13
Pond Unit - 14	SPD-14
Settling tank - 1	ST-1
Settling tank - 2	ST-2
Settling tank - 3	ST-3
Settling tank - 4	ST-4
Settling tank - 5	ST-5
Thickener - 1	TH-1
Thickener - 2	TH-2
Vacuum drum filter - 1	VF-1
Vacuum drum filter - 2	VF-2
Vacuum filter belt - 1	VFB-1
Vacuum filter belt - 2	VFB-2

Solids Handling	
For Use as Planned Solids Handling for the FGD Slurry Blowdown in Part B Table B-2.	
Centrifuge - 1	CENT-1
Centrifuge - 2	CENT-2
Centrifuge - 3	CENT-3
Centrifuge - 4	CENT-4
Hydrocyclones - 1	HYC-1
Hydrocyclones - 2	HYC-2
Hydrocyclones - 3	HYC-3
Hydrocyclones - 4	HYC-4
Filter press - 1	FP-1
Filter press - 2	FP-2
Thickener - 1	TH-1
Thickener - 2	TH-2
Vacuum drum filter - 1	VF-1
Vacuum drum filter - 2	VF-2
Vacuum filter belt - 1	VFB-1
Vacuum filter belt - 2	VFB-2

Part D Drop Downs

Process Wastewaters
Process Wastewaters
Select
Air heater cleaning water
Ash pile runoff
Boiler blowdown
Boiler fireside cleaning water
Boiler tube cleaning water
Bottom ash sluice
Carbon capture wastewater
Coal pile runoff
Combined ash sluice
Combustion turbine cleaning (combustion gas portion of turbine) water
Combustion turbine cleaning (compressor portion of the turbine) water
Combustion turbine evaporative coolers blowdown
Cooling tower blowdown
FGD scrubber purge
FGD slurry blowdown
Filter Backwash
Floor drain wastewater
Flue gas mercury control system wastewater
Fly ash sluice
General runoff
Gypsum pile runoff
Gypsum wash water
Ion exchange wastewater
Landfill runoff - capped landfill
Landfill runoff - uncapped landfill
Leachate
Limestone pile runoff
Mill reject sluice
Once -through cooling water
Reverse osmosis reject water
SCR catalyst regeneration wastewater
SCR catalyst washing wastewater
Soot blowing wash water
Steam turbine cleaning water
Yard drain wastewater
Other

Treated Wastewaters
Treated Wastewaters
Select
Effluent - 1
Effluent - 2
Effluent - 3
Effluent - 4
Effluent - 5
Effluent - 6
Filter backwash
POND-1 Effluent
POND-2 Effluent
POND-3 Effluent
POND-4 Effluent
POND-5 Effluent
POND-6 Effluent
POND-7 Effluent

POND-8 Effluent
POND-9 Effluent
POND-10 Effluent
POND-A Effluent
POND-B Effluent
POND-C Effluent
Sludge
WWT-1 Effluent
WWT-2 Effluent
WWT-3 Effluent
WWT-4 Effluent
WWT-5 Effluent
WWT-6 Effluent
WWT-A Effluent
WWT-B Effluent
WWT-C Effluent
Other

Process or Treated Wastewater (Influent Table D-3)
Process or Treated Wastewater (Influent Table D-3)
Select
Air heater cleaning water
Ash pile runoff
Boiler blowdown
Boiler fireside cleaning water
Boiler tube cleaning water
Bottom ash sluice
Carbon capture wastewater
Coal pile runoff
Combined ash sluice
Combustion turbine cleaning (combustion gas portion of turbine) water
Combustion turbine cleaning (compressor portion of the turbine) water
Combustion turbine evaporative coolers blowdown
Cooling tower blowdown
FGD scrubber purge
FGD slurry blowdown
Filter Backwash
Floor drain wastewater
Flue gas mercury control system wastewater
Fly ash sluice
General runoff
Gypsum pile runoff
Gypsum wash water
Ion exchange wastewater
Landfill runoff - capped landfill
Landfill runoff - uncapped landfill
Leachate
Limestone pile runoff
Mill reject sluice
Once -through cooling water
Reverse osmosis reject water
SCR catalyst regeneration wastewater
SCR catalyst washing wastewater
Sludge
Soot blowing wash water
Steam turbine cleaning water
Yard drain wastewater
POND-1 Effluent

POND-2 Effluent
POND-3 Effluent
POND-4 Effluent
POND-5 Effluent
POND-6 Effluent
POND-7 Effluent
POND-8 Effluent
POND-9 Effluent
POND-10 Effluent
POND-A Effluent
POND-B Effluent
POND-C Effluent
WWT-1 Effluent
WWT-2 Effluent
WWT-3 Effluent
WWT-4 Effluent
WWT-5 Effluent
WWT-6 Effluent
WWT-A Effluent
WWT-B Effluent
WWT-C Effluent
Other

Treated Wastewater (Effluents Table D-4)
Treated Wastewater (Effluents Table D-4)
Select
Effluent - 1
Effluent - 2
Effluent - 3
Effluent - 4
Effluent - 5
Effluent - 6
Filter backwash
Sludge
Other

Wastewater Treatment Units
Wastewater Treatment Units
Select
Adsorptive media
Aerobic Biological Reactor
Aerobic/Anaerobic Biological Reactor
Anaerobic Biological Reactor
Brine concentrator
Chemical Precipitation Reaction Tank 1 - 1
Chemical Precipitation Reaction Tank 1 - 2
Chemical Precipitation Reaction Tank 2 - 1
Chemical Precipitation Reaction Tank 2 - 2
Chemical Precipitation Reaction Tank 3 - 1
Chemical Precipitation Reaction Tank 3 - 2
Clarification, Primary - 1
Clarification, Primary - 2
Clarification, Secondary - 1
Clarification, Secondary - 2
Clarification, Tertiary - 1
Clarification, Tertiary - 2
Dryer
Constructed wetlands

Equalization, Primary
Equalization, Secondary
Evaporator
Filter press - 1
Filter press - 2
Filter, Microfiltration - 1
Filter, Microfiltration - 2
Filter, Microfiltration - 3
Filter, Microfiltration - 4
Filter, Sand/Gravity - 1
Filter, Sand/Gravity - 2
Filter, Sand/Gravity - 3
Filter, Sand/Gravity - 4
Filter, Ultrafiltration - 1
Filter, Ultrafiltration - 2
Filter, Ultrafiltration - 3
Filter, Ultrafiltration - 4
Holding tank
Ion exchange
Natural wetlands
pH adjustment - 1
pH adjustment - 2
pH adjustment - 3
Pond Unit - 1
Pond Unit - 2
Pond Unit - 3
Pond Unit - 4
Pond Unit - 5
Pond Unit - 6
Pond Unit - 7
Pond Unit - 8
Pond Unit - 9
Pond Unit - 10
Pond Unit - 11
Pond Unit - 12
Pond Unit - 13
Pond Unit - 14
Reverse osmosis
Settling tank - 1
Settling tank - 2
Settling tank - 3
Settling tank - 4
Settling tank - 5
Thickener - 1
Thickener - 2
Vacuum drum filter - 1
Vacuum drum filter - 2
Vacuum filter belt - 1
Vacuum filter belt - 2
NA
Other

Destinations
Destinations
Select
Burned on site
Deep-well injection
Discharge to POTW

Discharge to PrOTW
Discharge to surface water
Evaporation
Hauled off site for reuse (given away)
Hauled off site for reuse (marketed and sold)
Hauled off site for reuse (removal fee)
Hauled off site for disposal
Mixed with fly ash for disposal
On-site company owned landfill
POND-1
POND-2
POND-3
POND-4
POND-5
POND-6
POND-7
POND-8
POND-9
POND-10
POND-A
POND-B
POND-C
Reuse as boiler water
Reuse as bottom ash sluice
Reuse as combined ash sluice
Reuse as FGD absorber makeup
Reuse as FGD slurry preparation water
Reuse as fly ash sluice
Reuse as mill reject sluice
Reuse in cooling towers
WWT-1
WWT-2
WWT-3
WWT-4
WWT-5
WWT-6
WWT-A
WWT-B
WWT-C
NA
Other

Units
Units
Select
µg/L
mg/L

OMB Control Number: 2040-0281
Approval Expires: 05/31/2013

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Steam Electric Questionnaire

PART E - WASTES FROM CLEANING METAL PROCESS EQUIPMENT

Table of Contents

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

PART E. WASTES FROM CLEANING METAL PROCESS EQUIPMENT

INSTRUCTIONS

Complete Part E of the questionnaire for your plant. As you are completing the electronic form, note the following: When you enter your plant name and plant ID on the Part E TOC tab, all name and ID fields throughout Part E will automatically populate. Refer to the overall questionnaire instructions, the glossary, and the acronym list for assistance with completing Part E.

Please provide all free response answers in the highlighted yellow areas. Throughout Part E, you may need to make copies of certain sections/questions. Instructions are provided throughout Part E regarding making copies. Note that steam electric generating unit or metal cleaning operation names must be populated on the copied tab or section, located in the upper right corner under "Plant ID" and "Plant Name", in order to correlate the requested information with the steam electric generating unit or metal cleaning operation.

Use the Comments page at the end of Part E to do the following: provide additional information as requested in certain questions within Part E; indicate atypical data (e.g., if 2009 information is not representative of normal operations); and note methods used to make best engineering estimates in the event that exact data are not available.

Plant Name: Insert Plant ID
Plant ID: Insert Plant Name

Part: E
Section Title: 1. Metal Cleaning Operations

Instructions: Complete Part E of the questionnaire for your plant. This part collects information on operations that produce metal cleaning wastes at the plant. Metal cleaning wastes include any *process wastewaters* resulting from cleaning [with or without chemical cleaning compounds] any metal process equipment, including, but not limited to, boiler tube cleaning, boiler fireside cleaning, and air heater cleaning. This part also collects information on combined cycle combustion turbine and air compressor cleaning, and soot blowing. For Part E of the questionnaire, report all soot blowing operations that use water or steam during the cleaning event.

CBI?
☐ Yes

E1-1. Has the plant generated any wastes from cleaning metal process equipment associated with fossil- or nuclear-fueled steam electric generating units since January 1, 2000?

○ Yes (Continue)
○ No (Skip to next Questionnaire Part)

Plant Name: Insert Plant ID
Plant ID: Insert Plant Name
SE Unit ID: Insert Unit ID

Part: E
Section Title: 2. Generating Unit Cleaning Data

Instructions: Complete Section 2 (Questions E2-1 and E2-2) for each fossil- or nuclear-fueled steam electric generating unit for which the plant has performed at least one cleaning operation on metal process equipment since January 1, 2000. See Part A Section 8 for unit classifications. Enter the steam electric generating unit ID under the section heading above (use steam electric generating unit IDs assigned in Table A-8). Make a copy of Section 2 for each steam electric generating unit identified in Table A-8 using the "Copy Section 2" button below. Please provide all free response answers in the highlighted yellow areas.

NOTE: Combined cycle systems are considered steam electric generating units and, therefore, any cleaning operations performed on ANY portion of a combined cycle system, including cleaning operations associated with the combustion turbine portion of the system should be reported in this part. When responding to these questions, provide answers that describe the typical cleaning operation for the steam electric generating unit.

Copy Section 2

CBI?
☐ Yes

E2-1. In Table E-1, provide information about a typical cleaning event for each type of cleaning operation that uses chemical compounds on metal process equipment associated with fossil- or nuclear-fueled steam electric generating units. In addition, please note whether or not each type of cleaning operation occurs at the plant.

NOTE: "Typical Dose Concentration" refers to the average concentration of the chemical within the cleaning water and "cleaning event" refers to one instance in which the plant performs a cleaning operation on metal process equipment.

Table E-1. Metal Process Equipment Cleaning Operations Using Chemicals Performed on Steam Electric Generating Units

			Chemical Addition					
Operation ID	**Type of Metal Cleaning Operation**	**Does Type of Cleaning Occur at the Plant?**	**Type of Chemical Used in Operation**	**Typical Dose Concentration for Each Chemical (Grams per Liter)**	**Typical Amount Added for Each Chemical per Cleaning Event (Gallons)**	**Type of Water Used in Cleaning Operation**	**Typical Volume of Metal Cleaning Waste Generated per Cleaning Event (Gallons)**	**Typical Frequency of Cleaning Events (e.g., 1 time every 3 years)**
TUBE_CHEM	Boiler tube cleaning	○ Yes ○ No	Process Equipment Cleaning Chemical Other (specify):			Type of Water Other (specify):		time(s) every yrs
			Process Equipment Cleaning Chemical Other (specify):			Type of Water Other (specify):		
			Process Equipment Cleaning Chemical Other (specify):			Type of Water Other (specify):		
			Process Equipment Cleaning Chemical Other (specify):					
			Process Equipment Cleaning Chemical Other (specify):					
			Process Equipment Cleaning Chemical Other (specify):					
FIRE_CHEM	Boiler fireside cleaning	○ Yes ○ No	Process Equipment Cleaning Chemical Other (specify):			Type of Water Other (specify):		time(s) every yrs
			Process Equipment Cleaning Chemical Other (specify):			Type of Water Other (specify):		
			Process Equipment Cleaning Chemical Other (specify):			Type of Water Other (specify):		
			Process Equipment Cleaning Chemical Other (specify):					
			Process Equipment Cleaning Chemical Other (specify):					
			Process Equipment Cleaning Chemical Other (specify):					

Approved: May 20, 2010

AIR_CHEM	Air heater cleaning	O Yes O No	Process Equipment Cleaning Chemical Other (specify):			Type of Water Other (specify):			
			Process Equipment Cleaning Chemical Other (specify):			Type of Water Other (specify):			
			Process Equipment Cleaning Chemical Other (specify):			Type of Water Other (specify):		time(s) every	yrs
			Process Equipment Cleaning Chemical Other (specify):						
			Process Equipment Cleaning Chemical Other (specify):						
			Process Equipment Cleaning Chemical Other (specify):						
SOOT_CHEM	Soot blowing	O Yes O No	Process Equipment Cleaning Chemical Other (specify):			Type of Water Other (specify):			
			Process Equipment Cleaning Chemical Other (specify):			Type of Water Other (specify):			
			Process Equipment Cleaning Chemical Other (specify):			Type of Water Other (specify):		time(s) every	yrs
			Process Equipment Cleaning Chemical Other (specify):						
			Process Equipment Cleaning Chemical Other (specify):						
			Process Equipment Cleaning Chemical Other (specify):						
ST-TURB_CHEM	Steam turbine cleaning	O Yes O No	Process Equipment Cleaning Chemical Other (specify):			Type of Water Other (specify):			
			Process Equipment Cleaning Chemical Other (specify):			Type of Water Other (specify):			
			Process Equipment Cleaning Chemical Other (specify):			Type of Water Other (specify):		time(s) every	yrs
			Process Equipment Cleaning Chemical Other (specify):						
			Process Equipment Cleaning Chemical Other (specify):						
			Process Equipment Cleaning Chemical Other (specify):						

CT-COMB_CHEM	Combustion turbine cleaning (combustion portion of turbine)	O Yes O No	Process Equipment Cleaning Chemical Other (specify):			Type of Water Other (specify):			
			Process Equipment Cleaning Chemical Other (specify):			Type of Water Other (specify):			
			Process Equipment Cleaning Chemical Other (specify):			Type of Water Other (specify):		time(s) every	yrs
			Process Equipment Cleaning Chemical Other (specify):						
			Process Equipment Cleaning Chemical Other (specify):						
			Process Equipment Cleaning Chemical Other (specify):						
CT-COMPR_CHEM	Combustion turbine cleaning (compressor portion of combustion turbine)	O Yes O No	Process Equipment Cleaning Chemical Other (specify):			Type of Water Other (specify):			
			Process Equipment Cleaning Chemical Other (specify):			Type of Water Other (specify):			
			Process Equipment Cleaning Chemical Other (specify):			Type of Water Other (specify):		time(s) every	yrs
			Process Equipment Cleaning Chemical Other (specify):						
			Process Equipment Cleaning Chemical Other (specify):						
			Process Equipment Cleaning Chemical Other (specify):						
Other	Other:	O Yes O No	Process Equipment Cleaning Chemical Other (specify):			Type of Water Other (specify):			
			Process Equipment Cleaning Chemical Other (specify):			Type of Water Other (specify):			
			Process Equipment Cleaning Chemical Other (specify):			Type of Water Other (specify):		time(s) every	yrs
			Process Equipment Cleaning Chemical Other (specify):						
			Process Equipment Cleaning Chemical Other (specify):						
			Process Equipment Cleaning Chemical Other (specify):						
Other	Other:	O Yes O No	Process Equipment Cleaning Chemical Other (specify):			Type of Water Other (specify):			
			Process Equipment Cleaning Chemical Other (specify):			Type of Water Other (specify):			
			Process Equipment Cleaning Chemical Other (specify):			Type of Water Other (specify):		time(s) every	yrs
			Process Equipment Cleaning Chemical Other (specify):						
			Process Equipment Cleaning Chemical Other (specify):						
			Process Equipment Cleaning Chemical Other (specify):						

CBI?
☐ Yes

E2-2. In Table E-2, provide information about a typical cleaning event for each type of cleaning operation that does not use chemical compounds on metal process equipment associated with fossil- or nuclear- fueled steam electric generating units. In addition, please note whether or not each type of cleaning operation occurs at the plant.

NOTE: "Typical Dose Concentration" refers to the average concentration of the chemical within the cleaning water and "cleaning event" refers to one instance in which the plant performs a cleaning operation on metal process equipment.

Table E-2. Metal Process Equipment Cleaning Operations Without Chemicals Performed on Steam Electric Generating Units

Operation ID	Type of Metal Cleaning Operation	Does Type of Cleaning Occur at the Plant?	Type of Water Used in Cleaning Operation	Typical Volume of Metal Cleaning Waste Generated per Cleaning Event (Gallons)	Typical Frequency of Cleaning Events (e.g., 1 time every 3 years)	
TUBE_NO_CHEM	Boiler tube cleaning	○ Yes ○ No	Type of Water Other (specify): Type of Water Other (specify): Type of Water Other (specify):		time(s) every	yrs
FIRE_NO_CHEM	Boiler fireside cleaning	○ Yes ○ No	Type of Water Other (specify): Type of Water Other (specify): Type of Water Other (specify):		time(s) every	yrs
AIR_NO_CHEM	Air heater cleaning	○ Yes ○ No	Type of Water Other (specify): Type of Water Other (specify): Type of Water Other (specify):		time(s) every	yrs

SOOT_NO_CHEM	Soot blowing	○ Yes ○ No	Type of Water Other (specify): Type of Water Other (specify): Type of Water Other (specify):		time(s) every	yrs
ST-TURB_NO_CHEM	Steam turbine cleaning	○ Yes ○ No	Type of Water Other (specify): Type of Water Other (specify): Type of Water Other (specify):		time(s) every	yrs
CT-COMB_NO_CHEM	Combustion turbine cleaning (combustion portion of turbine)	○ Yes ○ No	Type of Water Other (specify): Type of Water Other (specify): Type of Water Other (specify):		time(s) every	yrs
CT-COMPR_NO_CHEM	Combustion turbine cleaning (compressor portion of combustion turbine)	○ Yes ○ No	Type of Water Other (specify): Type of Water Other (specify): Type of Water Other (specify):		time(s) every	yrs
Other	Other:	○ Yes ○ No	Type of Water Other (specify): Type of Water Other (specify): Type of Water Other (specify):		time(s) every	yrs
Other	Other:	○ Yes ○ No	Type of Water Other (specify): Type of Water Other (specify): Type of Water Other (specify):		time(s) every	yrs

Plant Name: Insert Plant ID
Plant ID: Insert Plant Name
SE Unit ID: Insert Unit ID
Metal Cleaning Operation ID: Insert Operation ID

Part: E
Section Title: 3. Cleaning Operation Data

Instructions: Complete Section 3 (Questions E3-1 through E3-8) for each type of metal cleaning operation performed on the steam electric generating unit, which is identified in Tables E-1 and E-2 of Section 2. Make a copy of Section 3 using the "Copy Section 3" button below. Enter the steam electric generating unit ID under the section heading above (use steam electric generating unit IDs assigned in Table A-8). In addition, enter the metal cleaning operation ID performed on the steam electric generating unit (use the IDs from Tables E-1 and E-2). Please provide all free response answers in the highlighted yellow areas.

Copy Section 3

CBI?
☐ Yes

E3-1. In the space below, provide a description of the process equipment cleaning operation. Include the type of equipment and metal cleaned, any chemical preparation steps (e.g., diluting the chemical prior to use), and a short description of the cleaning operation. An example is provided below.

Example: *The plant uses citric acid to remove copper deposits and iron oxides from the steel tube surfaces of the boiler. The citric acid is diluted to a pH of 3.5 and then used for cleaning in a two-stage process. In the first stage, the citric acid dissolves iron oxides. In the second stage anhydrous ammonia is added to raise the pH of the cleaning solution between 9 and 10 and air is bubbled through the solution to dissolve copper deposits.*

Approved: May 20, 2010

CBI?
☐ Yes

E3-2. Is the cleaning waste commingled with other *process wastewaters* ? If yes, indicate the process wastewaters with which the metal cleaning waste is commingled. [Check all boxes that apply.]

○ Yes

☐ Fly ash transport water
☐ Cooling tower blowdown
☐ Bottom ash transport water
☐ Once through cooling water
☐ FGD scrubber purge
☐ Other: ______

○ No

CBI?
☐ Yes

E3-3. What is the destination(s) of the cleaning waste? If the plant *recycles* the waste, indicate the plant process to which this waste is recycled. [Check all boxes that apply.]

☐ Immediately recycled back to plant process. Please describe how the cleaning waste is reused:

______

☐ Transferred to on-site treatment system. Identify the type of treatment system below. [Check all boxes that apply.]

☐ Settling Pond
☐ Constructed wetlands
☐ pH adjustment
☐ Other, specify: ______
☐ Chemical precipitation

☐ Discharged to surface water. Provide NPDES permitted outfall number (from Part A Section 2.2): ______

☐ Indirect discharge to a publicly or privately owned treatment works

☐ Evaporated during a cleaning operation

☐ Other, explain: ______

CBI?
☐ Yes

E3-4. Are *residues* or other solid by-products generated from the cleaning operation?

○ Yes (Continue)

○ No (Skip to next Questionnaire Part)

CBI?
☐ Yes

E3-5. If residues are generated, indicate if they are considered always hazardous, sometimes hazardous, or non-hazardous waste.

◯ Always hazardous (Continue)
◯ Sometimes hazardous (Continue)
◯ Always non-hazardous (Skip to Question E3-7)
◯ Unknown (Skip to Question E3-7)

CBI?
☐ Yes

E3-6. Indicate what characteristic(s) make the waste hazardous.

______

CBI?
☐ Yes

E3-7. Indicate how the plant handles the residue or other solid by-products and provide the tons per cleaning event for each type of storage handling technique. If the solid by-products are stored in a *landfill* or *pond/impoundment*, indicate whether the solid by-products are stored permanently or temporarily. [Check all boxes that apply.]

☐ Landfilled
- ☐ Stored permanently ______ tons per cleaning event
- ☐ Stored temporarily (later hauled off-site) ______ tons per cleaning event

☐ Sent to a pond/impoundment
- ☐ Stored permanently ______ tons per cleaning event
- ☐ Stored temporarily (later hauled off-site) ______ tons per cleaning event

☐ Hauled off-site for disposal ______ tons per cleaning event

☐ Other (specify): ______ ______ tons per cleaning event

CBI?

☐ Yes

E3-8. If the plant stores the residues or other solid by-products from cleaning operations in a landfill or pond/impoundment, are they combined with other solid by-products generated at the plant? If yes, indicate which. [Check all boxes that apply.]

○ Yes

- ☐ Fly ash
- ☐ Bottom ash
- ☐ FGD solids
- ☐ Mill rejects
- ☐ Other: ________________

○ No (residues/solid by-products transferred to landfill but not combined with other wastes)

○ NA (residues/solid by-products not transferred to landfill or pond/impoundment)

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: E
Section Title: Part E Comments

Instructions: Cross reference your comments by question number and indicate the confidential status of your comment by checking the box next to “Yes” under "CBI?" (Confidential Business Information).

	Question Number	Comment
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		

CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		

Part E Drop Downs

Process Equipment Cleaning Chemical
Select
A-120 Inhibitor
A-300 Inhibitor
Ammoniated EDTA
Ammonium Bicarbonate
Ammonium Bifluoride
Ammonium Hydroxide
Ammonium Persulfate
Anti Foam
Aqua Ammonia
Bromate
Citric Acid
F082 Surfactant
F085 Foam agent
Formic Acid
Hydrazine
Hydrochloric Acid
Hydrogen Peroxide
Hydroxyacetic Acid
Nitrogen
Oxygen
Phosphate - DSP disodium
Phosphate - TSP Trisodium
Phosphoric Acid
Rodine 213
Rodine 214
Rodine 31A
Sodium Bromate
Sodium Hydroxide
Sodium Nitrite
Sodium Sulfite
Sulfuric Acid
Thiourea
Other

Type of Water
Select
Potable (city) water
Raw plant intake water
Steam
Treated plant intake water
Other

OMB Control Number: 2040-0281
Approval Expires: 05/31/2013

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Steam Electric Questionnaire

PART F - MANAGEMENT PRACTICES FOR PONDS/IMPOUNDMENTS AND LANDFILLS

Table of Contents

Approved: May 20, 2010

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

PART F. MANAGEMENT PRACTICES FOR PONDS/IMPOUNDMENTS AND LANDFILLS

INSTRUCTIONS

Complete Part F of the questionnaire for your plant. As you are completing the electronic form, note the following: When you enter your plant name and plant ID on the Part F TOC tab, all name and ID fields throughout Part F will automatically populate. Refer to the overall questionnaire instructions, the glossary, and the acronym list for assistance with completing Part F.

Please provide all free response answers in the highlighted yellow areas. Throughout Part F, you may need to make copies of certain sections/questions. Instructions are provided throughout Part F regarding making copies. Note that pond/impoundment unit, landfill, leachate treatment system, and leachate treatment unit names or IDs must be populated on the copied tab or section, located in the upper right corner under "Plant ID" and "Plant Name", in order to correlate the requested information.

Throughout Part F Section 4, information is requested on leachate treatment units and systems that are planned, under construction/installation, or planned to begin construction/installation by December 31, 2020. Provide design information, or best engineering estimates as necessary, for these planned systems/units. Additionally, enter “NA” in the field or checkbox if the information requested is not applicable for planned systems/units (e.g., a question that requests flow rate data for year 2009).

Use the Part F Comments tab to do the following: provide additional information as requested in certain questions within Part F; indicate atypical data (e.g., if 2009 information is not representative of normal operations); and note methods used to make best engineering estimates in the event that exact data are not available.

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: F
Section Title: 1. Pond/Impoundment and Landfill Use

Instructions: Part F requests information for all active/inactive/open and retired/closed *pond/impoundment* units and *landfills* , including those located on non-adjoining property, used for the storage, treatment, and/or disposal of *process wastewater* , *residues* , or by-products (or *sludges* or water streams containing the residues or by-products) from the combustion of coal or petroleum coke, including, but not limited to, *fly ash* , *bottom ash* , boiler slag, or flue gas emission control residues. This includes liquid-borne material and solid material.

CBI?
☐ Yes

F1-1. Does the plant have one or more active/inactive/open or retired/closed *pond/impoundment* units or *landfills* , including those located on non-adjoining property, used for the storage, treatment, and/or disposal of process wastewater, residues, or by-products (or sludges or water streams containing the residues or by-products) from the combustion of coal or petroleum coke, including, but not limited to, fly ash, bottom ash, boiler slag, or flue gas emission control residues (this includes liquid-borne material and solid material)? [Check the box below.]

Note: Answer "yes" to this question even if all the pond/impoundments and landfills are closed.

○ Yes (Continue)

○ No (Skip to the next Questionnaire Part)

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Plant ID: Insert Plant ID
Plant Name: Insert Plant Name
Pond/Impoundment Unit ID: Insert Pond ID

Part: F
Section Title: 2. Pond/Impoundment Management Practices

Instructions: Complete Section 2 for each active/inactive/open and retired/closed *pond/impoundment* unit, including those located on non-adjoining property, used for the storage, treatment, and/or disposal of *process wastewater*, *residues*, or by-products (or *sludges* or water streams containing the residues or by-products) from the combustion of coal or petroleum coke, including, but not limited to, *fly ash*, *bottom ash*, boiler slag, or flue gas emission control residues. This includes liquid-borne material and solid material. Enter the pond/impoundment unit ID in the space provided above (use pond/impoundment unit IDs assigned in Table A-4). Please provide all free response answers in the highlighted yellow areas.

Make a copy of Section 2 for each active/inactive/open and retired/closed pond/impoundment unit, including those located on non-adjoining property, using the "Copy Section 2" button below.

Copy Section 2

Pond/Impoundment Unit Design

CBI?
☐ Yes

F2-1. If known, indicate the hydrologic design criteria of the pond/impoundment unit.

○ 100-year, 24-hour storm event

○ ½ Probable maximum flood

○ Other (specify): ____________

○ None

CBI?
☐ Yes

F2-2. Has the pond/impoundment unit ever experienced an overflow or other type of release, excluding routine permitted *discharges* , since January 1,1995?

○ Yes

State when the overflow occurred and describe the reason for the overflow (e.g., experienced two 100-year, 24-hour storm events within one month):

____

○ No (Skip to Question F2-4)

CBI?
☐ Yes

F2-3. Has a non-permitted pond/impoundment overflow or other type of release been discharged to a receiving water, since January 1, 1995? If so, identify the name of the receiving water.

○ Yes (specify name of receiving water): ____________________

○ No

Leachate Collection and Leak Detection Systems

CBI?
☐ Yes

F2-4. Does the pond/impoundment unit have a system to collect *leachate* (including leaks, seepage, toe drains, or similar releases)?

○ Yes

☐ Leachate collection system

☐ Leak detection system

☐ Other collection system (specify): ____________________

○ No (Skip to Question F2-9)

CBI?
☐ Yes

F2-5. Provide the volume of leachate (including leaks, seepage, toe drains, or similar releases) collected in 2009 (gpd AND gpy) and the frequency of process wastewater generation (days). Also provide a description of the estimation method below.

________ gpd
AND
________ gpy Over ________ days

Description of estimation method:
____

CBI?
☐ Yes

F2-6. Does the plant collect stormwater, rainfall, or process wastewaters in the collection system for this pond/impoundment unit? If yes, identify the stormwater, rainfall, or process wastewaters and their flow rates. If the process wastewater is not one of the response options provided, select "Other" in the drop-down box and specify the type of process wastewater in the yellow highlighted space below.

○ Yes

☐ Uncontaminated stormwater ________ gpy

☐ Rainfall ________ gpy

☐ Process Wastewaters 2 ________ gpy

If other, explain: ________

○ No

CBI?
☐ Yes

F2-7. Indicate all intermediate and final destination(s) of the leachate. If the plant *recycles* the leachate, indicate the plant process to which this waste is recycled. [Check all boxes that apply.]

☐ Transferred back into pond/impoundment unit

☐ Combined with pond/impoundment unit effluent

☐ Transferred to other pond/impoundment units. Provide ID of the pond/impoundment unit previously defined in Table A-4:

☐ Transferred to on-site treatment system, including those located on non-adjoining property.
Is this wastewater treatment system previously defined in Table D-2?

○ Yes (specify the wastewater treatment system ID from Table D-2):

○ No (section 4 of Part F must be filled out for this treatment system)

☐ Transferred back to storage tank

☐ Indirect discharge to a publicly or privately owned treatment works

☐ Immediately recycled back to plant process. Please describe how the leachate is reused:

☐ Discharged to surface water. Provide NPDES permitted outfall number (from Part A Section 2.2):

☐ Other, explain:

CBI?
☐ Yes

F2-8. If the leachate is sent to a pond or storage tank, are chemicals used to treat the leachate (e.g., lime for pH control)? If yes, indicate which chemicals are used. [Check all boxes that apply].

○ Yes

☐ Lime

☐ Sodium Hydroxide

☐ Sulfuric Acid

☐ Other (specify):

○ No

○ NA

Monitoring and Inspections

CBI?
☐ Yes

F2-9. Does the plant and/or its engineering contractors regularly monitor/inspect the structural integrity of the pond/impoundment unit?

○ Yes (Continue)

○ No (Skip to Section 3)

CBI?
☐ Yes

F2-10. Indicate which of the following monitoring measures or inspections are performed on the pond/impoundment unit by the plant and/or its engineering contractors, the frequency of monitoring, and the average number of hours spent each year performing monitoring activities:

☐ Seepage			Inspections/year		hrs/year
☐ Piezometric levels			Inspections/year		hrs/year
☐ Pool levels (indication of rapid drawdown)			Inspections/year		hrs/year
☐ Deformation/movement of dike/embankment			Inspections/year		hrs/year
☐ Compaction testing			Inspections/year		hrs/year
☐ Spillway/weir/outflow structural integrity			Inspections/year		hrs/year
☐ Other (specify):			Inspections/year		hrs/year
☐ Other (specify):			Inspections/year		hrs/year

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name
Landfill ID: Insert Landfill ID

Part: F
Section Title: 3.1 Landfill Management Practices

Instructions: Complete Section 3.1 for each active/inactive/open and retired/closed *landfill*, including those located on non-adjoining property, used for the storage, treatment, and/or disposal of *process wastewater*, *residues*, or by-products (or *sludges* or water streams containing the residues or by-products) from the combustion of coal or petroleum coke, including, but not limited to, *fly ash*, *bottom ash*, boiler slag, or flue gas emission control residues. This includes liquid-borne material and solid material. Enter the landfill ID in the space provided above (use landfill IDs assigned in Table A-6). Please provide all free response answers in the highlighted yellow areas.

Note: This includes landfills located on non-adjoining property that are under the operational control of the plant. This also includes landfills, within 20 miles, owned/operated by the plant's ultimate parent firm, for the purpose of storing/disposing of process wastewaters, residues or by-products, from the plant.

Make a copy of Sections 3.1 for each active/inactive/open and retired/closed landfill, including those located on non-adjoining property, using the "Copy Section 3.1" button below.

Copy Section 3.1

CBI?
☐ Yes

F3-1. List the date the landfill was built, and the landfill's surface area and approved/licensed volume capacity and height when it was originally built.

________ Date built
________ Surface area, acres
________ Volume capacity, cubic feet
________ Approved/licensed height, feet

CBI?
☐ Yes

F3-2. List the landfill's current surface area, and volume, and height above the original elevation of the stored materials.

________ Surface area, acres
________ Volume of stored materials, cubic feet
________ Height above original elevation, feet

CBI?
☐ Yes

F3-3. Is the landfill closed? If yes, provide the date it was closed. If not, list the year of the landfill's expected end of life (i.e., closure), and the expected surface area, and volume and height of stored materials at its expected end of life.

○ Yes. Date closed: ________

○ No. Year of expected end of life (closure): ________

________ Surface area, acres
________ Volume of stored materials, cubic feet
________ Height above original elevation, feet

Approved: May 20, 2010

CBI?
☐ Yes

F3-4. Has the landfill been expanded since the date it was built?

○ Yes (Continue)

○ No (Skip to Question F3-8)

CBI?
☐ Yes

F3-5. Identify the type of expansion.

○ Lateral expansion

○ Vertical expansion

○ Both lateral and vertical expansion

CBI?
☐ Yes

F3-6. Describe the expansion(s) to the landfill, since January 1, 2000, including starting and ending dimensions (surface area, volume of stored materials, height). Additionally, provide the date(s) of expansion (month/yr).

CBI?
☐ Yes

F3-7. Provide the total cost associated for any expansion(s), since January 1, 2000. Include the costs associated with the *leachate collection system* , if included as part of the landfill, in the costs provided.

Note: Total costs should include purchased equipment, installation, buildings, site preparation, land, engineering costs, construction expenses, and any other costs available.

$ ____________ Total cost of expansion

CBI?
☐ Yes

F3-8. Does the landfill have a *liner*?

◯ Yes (Complete Table F-1)
◯ No (Skip to Question F3-9)

Table F-1. Landfill Liner

Type of Liner (Mark all that apply)		Liner Layer Number (number from inner to outer layer)	Thickness of Liner Layer (cm)	Permeability of Liner Layer (cm/sec)
☐ Compacted clay				
☐ Geosynthetic clay				
☐ High density polyethylene (HDPE)				
☐ Other (specify)				
☐ Other (specify)				
☐ Other (specify)				

CBI?
☐ Yes

F3-9. Does the landfill have a cap/cover?

○ Yes (Complete Table F-2)
○ No (Skip to Question F2-10)

Table F-2. Landfill Cap/Cover

Type of Cap/Cover (Mark all that apply)		Cap/Cover Layer Number (number from inner to outer layer)	Thickness of Cap/Cover Layer (cm)	Permeability of Cap/Cover Layer (cm/sec)
☐ Compacted clay				
☐ Geosynthetic clay				
☐ High density polyethylene (HDPE)				
☐ Vegetative cover				
☐ Other (specify)				
☐ Other (specify)				
☐ Other (specify)				

CBI?
☐ Yes

F3-10. Has the plant built any structures on top of the closed landfill?

○ Yes (Continue)
○ No (Skip to Question F3-11)
○ NA. The landfill is not closed. (Skip to Question F3-11)

Provide a description of the structure(s) and any challenges that the plant faced building on top of the landfill.

Leachate Collection System

CBI?
☐ Yes

F3-11. Does the landfill have a system to collect *leachate* (including leaks, seepage, toe drains, or similar releases)?

○ Yes
☐ Leachate collection system
☐ Leak detection system
☐ Other collection system (specify): ____________
○ No (Skip to Question F3-16)

CBI?
☐ Yes

F3-12. Provide the volume of *leachate* collected in 2009 (gpd AND gpy) and the frequency of process wastewater generation (days). Also provide a description of the estimation method below.

____________ gpd
AND
____________ gpy Over ____________ days

Description of estimation method:
____

CBI?
☐ Yes

F3-13. Does the plant collect stormwater, rainfall, or process wastewaters in the collection system for this landfill? If yes, identify the stormwater, rainfall, or process wastewaters and their flow rates. If the process wastewater is not one of the response options provided, select "Other" in the drop-down box and specify the type of process wastewater in the yellow highlighted space below.

○ Yes
☐ Uncontaminated stormwater ____________ gpd
☐ Rainfall ____________ gpd
☐ Process Wastewaters 2 ▼ ____________ gpd
If other, explain: ____________
○ No

CBI?
☐ Yes

F3-14. Indicate all intermediate and final destination(s) of the leachate. If the plant *recycles* the leachate, indicate the plant process to which this waste is recycled. [Check all boxes that apply.]

☐ Transferred to pond(s)/impoundment(s). Provide the IDs of the pond/impoundment unit(s) previously defined in Table A-4:

☐ Transferred to on-site treatment system, including those located on non-adjoining property.
Is this wastewater treatment system previously defined in Table D-2?

○ Yes (specify the wastewater treatment system ID from Table D-2):

○ No (Section 4 of Part F must be filled out for this treatment system)

☐ Transferred back to storage tank

☐ Indirect discharge to a publicly or privately owned treatment works

☐ Immediately recycled back to plant process. Please describe how the leachate is reused:

☐ Discharged to surface water. Provide NPDES permitted outfall number (from Part A Section 2.2):

☐ Other, explain:

CBI?
☐ Yes

F3-15. If the leachate is sent to a pond or storage tank, are chemicals used to treat the leachate (e.g., lime for pH control)? If yes, indicate which chemicals are used. [Check all boxes that apply].

○ Yes

☐ Lime

☐ Sodium Hydroxide

☐ Sulfuric Acid

☐ Other, explain:

○ No

○ NA

Stormwater Runoff

CBI?

☐ Yes

F3-16. Does the plant combine the conveyed *stormwater runoff* that has contacted the uncapped portion of the landfill with leachate?

○ Yes

○ No

CBI?

☐ Yes

F3-17. Indicate all intermediate and final destination(s) of the conveyed stormwater runoff that has contacted the uncapped portion of the landfill. If the plant *recycles* the stormwater runoff, indicate the plant process to which this waste is recycled. [Check all boxes that apply.]

☐ Transferred to pond/impoundment unit(s). Provide the ID(s) of the pond/impoundment unit(s) previously defined in Table A-4:

☐ Transferred to on-site treatment system, including those located on non-adjoining property.
Indicate the type of treatment system below. Provide the ID of the wastewater treatment system previously defined in Table D-2, otherwise enter NA:

○ Chemical precipitation
○ Biological reactor - aerobic
○ Biological reactor - anoxic\anaerobic
○ Constructed wetlands
○ Other (specify):

☐ Transferred to storage tank

☐ Indirect discharge to a publicly or privately owned treatment works

☐ Immediately recycled back to plant process. Please describe how the leachate is reused:

☐ Discharged to surface water. Provide NPDES permitted outfall number (from Part A Section 2.2):

☐ Other, explain:

CBI?
☐ Yes

F3-18. Does the plant combine the conveyed *stormwater runoff* that has contacted the capped portion of the landfill with leachate?

○ Yes

○ No

CBI?
☐ Yes

F3-19. Indicate all intermediate and final destination(s) of the conveyed stormwater runoff that has contacted the capped portion of the landfill. If the plant *recycles* the stormwater runoff, indicate the plant process to which this waste is recycled. [Check all boxes that apply.]

☐ Transferred to pond/impoundment unit(s). Provide the ID(s) of the pond/impoundment unit(s) previously defined in Table A-4:

☐ Transferred to on-site treatment system, including those located on non-adjoining property.
Indicate the type of treatment system below. Provide the ID of the wastewater treatment system previously defined in Table D-2, otherwise enter NA:

○ Chemical precipitation
○ Biological reactor - aerobic
○ Biological reactor - anoxic\anaerobic
○ Constructed wetlands
○ Other (specify):

☐ Transferred to storage tank

☐ Indirect discharge to a publicly or privately owned treatment works

☐ Immediately recycled back to plant process. Please describe how the leachate is reused:

☐ Discharged to surface water. Provide NPDES permitted outfall number (from Part A Section 2.2):

☐ Other, explain:

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name
Landfill ID: Insert System ID

Part: F
Section Title: 3.2. Landfill Costs

Instructions: Complete Section 3.2 for each active/inactive/open and retired/closed landfills that began operating at the plant on or after January 1, 2000. This includes landfills located on non-adjoining property, used for the storage, treatment, and/or disposal of process wastewater, residues, or by-products (or sludges or water streams containing the residues or by-products) from the combustion of coal or petroleum coke, including, but not limited to, fly ash, bottom ash, boiler slag, or flue gas emission control residues. This includes liquid-borne material and solid material. Enter the landfill ID in the space provided above (use landfill IDs assigned in Table A-6). Please provide all free response answers in the highlighted yellow areas.

Note: This includes landfills located on non-adjoining property that are under the operational control of the plant. This also includes landfills, within 20 miles, owned/operated by the plant's ultimate parent firm, for the purpose of storing/disposing of process wastewaters, residues or by-products, from the plant.

Make a copy of Sections 3.2 for each active/inactive/open and retired/closed landfill, including those located on non-adjoining property, using the "Copy Section 3.2" button below.

CBI?
☐ Yes

F3-20. Provide annual O&M cost data in Table F-3 for each landfill identified in Table A-6 that was operated in 2009. Provide best engineering estimates when actual data are not readily available. If you provide an estimate, note the methods that were used to make the estimates in the Comments page.

Note: Do NOT include O&M costs for leachate treatment systems, as the information will be collected in Section 4.5.

Table F-3. O&M Cost for Landfills for 2009

O&M Cost Category	2009 Annual Cost	Rate	Staffing/ Consumption
Operating labor	$	$ per hour (average rate of labor)	No. of workers hpd dpy
Maintenance labor	$	$ per hour (average rate of labor)	No. of workers hpd dpy
Maintenance materials	$		
Chemicals	$		
Plants/organic matter	$		
Energy - Power for pumping	$	$ per kWh	kWh/hr
Energy - Power for operations other than pumping	$	$ per kWh	kWh/hr

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Steam	$	$ per pound	pounds/hr
Hazardous Sludge Disposal - Dredging	$	$ per ○ Gal ○ Ton	
Hazardous Sludge Disposal - Landfilling	$	$ per ○ Gal ○ Ton	
Nonhazardous Sludge Disposal - Dredging	$	$ per ○ Gal ○ Ton	
Nonhazardous Sludge Disposal - Landfilling	$	$ per ○ Gal ○ Ton	
Other:	$		
Other:	$		
Total O&M Cost (2009)	$		

CBI?
☐ Yes

F3-21. Provide capital cost data in Table F-4 for all landfills identified in Table A-6, including planned leachate treatment systems. Provide best engineering estimates when actual data are not readily available. For all costs, do not adjust for inflation. For example, if the plant incurred a land cost in 2002, enter the cost in the “Cost” column and enter “2002” in the “Year on which Cost is Based” column.

Note: If no records are available on this leachate treatment system, provide an explanation in the Comments page.

Note: Do NOT include capital costs for leachate treatment systems, as the information will be collected in Section 4.5.

Table F-4. Capital Cost for Landfills

Project	Cost	Year on which Cost is Based
Direct Costs		
Purchased equipment (includes all equipment for the installation or the upgrade: mechanical equipment; piping; instrumentation; electrical equipment; plants/organic matter for constructed wetland(s); spare parts; freight charges; taxes; insurance; and duties)	$	
Purchased equipment installation (includes installation of all equipment; piping; instrumentation/calibration; electrical equipment; mechanical equipment; structural supports, insulation, and paint)	$	
Buildings (buildings constructed to house operator rooms, or other operations associated with the system; also includes plumbing, heating, ventilation, dust collection, air conditioning, lighting, telephones, intercoms, painting, sprinklers, fire alarms)	$	
Site preparation (includes site clearing, all demolition, grading, roads, walking areas, fences)	$	
Land (includes property costs and survey fees)	$	
Total Direct Costs	**$**	
Indirect Costs		
Engineering Costs (includes process design and general engineering, cost engineering, consulting fees, supervision, inspection for each category below:		
a. Engineering Contract Firm Costs	$	
b. Owner's Overhead Engineering Costs	$	
☐ Hired outside engineering firm to oversee design and/or installation of the treatment system.		
Construction expenses (includes temporary construction offices, roads, communications, fencing; construction tools and equipment; permits, taxes, insurance)	$	
Other Contractor's Fees	$	
Contingency actually expended (to compensate for unpredictable events such as storms, floods, strikes, price changes, errors in estimates, design changes, etc.)	$	
Total Indirect Costs	$	
Total Capital Cost	$	

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: F
Section Title: 4.1. Leachate Treatment System Design

Instructions: Complete Section 4.1 (Question F4-1and F4-2) for all leachate treatment systems (as specified in Question F2-7 and F3-14) which the plant operates or plans to operate or construct/install by December 31, 2020. Note that *wastewater treatment systems* previously defined in Table D-2 that receive pond/impoundment or landfill *leachate* should NOT be included in this table and you do not need to provide information for those systems in this section. Refer to your responses to Questions F2-7 and F3-14 to identify the systems that need to be included in this table. Please provide all free response answers in the highlighted yellow areas.

CBI?
☐ Yes

F4-1. In Table F-5, list all leachate treatment systems (as specified in Question F2-7 and F3-14), not including wastewater treatment systems previously defined in Table D-2, which the plant operates or plans to operate. For each leachate treatment system, EPA assigned a number (e.g., LTS-1, LTS-2) in Table F-5, which will be used throughout the remainder of the survey. In the “Plant Designation” column, provide the plant’s name for each leachate treatment system. As an example, if a plant operates a chemical precipitation leachate treatment system that discharges to an ash pond/impoundment system, the leachate treatment system should be identified in Table F-5 as LTS-1 and the ash pond/impoundment system should have been previously identified in Table D-1. For each planned leachate treatment system, provide an estimate of the expected average annual flow rate of the effluent from the treatment system.

Table F-5. Plant Leachate Treatment Systems

LTS System ID	Plant Designation	Treatment System Footprint (ft^2)	Year Initially Brought On Line	Number of Leachate Collection Systems Contributing to the System	Distance from Leachate Collection System* (ft)	Approximate Distance to Final Outfall (ft)
Operating Leachate Treatment Systems						
LTS-1						Outfall number:
LTS-2						Outfall number:
LTS-3						Outfall number:
LTS-4						Outfall number:
LTS-5						Outfall number:
LTS-6						Outfall number:
Planned Leachate Treatment Systems						
LTS-A						Outfall number:
LTS-B						Outfall number:
LTS-C						Outfall number:

* If there are multiple leachate collection systems transferring leachate to the treatment system, provide the average distance for all leachate collection systems.

CBI?
☐ Yes

F4-2. Attach a block diagram that shows the leachate treatment operations, the process wastewaters that currently enter or are planned to enter the leachate treatment system, and the ultimate destinations of the leachate treatment system effluent(s). Specific instructions for the diagram are provided in the checklist below. The diagram should have a level of detail similar to EPA's Example EPA_F-1 shown below.

NOTE: You may use an existing diagram, such as a water balance diagram included in the plant's NPDES Form 2C, and mark the additional required information on the diagram by hand.

Provide as many diagrams as necessary to convey the information requested in the checklist below. Number each block diagram in the upper right corner; the first block diagram should be numbered F-1, the second F-2, etc. Include the plant name, plant ID, and leachate treatment system ID in the upper right hand corner of the diagram.

☐ Diagram(s) attached.

Block Diagram Checklist

Mark the boxes below to verify that you have completed each checklist item…

☐ Include the block diagram number, plant name, plant ID, and leachate treatment system ID on the diagram.

☐ Include each leachate treatment unit operation. Show all influent and effluent streams from the units and label all influent and effluent streams from the leachate treatment system using the codes on the "Code Tables" tab provided at the end of this workbook. Effluent streams may include process wastewater and *sludges* .

☐ If a *process operation* does not have an EPA-assigned number, use the plant-designated name for the process operation. When sources or destinations are not shown on the diagram (i.e., the stream is entering from a location not shown on the diagram), describe the source or destination and add the block diagram number, when appropriate, where the stream's previous location can be seen. Use codes from the "Code Tables" tab provided at the end of this workbook. **Note that the codes listed in the "*Wastewater Treatment Unit*" table on the "Code Tables" tab should be used for assigning the leachate treatment units.**

☐ Indicate where chemical addition occurs (i.e., into or between which leachate treatment units). For constructed wetland treatment cells, indicate and note on the diagram where within or near the constructed wetland treatment cell the chemical is added (e.g., within the constructed wetland treatment cell near the leachate influent point, within the constructed wetland treatment cell near the effluent, in the effluent/discharge canal). The chemicals indicated should correspond to the chemicals listed in Table F-9.

☐ Identify the final, general destination of the treated leachate (e.g., treated leachate effluent to *POTW* or surface waters; solid wastes to on- or off-site destinations). Use codes from the "Code Tables" tab provided at the end of this workbook, when applicable.

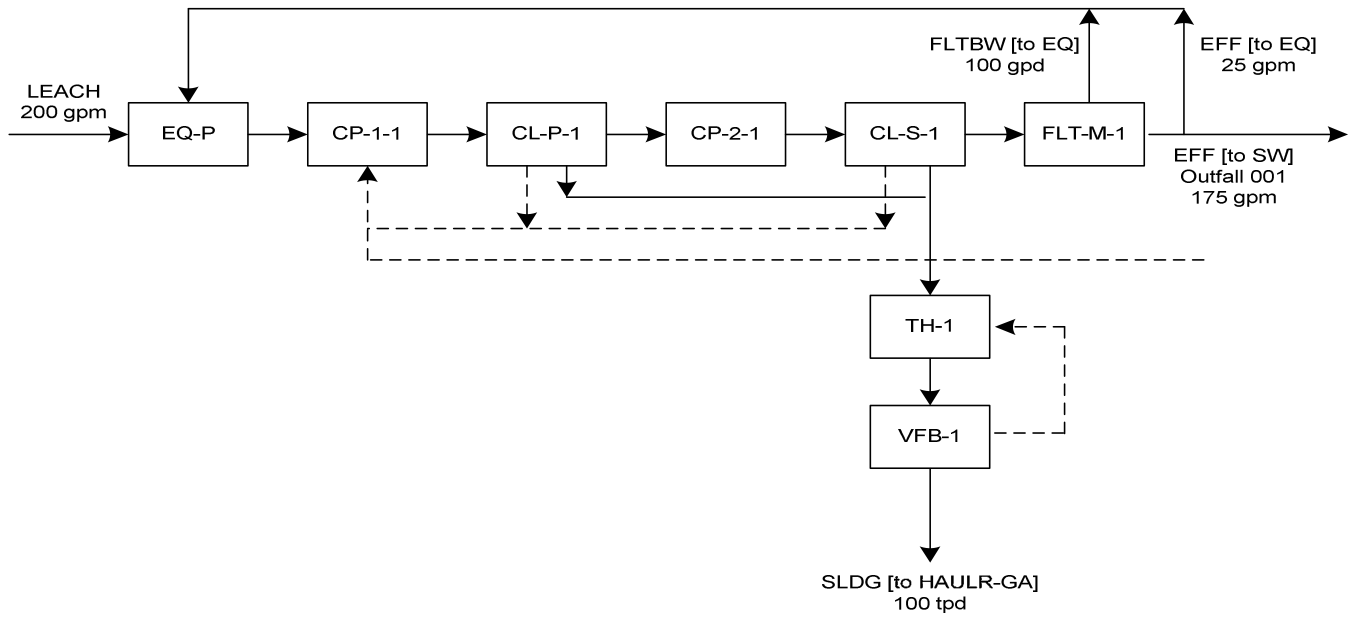
☐ Indicate, as appropriate, where treated leachate is *reused* or *recycled* within the plant (e.g., reuse of settling pond/impoundment water as fly ash sluice).

☐ Include the average annual (2009) flow rates for influent and effluent streams from the leachate treatment system on the diagram (in gpm or gpd). For planned leachate treatment systems, provide the design flow rates for the system. Note that these should be the same flow rates that are entered into Table F-6 in Question F4-3. If the actual number of days of operation for 2009 is not known, the total annual flow may be divided by 365 days and a comment added to the Comments page. If the leachate stream is intermittent, provide amount and frequency; for example "100 gal, twice/day, 100 dpy" or "1000 gpm, 4 hpd, 365 dpy".

☐ Include *NPDES permit* outfall numbers, if applicable.

If you believe that the diagram should be treated as confidential, stamp it "Confidential" or write "Confidential" or "CBI" across the top. If any diagram is not marked "Confidential", it will be considered nonconfidential under 40 CFR Part 2, Subpart B.

Review:
If any of the statements above were not checked, revise the block diagram(s) and ensure all statements have been checked.



Example EPA_F-1. Block Diagram for Leachate Treatment System

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name
Leachate Treatment System ID: Insert System ID

Part: F
Section Title: 4.2. Leachate Treatment System Flows

Instructions: Complete Section 4.2 (Question F4-3) for each leachate treatment system identified in Table F-5, including planned systems, systems under construction/installation, or planned to be constructed/installed by December 31, 2020. Enter the leachate treatment system ID in the yellow highlighted space provided above (use the leachate treatment system ID assigned in Table F-5).

Make a copy of Section 4.2 for each leachate treatment system identified in Table F-5 using the "Copy Section 4.2" button below.

Copy Section 4.2

CBI?
☐ Yes

F4-3. Complete Table F-6 for each leachate treatment system identified in Table F-5. Identify the process wastewaters generated from pond/impoundment(s) and/or landfill(s), previously defined in Table A-4 and Table A-6, that are treated by the leachate treatment system. Please provide the flow rates of the process wastewater into the leachate treatment system. For planned leachate treatment systems, provide the design flow rates for the system.

Table F-6. Leachate Treatment System Flows in 2009

Process Wastewater	Pond/Impoundment Unit or Landfill ID (Identified in Table A-4 or A-6)	Influent to the Treatment System Average Annual (2009) Flow Rate
Process Wastewaters 1		gpm hpd dpy
Other:		OR gpd dpy
Process Wastewaters 1		gpm hpd dpy
Other:		OR gpd dpy
Process Wastewaters 1		gpm hpd dpy
Other:		OR gpd dpy
Process Wastewaters 1		gpm hpd dpy
Other:		OR gpd dpy
Process Wastewaters 1		gpm hpd dpy
Other:		OR gpd dpy
Process Wastewaters 1		gpm hpd dpy
Other:		OR gpd dpy
Process Wastewaters 1		gpm hpd dpy
Other:		OR gpd dpy
Process Wastewaters 1		gpm hpd dpy
Other:		OR gpd dpy
Process Wastewaters 1		gpm hpd dpy
Other:		OR gpd dpy

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name
Leachate Treatment System ID: Insert System ID

Part: F
Section Title: 4.3. Leachate Treatment System Units

Instructions: Complete Section 4.3 (Questions F4-4 through F4-7) for each leachate treatment system identified in Table F-5, including systems that are planned, under construction/installation, or planned to be constructed/installed by December 31, 2020. Enter the leachate treatment system ID in the yellow highlighted space provided above (use leachate treatment system ID assigned in Table F-5).

Make a copy of Section 4.3 for each leachate treatment system identified in Table F-5 using the "Copy Section 4.3" button below.

NOTE: If the leachate treatment system includes a *pond/impoundment* unit, include the pond/impoundment unit in Table F-7.

CBI?
☐ Yes

F4-4. In Table F-7, list all leachate treatment units comprising the leachate treatment system including units that are operating, under construction/installation, or planned to be constructed/installed by December 31, 2020. For each leachate treatment unit, assign an ID using the leachate treatment unit ID options presented in the drop-down box; however, if a pond/impoundment unit is included as part of the leachate treatment system, enter the pond/impoundment unit ID assigned in Table A-4 in the space labeled "Pond ID". The drop-down menu accounts for the possibility of multiple leachate treatment system units; they are numbered sequentially. Note that these terms originated from the code tables on the "Code Tables" tab, provided at the end of this workbook. For example, if the leachate treatment system includes two clarifiers, select Clarification, Primary-1 for the first clarifier and Clarification, Secondary-1 for the second. In the “Plant Designation” column, provide the plant’s name for each leachate treatment unit. In the “Date Added to WWT System” column, either enter the date the unit was/will be installed if the unit is a retrofit, or enter “original” if the unit was part of the original wastewater treatment system installation.

Note: A constructed wetland cell is considered one leachate treatment unit.

Table F-7. Leachate Treatment Units

Leachate Treatment Unit ID		Plant Designation
Leachate Treatment Units		
Other:		
Pond ID:		
Leachate Treatment Units		
Other:		
Pond ID:		
Leachate Treatment Units		
Other:		
Pond ID:		
Leachate Treatment Units		
Other:		
Pond ID:		
Leachate Treatment Units		
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Pond ID:		
Leachate Treatment Units		
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Pond ID:		
Leachate Treatment Units		
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Leachate Treatment Units		
Other:		
Pond ID:		
Leachate Treatment Units		
Other:		
Pond ID:		
Leachate Treatment Units		
Other:		
Pond ID:		
Leachate Treatment Units		
Other:		
Pond ID:		
Leachate Treatment Units		
Other:		
Pond ID:		

CBI?
☐ Yes

F4-5. In Table F-8, list all improvements to the leachate treatment system planned up to December 31, 2020. For each planned improvement to the leachate treatment system, provide the appropriate Leachate Treatment Unit ID (if applicable), using the Code Tables. However, if the improvement relates directly to a pond/impoundment, use the pond/impoundment ID assigned in Table A-4. Provide a description of the improvement, the expected date of the improvement, and the total capital cost related to the improvement.

Note: Total capital costs should include purchased equipment, installation, buildings, site preparation, land, engineering costs, construction expenses, and any other costs available.

Table F-8. Planned Improvements to the Leachate Treatment System

Leachate Treatment Unit ID	Description of Improvement	Expected Date of Improvement (mm/dd/yyyy)	Total Capital Cost
Leachate Treatment Units Other: Pond ID:			$
Leachate Treatment Units Other: Pond ID:			$
Leachate Treatment Units Other: Pond ID:			$
Leachate Treatment Units Other: Pond ID:			$
Leachate Treatment Units Other: Pond ID:			$

CBI?
☐ Yes

F4-6. Were any of the above planned improvements to the leachate treatment system, or the planned leachate treatment system, planned in preparation for potential limit changes in the future?

○ Yes (Provide further information)

○ No (Skip to Question F4-7)

Please identify which pollutants and/or limits, in particular, the improvement or system will target.

CBI?
☐ Yes

F4-7. Provide the typical flow rate for the leachate treatment system, the maximum flow rate for 2009, and the annual average flow rate for 2009. In addition, provide the duration and frequency of the effluent transfers from the leachate treatment system in 2009. If the leachate treatment system is planned, only provide the design flow rate and enter "N/A" in all other fields.

______ Typical flow rate in 2009, gpm

______ Maximum daily flow rate in 2009, gpd

______ Average annual flow rate in 2009, gpy

______ Duration of effluent transfers from treatment system in 2009, hpd

______ Frequency of effluent transfers from treatment system in 2009, dpy

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name
Leachate Treatment System ID: Insert System ID
Leachate Treatment Unit ID: Insert Unit ID

Part: F
Section Title: 4.4 Leachate Treatment Unit Information

Instructions: Complete Section 4.4 (Questions F4-8 through F4-15) for each leachate treatment unit identified in Table F-7, including all leachate treatment units that are operating, under construction/installation, or planned to be constructed/installed by December 31, 2020. Do NOT complete Questions F4-8 through F4-15 for *pond/impoundment* units that are part of the leachate treatment system. Enter the leachate treatment system ID and leachate treatment unit ID in the highlighted yellow spaces provided above (use leachate treatment system IDs assigned in Table F-5 and leachate treatment unit IDs assigned in Table F-7). Please provide all free response answers in the highlighted yellow areas.

Make a copy of Section 4.4 for each leachate treatment unit identified in Table F-7 using the "Copy Section 4.4" button below.

Copy Section 4.4

CBI? ☐ Yes

F4-8. Provide the volume (ft^3) of the leachate treatment unit. In the case of a wetland cell, provide the water depth (ft).

________ ft^3

OR

________ ft

CBI? ☐ Yes

F4-9. Provide the footprint/surface area (ft^2) of the leachate treatment system unit.

________ ft^2

CBI? ☐ Yes

F4-10. Provide the residence time (hours) of *leachate* within the leachate treatment unit.

________ hours

CBI? ☐ Yes

F4-11. Indicate the type of materials of construction of the leachate treatment unit. [Check all boxes that apply.]

- ☐ Stainless steel (Provide further detail)
  - ☐ 316L stainless steel
  - ☐ 317LM stainless steel
  - ☐ 317LMN stainless steel
  - ☐ 2205 stainless steel
  - ☐ 255 stainless steel
  - ☐ 625 stainless steel
  - ☐ Other alloy: ________
- ☐ Carbon steel
- ☐ Carbon steel, lined with ________
- ☐ Fiberglass
- ☐ Titanium
- ☐ Other (specify): ________

CBI?
☐ Yes

F4-12. Indicate the *pollutants* targeted for removal by this leachate treatment unit using techniques other than settling (e.g., adding chemicals to remove certain metals). [Check all boxes that apply.]

☐ Metals (specify): ______
☐ Mercury
☐ Chlorides
☐ Sulfates
☐ TDS
☐ TSS
☐ Other: ______

CBI?
☐ Yes

F4-13. Of the pollutants listed in Question F4-12, which effluent limitation(s) drives/will drive the operation of this leachate treatment unit? Provide the pollutant(s) and the limitation(s) (µg/L or mg/L).

Pollutant: ______
Limitation: ______ Units
Pollutant: ______
Limitation: ______ Units
Pollutant: ______
Limitation: ______ Units

CBI?
☐ Yes

F4-14. Did the plant add chemicals to this leachate treatment unit in 2009?

○ Yes (Complete Table F-9)

○ No (Skip to Question F4-15)

○ NA (Leachate treatment unit is planned to be constructed. Provide information in Table F-8 to the extent possible based on plans.)

Note that "Average Dose Concentration" refers to the average concentration of the chemical within the wastewater treatment unit just after it is added to the unit.

Table F-9. Chemicals Used in Leachate Treatment Unit Operations

Chemical Type	Trade Name	Manufacturer	Purpose	Location of Chemical Addition	Average Dose Concentration (g/L)	Average Addition Rate (gpd or lb/day)			Frequency of Addition (dpy)
							○ gpd ○ lb/day	○ Solid ○ Liquid	
							○ gpd ○ lb/day	○ Solid ○ Liquid	
							○ gpd ○ lb/day	○ Solid ○ Liquid	
							○ gpd ○ lb/day	○ Solid ○ Liquid	
							○ gpd ○ lb/day	○ Solid ○ Liquid	

CBI?
☐ Yes

F4-15. Does the leachate treatment unit contain any plant species? [Check the box below.]

○ Yes (Complete Table F-10)

○ No (Skip to Section 4.5)

○ NA (Leachate treatment unit is planned to be constructed. Provide information in Table F-8 to the extent possible based on plans.)

Table F-10. Plant Species Used in Leachate Treatment Unit Operations

Plant Species	Plant Name	Purpose

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name
Leachate Treatment System ID: Insert System ID

Part: F
Section Title: 4.5. Leachate Treatment System Costs

Instructions: Complete Sections 4.5 and 4.6 (Question F4-16 and F4-18) for each leachate treatment system identified in Table F-5 that began operating at the plant on or after January 1, 2000. Enter the leachate treatment system ID in the highlighted yellow space provided above (use leachate treatment system IDs assigned in Table F-5).

Make a copy of Sections 4.5 and 4.6 for each leachate treatment system identified in Table F-5 using the "Copy Section 4.5 and 4.6" button below. Please note that you will create two new tabs for this section. You may delete unneeded tabs, if accidently created.

Copy Section 4.5 and 4.6

CBI?
☐ Yes

F4-16. Provide annual O&M cost data in Table F-11 for each leachate treatment system identified in Table F-5 that was operated in 2009. Provide best engineering estimates when actual data are not readily available. If you provide an estimate, note the methods that were used to make the estimates in the Comments page.

Table F-11. O&M Cost for the Leachate Treatment System for 2009

O&M Cost Category	2009 Annual Cost	Rate	Staffing/ Consumption
Operating labor	$	$ per hour (average rate of labor)	No. of workers hpd dpy
Maintenance labor	$	$ per hour (average rate of labor)	No. of workers hpd dpy
Maintenance materials	$		
Chemicals	$		
Plants/organic matter	$		
Energy - Power for pumping	$	$ per kWh	kWh/hr
Energy - Power for operations other than pumping	$	$ per kWh	kWh/hr
Steam	$	$ per pound	pounds/hr

Hazardous Sludge Disposal - Dredging	$	$ per	○ Gal ○ Ton
Hazardous Sludge Disposal - Landfilling	$	$ per	○ Gal ○ Ton
Nonhazardous Sludge Disposal - Dredging	$	$ per	○ Gal ○ Ton
Nonhazardous Sludge Disposal - Landfilling	$	$ per	○ Gal ○ Ton
Other:	$		
Other:	$		
Total O&M Cost (2009)	$		

CBI?
☐ Yes

F4-17. Provide capital cost data in Table F-12 for all leachate treatment systems identified in Table F-5, including planned leachate treatment systems. Provide best engineering estimates when actual data are not readily available. For all costs, do not adjust for inflation. For example, if the plant incurred a land cost in 2002, enter the cost in the "Cost" column and enter "2002" in the "Year on which Cost is Based" column.

NOTE: If no records are available on this leachate treatment system, provide an explanation in the Comments page.

Table F-12. Capital Cost for the Leachate Treatment System

Project	Cost	Year on which Cost is Based
Direct Costs		
Purchased equipment (includes all equipment for the installation or the upgrade: mechanical equipment; piping; instrumentation; electrical equipment; plants/organic matter for constructed wetland(s); spare parts; freight charges; taxes; insurance; and duties)	$	
Purchased equipment installation (includes installation of all equipment; piping; instrumentation/calibration; electrical equipment; mechanical equipment; structural supports, insulation, and paint)	$	
Buildings (buildings constructed to house operator rooms, or other operations associated with the system; also includes plumbing, heating, ventilation, dust collection, air conditioning, lighting, telephones, intercoms, painting, sprinklers, fire alarms)	$	
Site preparation (includes site clearing, all demolition, grading, roads, walking areas, fences)	$	
Land (includes property costs and survey fees)	$	
Total Direct Costs	**$**	
Indirect Costs		
Engineering Costs (includes process design and general engineering, cost engineering, consulting fees, supervision, inspection for each category below:		
a. Engineering Contract Firm Costs	$	
b. Owner's Overhead Engineering Costs	$	
☐ Hired outside engineering firm to oversee design and/or installation of the treatment system.		
Construction expenses (includes temporary construction offices, roads, communications, fencing; construction tools and equipment; permits, taxes, insurance)	$	
Other Contractor's Fees	$	
Contingency actually expended (to compensate for unpredictable events such as storms, floods, strikes, price changes, errors in estimates, design changes, etc.)	$	
Total Indirect Costs	$	
Total Capital Cost	$	

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name
Leachate Treatment System ID: Insert System ID

Part: F
Section Title: 4.6. Leachate Treatment System Equipment

Instructions: Complete Section 4.6 (Question F4-18) for all ancillary pieces of equipment included in the leachate treatment system that contribute significantly to the capital costs provided in Table F-12.

Note: This tab will copy with every copy made for the previous tab (Part F Section 4.5) as the information is directly related.

CBI?
☐ Yes

F4-18. In Table F-13, list the ancillary pieces of equipment included in the leachate treatment system that contribute significantly to the capital costs provided in Table F-12. Enter the description of the equipment and the total number of pieces of that equipment included in the system. Refer to the example shown below.

Examples of ancillary equipment:

- Aerator
- Agitator
- Chemical feed system (specify chemicals)
- Pump, sludge (specify purpose/location)
- Pump, process wastewater (specify purpose/location)

Table F-13. Ancillary Equipment of the Leachate Treatment System

Ancillary Equipment (if applicable)	Number of Ancillary Equipment Pieces in the System
Pump, sludge (serving underflow from clarifiers)	***2***

Approved: May 20, 2010

Plant Name: Insert Plant ID
Plant ID: Insert Plant Name
Pond/Impoundment ID or Landfill ID: Insert ID

Part: F
Section Title: 5. Groundwater Monitoring Practices

Instructions: Make copies of Section 5 for each active/inactive/open and retired/closed *pond/impoundment* and *landfill*, including those located on non-adjoining property, used for the storage, treatment, and/or disposal of *residues* or by-products (or *sludges* or water streams containing the residues or by-products) from the combustion of coal or petroleum coke, including, but not limited to, *fly ash*, *bottom ash*, boiler slag, or flue gas emission control residues. This includes liquid-borne material and solid material. Enter the pond/impoundment or landfill ID in the space provided above (use pond/impoundment and landfill IDs assigned in Table A-4 and Table A-6). Please provide all free response answers in the highlighted yellow areas.

Make a copy of Section 5 for each active/inactive/open and retired/closed pond/impoundment and landfill, including those located on non-adjoining property, using the "Copy Section 5" button below.

Copy Section 5

CBI?
☐ Yes

F5-1. Does the plant perform groundwater monitoring of the pond/impoundment or landfill?

○ No (Skip to next Questionnaire Part)

○ Yes (Continue)

_______ Year of last monitoring event

_______ Average frequency of monitoring, dpy

_______ Number of times monitored in the last five years

CBI?
☐ Yes

F5-2. Has the plant measured ***pollutant*** concentrations from ash and FGD-related constituents (refer to list of analytes in Question G3-1) in ground water that exceed a primary or secondary MCL and/or state-issued standard/criteria?

◯ Yes (Continue)

◯ No (Skip to Question F5-4)

CBI?
☐ Yes

F5-3. Identify the pollutants that exceeded a primary or secondary MCL and/or state-issued standard/criteria.

CBI?
☐ Yes

F5-4. Has the plant measured pollutant concentrations from ash and FGD-related constituents (refer to list of analytes in Question G3-1) in ground water that do not exceed a primary or secondary MCL and/or state-issued standard/criteria, but do exceed ***background concentrations***?

◯ Yes (Continue)

◯ No (Skip to Question F5-6)

CBI?
☐ Yes

F5-5. Identify the pollutants that did not exceed a primary or secondary MCL and/or state-issued standard/criteria, but did exceed background concentrations.

Approved: May 20, 2010

CBI?
☐ Yes

F5-6. Provide an overhead diagram of the pond/impoundment or landfill. Identify the location of the monitoring wells of the pond/impoundment or landfill and assign each well a number. In Table F-14, provide the average water table depth, averaged over the last year, at each monitoring well location and the distance to the nearest surface water.

☐ Diagram attached.

Table F-14. Monitoring Well Information

Monitoring Well ID Number	Average Water Table Depth at Well (ft)	Distance to Nearest Surface Water (miles)
Example: Well-1	***26 feet***	***0.25 miles***

Plant Name: Insert Plant ID
Plant ID: Insert Plant Name

Part: F
Section Title: Part F Comments

Instructions: Cross reference your comments by question number and indicate the confidential status of your comment by checking the box next to “Yes” under "CBI?" (Confidential Business Information).

	Question Number	Comment
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		

CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		

Steam Electric Questionnaire Code Tables

Process Wastewaters	
For Use in Tables and Questions throughout Parts A, B, C, D, and F.	
Air heater cleaning water	AHCW
Ash pile runoff	APR
Boiler blowdown	BB
Boiler fireside cleaning water	BFCW
Boiler tube cleaning water	BTCW
Bottom ash sluice	BAS
Carbon capture wastewater	CCAPW
Coal pile runoff	CPR
Combined ash sluice	CAS
Combustion turbine cleaning (combustion gas portion of turbine) water	COMBCW
Combustion turbine cleaning (compressor portion of the turbine) water	COMPRCW
Combustion turbine evaporative coolers blowdown	TECB
Cooling tower blowdown	CTB
FGD scrubber purge	SCRBP
FGD slurry blowdown	FGDB
Filter Backwash	FLTBW
Floor drain wastewater	FDW
Flue gas mercury control system wastewater	FGMCW
Fly ash sluice	FAS
General runoff	GR
Gypsum pile runoff	GPR
Gypsum wash water	GYPWW
Ion exchange wastewater	IXW
Landfill runoff - capped landfill	LRC
Landfill runoff - uncapped landfill	LRUC
Leachate	LEACH
Limestone pile runoff	LPR
Mill reject sluice	MRS

Treated Wastewaters	
For Use as Effluents from Pond/Impoundment Systems and/or Wastewater Treatment Systems in Part D, Table D-4.	
Effluent - 1	EFF-1
Effluent - 2	EFF-2
Effluent - 3	EFF-3
Effluent - 4	EFF-4
Effluent - 5	EFF-5
Effluent - 6	EFF-6
Filter backwash	FltBW
Sludge	SLDG
For Use as Influents to Pond/Impoundment Systems and/or Wastewater Treatment Systems in Part D, Table D-3, AND Recycled Waters Throughout Questionnaire.	
POND-1 Effluent	POND-1-EFF
POND-2 Effluent	POND-2-EFF
POND-3 Effluent	POND-3-EFF
POND-4 Effluent	POND-4-EFF
POND-5 Effluent	POND-5-EFF
POND-6 Effluent	POND-6-EFF
POND-7 Effluent	POND-7-EFF
POND-8 Effluent	POND-8-EFF
POND-9 Effluent	POND-9-EFF
POND-10 Effluent	POND-10-EFF
POND-A Effluent	POND-A-EFF
POND-B Effluent	POND-B-EFF
POND-C Effluent	POND-C-EFF
WWT-1 Effluent	WWT-1-EFF
WWT-2 Effluent	WWT-2-EFF
WWT-3 Effluent	WWT-3-EFF
WWT-4 Effluent	WWT-4-EFF
WWT-5 Effluent	WWT-5-EFF

Steam Electric Questionnaire Code Tables

Process Wastewaters	
For Use in Tables and Questions throughout Parts A, B, C, D, and F.	
Once -through cooling water	CW
Reverse osmosis reject water	RORW
SCR catalyst regeneration wastewater	SCRRW
SCR catalyst washing wastewater	SCRWW
Soot blowing wash water	SOOTW
Steam turbine cleaning water	STCW
Yard drain wastewater	YARDW

Treated Wastewaters	
For Use as Influents to Pond/Impoundment Systems and/or Wastewater Treatment Systems in Part D, Table D-3, AND Recycled Waters Throughout Questionnaire.	
WWT-6 Effluent	WWT-6-EFF
WWT-A Effluent	WWT-A-EFF
WWT-B Effluent	WWT-B-EFF
WWT-C Effluent	WWT-C-EFF

Steam Electric Questionnaire Code Tables

Wastewater Treatment Units	
For Use in Tables and Questions Throughout Parts D and F.	
Adsorptive media	ADSORB
Aerobic Biological Reactor	AERBIO
Anaerobic Biological Reactor	ANBIO
Aerobic/Anaerobic Biological Reactor	AER/ANBIO
Chemical Precipitation Reaction Tank 1 - 1	CP-1-1
Chemical Precipitation Reaction Tank 1 - 2	CP-1-2
Chemical Precipitation Reaction Tank 2 - 1	CP-2-1
Chemical Precipitation Reaction Tank 2 - 2	CP-2-2
Chemical Precipitation Reaction Tank 3 - 1	CP-3-1
Chemical Precipitation Reaction Tank 3 - 2	CP-3-2
Clarification, Primary - 1	CL-P-1
Clarification, Primary - 2	CL-P-2
Clarification, Secondary - 1	CL-S-1
Clarification, Secondary - 2	CL-S-2
Clarification, Tertiary - 1	CL-T-1
Clarification, Tertiary - 2	CL-T-2
Constructed wetland - Cell 1	CWL -1
Constructed wetland - Cell 2	CWL -2
Constructed wetland - Cell 3	CWL -3
Constructed wetland - Cell 4	CWL -4
Constructed wetland - Cell 5	CWL -5
Constructed wetland - Cell 6	CWL -6
Constructed wetland system	CWTS
Equalization, Primary	EQ-P
Equalization, Secondary	EQ-S
Filter, Microfiltration - 1	FLT-M-1
Filter, Microfiltration - 2	FLT-M-2

Destinations	
For Use in Tables and Questions Throughout Parts A, C, D, and F.	
Burned on site	BURN
Deep-well injection	DWELL
Discharge to POTW	POTW
Discharge to PrOTW	PrOTW
Discharge to surface water	SW
Evaporation	EVAP
Hauled off site for reuse (removal fee)	HAULR - RF
Hauled off site for reuse (given away)	HAULR - GA
Hauled off site for reuse (marketed and sold)	SOLD
Hauled off site for disposal	HAUL
Mixed with fly ash for disposal	MFA
On-site landfill (as reported in Table A-6)	LANDF
POND-1	POND-1
POND-2	POND-2
POND-3	POND-3
POND-4	POND-4
POND-5	POND-5
POND-6	POND-6
POND-7	POND-7
POND-8	POND-8
POND-9	POND-9
POND-10	POND-10
POND-A	POND-A
POND-B	POND-B
POND-C	POND-C
WWT-1	WWT-1
WWT-2	WWT-2

Steam Electric Questionnaire Code Tables

Wastewater Treatment Units	
For Use in Tables and Questions Throughout Parts D and F.	
Filter, Microfiltration - 3	FLT-M-3
Filter, Microfiltration - 4	FLT-M-4
Filter, Sand/Gravity - 1	FLT-S-1
Filter, Sand/Gravity - 2	FLT-S-2
Filter, Sand/Gravity - 3	FLT-S-3
Filter, Sand/Gravity - 4	FLT-S-4
Filter, Ultrafiltration - 1	FLT-U-1
Filter, Ultrafiltration - 2	FLT-U-2
Filter, Ultrafiltration - 3	FLT-U-3
Filter, Ultrafiltration - 4	FLT-U-4
Filter press - 1	FP-1
Filter press - 2	FP-2
Holding tank	HT
Ion exchange	IX
Natural wetlands	NW
pH adjustment - 1	PH-1
pH adjustment - 2	PH-2
pH adjustment - 3	PH-3
Reverse osmosis	ROS
Pond Unit - 1	SPD-1
Pond Unit - 2	SPD-2
Pond Unit - 3	SPD-3
Pond Unit - 4	SPD-4
Pond Unit - 5	SPD-5
Pond Unit - 6	SPD-6
Pond Unit - 7	SPD-7
Pond Unit - 8	SPD-8
Pond Unit - 9	SPD-9

Destinations	
For Use in Tables and Questions Throughout Parts A, C, D, and F.	
WWT-3	WWT-3
WWT-4	WWT-4
WWT-5	WWT-5
WWT-6	WWT-6
WWT-A	WWT-A
WWT-B	WWT-B
WWT-C	WWT-C
Reuse as boiler water	RECYC - BW
Reuse as bottom ash sluice	RECYC - BAS
Reuse as combined ash sluice	RECYC - CAS
Reuse as FGD slurry preparation water	RECYC - FGDP
Reuse as FGD absorber makeup	RECYC - FGDAB
Reuse as fly ash sluice	RECYC - FAS
Reuse as mill reject sluice	RECYC - MRS
Reuse in cooling towers	RECYC - CW

Steam Electric Questionnaire Code Tables

Wastewater Treatment Units	
For Use in Tables and Questions Throughout Parts D and F.	
Pond Unit - 10	SPD-10
Pond Unit - 11	SPD-11
Pond Unit - 12	SPD-12
Pond Unit - 13	SPD-13
Pond Unit - 14	SPD-14
Settling tank - 1	ST-1
Settling tank - 2	ST-2
Settling tank - 3	ST-3
Settling tank - 4	ST-4
Settling tank - 5	ST-5
Thickener - 1	TH-1
Thickener - 2	TH-2
Vacuum drum filter - 1	VF-1
Vacuum drum filter - 2	VF-2
Vacuum filter belt - 1	VFB-1
Vacuum filter belt - 2	VFB-2

Solids Handling	
For Use as Planned Solids Handling for the FGD Slurry Blowdown in Part B Table B-2.	
Centrifuge - 1	CENT-1
Centrifuge - 2	CENT-2
Centrifuge - 3	CENT-3
Centrifuge - 4	CENT-4
Hydrocyclones - 1	HYC-1
Hydrocyclones - 2	HYC-2
Hydrocyclones - 3	HYC-3
Hydrocyclones - 4	HYC-4
Filter press - 1	FP-1
Filter press - 2	FP-2
Thickener - 1	TH-1
Thickener - 2	TH-2
Vacuum drum filter - 1	VF-1
Vacuum drum filter - 2	VF-2
Vacuum filter belt - 1	VFB-1
Vacuum filter belt - 2	VFB-2

Part F Drop Downs

Process Wastewaters 1
Process Wastewaters 1
Select
Leachate
Stormwater
Other

Units
Units
Select
µg/L
mg/L

Process Wastewaters 2
Process Wastewaters 2
Select
Air heater cleaning water
Ash pile runoff
Boiler blowdown
Boiler fireside cleaning water
Boiler tube cleaning water
Bottom ash sluice
Carbon capture wastewater
Coal pile runoff
Combined ash sluice
Combustion turbine cleaning (combustion gas portion of turbine) water
Combustion turbine cleaning (compressor portion of the turbine) water
Combustion turbine evaporative coolers blowdown
Contaminated stormwater
Cooling tower blowdown
FGD scrubber purge
FGD slurry blowdown
Filter Backwash
Floor drain wastewater
Flue gas mercury control system wastewater
Fly ash sluice
General runoff
Gypsum pile runoff
Gypsum wash water
Ion exchange wastewater
Landfill runoff - capped landfill
Landfill runoff - uncapped landfill
Leachate
Limestone pile runoff
Mill reject sluice
Once -through cooling water
Reverse osmosis reject water
SCR catalyst regeneration wastewater
SCR catalyst washing wastewater
Soot blowing wash water
Steam turbine cleaning water
Yard drain wastewater
Other

Treated Wastewaters
Treated Wastewaters
Select
Effluent - 1
Effluent - 2
Effluent - 3
Effluent - 4
Effluent - 5
Effluent - 6
Filter backwash
Sludge
POND-1 Effluent
POND-2 Effluent
POND-3 Effluent
POND-4 Effluent
POND-5 Effluent
POND-6 Effluent
POND-7 Effluent
POND-8 Effluent
POND-9 Effluent
POND-10 Effluent
POND-A Effluent
POND-B Effluent

POND-C Effluent
WWT-1 Effluent
WWT-2 Effluent
WWT-3 Effluent
WWT-4 Effluent
WWT-5 Effluent
WWT-6 Effluent
WWT-A Effluent
WWT-B Effluent
WWT-C Effluent
Other

Leachate Treatment Units
Leachate Treatment Units
Select
Adsorptive media
Aerobic Biological Reactor
Anaerobic Biological Reactor
Aerobic/Anaerobic Biological Reactor
Chemical Precipitation Reaction Tank 1 - 1
Chemical Precipitation Reaction Tank 1 - 2
Chemical Precipitation Reaction Tank 2 - 1
Chemical Precipitation Reaction Tank 2 - 2
Chemical Precipitation Reaction Tank 3 - 1
Chemical Precipitation Reaction Tank 3 - 2
Clarification, Primary - 1
Clarification, Primary - 2
Clarification, Secondary - 1
Clarification, Secondary - 2
Clarification, Tertiary - 1
Clarification, Tertiary - 2
Constructed wetland - Cell 1
Constructed wetland - Cell 2
Constructed wetland - Cell 3
Constructed wetland - Cell 4
Constructed wetland - Cell 5
Constructed wetland - Cell 6
Constructed wetland system
Equalization, Primary
Equalization, Secondary
Filter, Microfiltration - 1
Filter, Microfiltration - 2
Filter, Microfiltration - 3
Filter, Microfiltration - 4
Filter, Sand/Gravity - 1
Filter, Sand/Gravity - 2
Filter, Sand/Gravity - 3
Filter, Sand/Gravity - 4
Filter, Ultrafiltration - 1
Filter, Ultrafiltration - 2
Filter, Ultrafiltration - 3
Filter, Ultrafiltration - 4
Filter press - 1
Filter press - 2
Holding tank
Ion exchange
Natural wetlands
pH adjustment - 1
pH adjustment - 2
pH adjustment - 3
Reverse osmosis
Pond Unit - 1
Pond Unit - 2
Pond Unit - 3
Pond Unit - 4
Pond Unit - 5
Pond Unit - 6
Pond Unit - 7
Pond Unit - 8
Pond Unit - 9
Pond Unit - 10
Pond Unit - 11
Pond Unit - 12
Pond Unit - 13
Pond Unit - 14
Settling tank - 1
Settling tank - 2
Settling tank - 3
Settling tank - 4
Settling tank - 5
Thickener - 1
Thickener - 2

OMB Control Number: 2040-0281
Approval Expires: 05/31/2013

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Steam Electric Questionnaire

PART G - LEACHATE SAMPLING DATA FOR PONDS/IMPOUNDMENTS AND LANDFILLS

Table of Contents

Approved: May 20, 2010

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

PART G. LEACHATE SAMPLING DATA FOR PONDS/IMPOUNDMENTS AND LANDFILLS

INSTRUCTIONS

Complete Part G of the questionnaire for your plant. As you are completing the electronic form, note the following: When you enter your plant name and plant ID on the Part G TOC tab, all name and ID fields throughout Part G will automatically populate. Refer to the overall questionnaire instructions, the glossary, and the acronym list for assistance with completing Part G.

Please provide all free response answers in the highlighted yellow areas. Throughout Part G, you may need to make copies of certain sections/questions. Instructions are provided throughout Part G regarding making copies. Note that pond/impoundment unit and landfill names must be populated on the copied tab or section, located in the upper right corner under "Plant ID" and "Plant Name", in order to correlate the requested information with the pond/impoundment or landfill.

Use the Part G Comments tab to do the following: provide additional information as requested in certain questions within Part G; indicate atypical data (e.g., if the analytical data provided from the sample collection is not representative of normal operations); and note methods used to make best engineering estimates in the event that exact data are not available.

Sampling data and the completed Part G of the questionnaire shall be submitted to EPA no later than 120 calendar days after receiving the questionnaire.

A company or plant may be exempt from the leachate sample collection (Question G3-1). Please refer to Question G1-1 and the "Applicability" section located in the "Part G Section 3" tab to determine if you are exempt and how to submit a written explanation.

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: G
Section Title: 1. Leachate Collection

Instructions: Part G requests *leachate* sampling data for *pond/impoundment* units and *landfills* used for the storage, treatment, and/or disposal of *residues* or by-products (or *sludges* or water streams containing the residues or by-products) from the combustion of coal or petroleum coke, including, but not limited to, *fly ash*, *bottom ash*, boiler slag, or flue gas desulfurization (FGD) system residues. This includes liquid-borne material and solid material.

CBI?
☐ Yes

G1-1. Is *leachate* currently collected from any *pond/impoundment* and/or *landfill*, including those located on non-adjoining property, that contains residues or by-products from the combustion of coal or petroleum coke? Please see the glossary for a complete definition of *leachate*, which includes the terms seepage, leak, and leakage.

Note: This includes landfills located on non-adjoining property that are under the operational control of the plant. This also includes landfills, within 20 miles, owned/operated by the plant's ultimate parent firm, for the purpose of storing/disposing of process wastewaters, residues or by-products, from the plant.

○ Yes (Skip to Section 2)

○ No (Skip to next Questionnaire Part)

Approved: May 20, 2010

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name
Pond/Impoundment Unit or Landfill ID: Insert ID

Part: G
Section Title: 2. Leachate Generated from Ponds/Impoundments and Landfills

Instructions: Make copies of Section 2 (Questions G2-1 through G2-4) for each *pond/impoundment* unit and *landfill*, including those located on non-adjoining property, used for the storage, treatment, and/or disposal of *residues* or by-products (or *sludges* or water streams containing the residues or by-products) from the combustion of coal or petroleum coke, including, but not limited to, *fly ash*, *bottom ash*, boiler slag, or flue gas desulfurization (FGD) system residues. This includes liquid-borne material and solid material. Enter the pond/impoundment unit or landfill ID in the space provided above (use pond/impoundment unit and landfill IDs assigned in Table A-4 and Table A-6). Please provide all free response answers in the highlighted yellow areas.

Note: This includes landfills located on non-adjoining property that are under the operational control of the plant. This also includes landfills, within 20 miles, owned/operated by the plant's ultimate parent firm, for the purpose of storing/disposing of process wastewaters, residues or by-products, from the plant.

Make a copy of Section 2 for each pond/impoundment unit and landfill, including those located on non-adjoining property, using the "Copy Section 2" button below.

Note: "Treatment" refers to the removal of specific pollutants or process wastewater constituents other than suspended solids. Refer to Figure G-1 below to help determine the leachate sample collection requirements for this pond/impoundment or landfill.

Copy Section 2

CBI? ☐ Yes

G2-1. Is *leachate* currently collected from this pond/impoundment unit or landfill (excluding leachate returned to the pond/impoundment from which it originated)?

○ Yes (Continue)
○ No (Skip to Section 5)

CBI? ☐ Yes

G2-2. Is all collected leachate transported off site for treatment and/or disposal?

○ Yes (Skip to Section 3. Provide ONLY untreated monitoring data as described in Question G3-1.)
○ No (Continue)

CBI?
☐ Yes

G2-3. Is the collected leachate from this pond/impoundment unit or landfill that is not transferred off site currently treated?

○ Yes (Continue)
○ No (Skip to Section 3. Provide ONLY untreated monitoring data as described in Question G3-1.)

CBI?
☐ Yes

G2-4. Is the leachate combined with other waste streams prior to treatment?

○ Yes, combined with ONLY runoff or other stormwater (Provide treated and untreated monitoring data as described in Question G3-1)
○ Yes, combined with process wastewater other than runoff/stormwater (Provide ONLY untreated monitoring data as described in Question G3-1)
○ No (Provide treated and untreated monitoring data as described in Question G3-1)

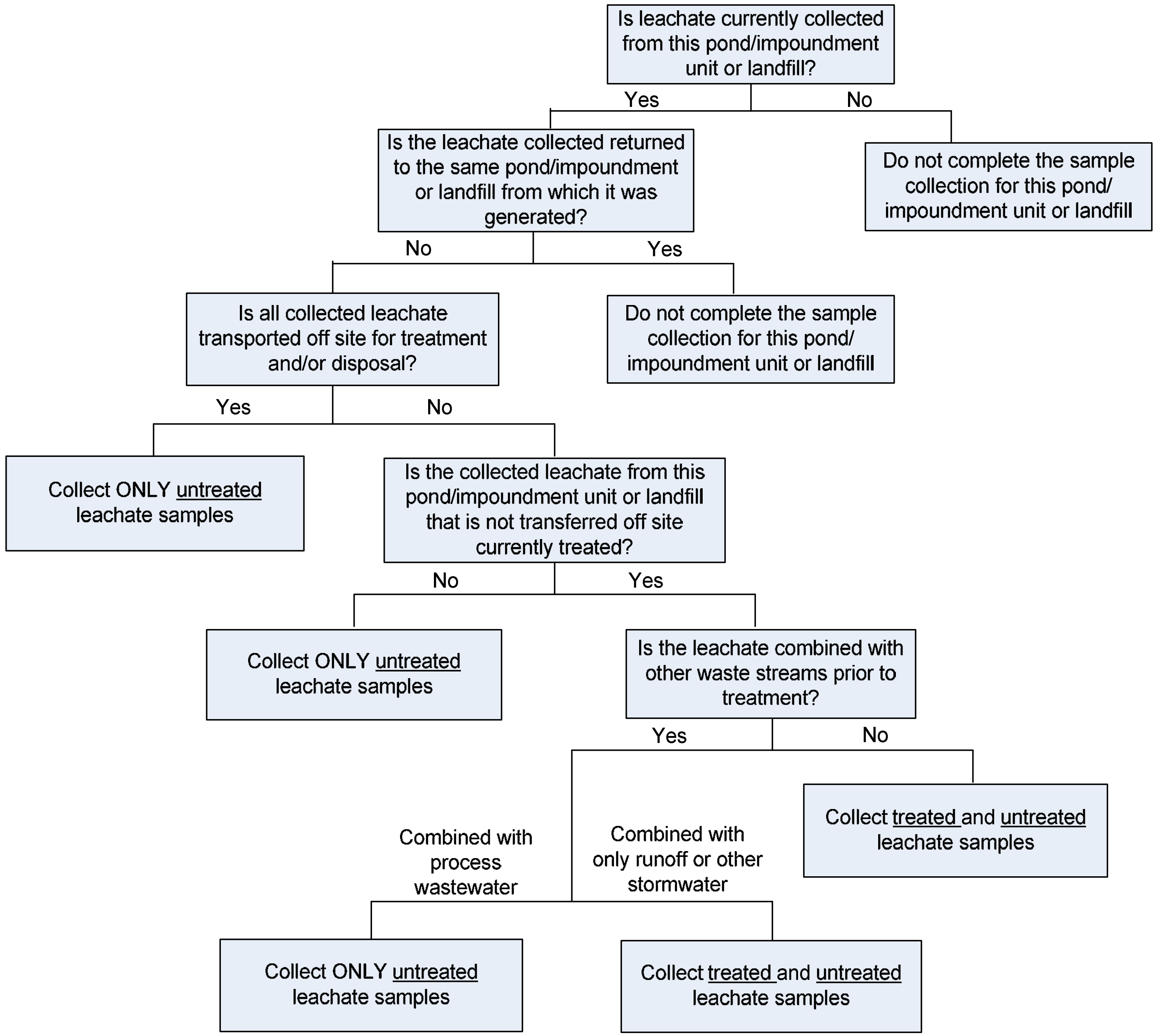

Figure G-1. Leachate Collection Decision Tree

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: G
Section Title: 3. Leachate Sample Collection Instructions

G3-1. OVERVIEW OF THE SAMPLE COLLECTION

Collect process wastewater samples of untreated and/or treated *leachate* streams generated from *pond(s)/impoundment(s)* and *landfill(s)* used for the storage, treatment, or disposal of *residues* or by-products (or *sludges* or water streams containing the residues or by-products) from the combustion of coal or petroleum coke, including, but not limited to, *fly ash* , *bottom ash* , boiler slag, or flue gas desulfurization (FGD) system residues (this includes liquid-borne material and solid material).

Sampling data and the completed Part G of the questionnaire shall be submitted to EPA no later than 120 calendar days after receiving the questionnaire.

The samples should be collected as detailed in these instructions. In general, samples should be collected as grab samples (i.e., composite samples are not required). The plant should collect samples from each leachate collection point for each pond/impoundment and landfill. If the plant determines that a sample from one or more collection points are representative of an individual pond/impoundment or landfill, then the plant may simply collect the representative sample(s). The plant should collect samples from each sampling location once per week for four consecutive weeks, or as soon thereafter as sufficient leachate is available for collection.

The following analytes and analytical methods must be used for the sample analysis:

• Metals (total recoverable; antimony, arsenic, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc)	EPA Method 200.8
• Metals (total recoverable: aluminum, barium, boron, calcium, iron, magnesium, sodium, tin, and titanium)	EPA Method 200.7 or 200.8
• Mercury	EPA Method 1631E
• Chlorides	40 CFR Part 136-approved
• Sulfates	40 CFR Part 136-approved
• Total dissolved solids (TDS)	40 CFR Part 136-approved
• Total suspended solids (TSS)	40 CFR Part 136-approved
• pH	40 CFR Part 136-approved

Each company or plant is responsible for identifying and contracting an analytical laboratory to perform the analyses.

APPLICABILITY

A plant may be exempt from the leachate sample collection (and skip to Question G3-2) if one of these two circumstances is true:

1. The plant can provide previously collected leachate characterization data if it fulfills the following data requirements:

    • Must have data from leachate generated from each pond/impoundment and landfill where leachate is collected;
    • Must have at least four samples of untreated and/or treated leachate, where each sample is collected at least five days apart; and
    • Must have tested for every analyte listed above using the specified analytical methods.

2. The plant personnel are unable to collect the samples safely.

If you believe you are exempt, you must submit a written explanation justifying one or both of these two circumstances within two weeks after receiving the questionnaire by e-mail (preferred) or mailed to:

Jezebele Alicea
US EPA
Engineering and Analysis Division
Mail Code: 4303T
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460
alicea.jezebele@epa.gov

EPA will then determine if the plant is exempt from the leachate sample collection requirement. If the plant can provide previously collected leachate characterization data, then the plant should complete Section 4 (Questions G4-1 and G4-2) and continue to Section 5 (Question G5-1). Also, the plant must provide the leachate sampling data in Table G-4 found in the "Part G Sampling Results" tab. If the plant cannot collect the samples safely, then the plant should skip Section 4 and continue to Section 5 (Question G5-1).

SAMPLE LOCATION

Collect untreated and/or treated leachate samples from each pond/impoundment unit and landfill for which you responded "yes" in Question G2-1.

The untreated leachate samples must be collected directly from the *leachate collection system* or holding tank prior to any form of treatment. The treated leachate samples must be collected from the effluent from a leachate treatment system that is designed for the purpose of removing pollutants or process wastewater constituents, other than suspended solids, prior to *discharge* or commingling with other process wastewaters.

If the pond/impoundment unit and/or landfill has multiple collection points, the untreated sample may be collected from a common header area, if applicable. If there is not a common header area for the pond/impoundment or landfill, the plant may select one of the collection points that is "representative" of the pond/impoundment or landfill from which to collect the sample. If warranted due to the characteristics of the pond/impoundment or landfill, the plant may need to collect samples from more than one collection point to obtain representative samples. If the plant collects the samples from one ”representative” collection point, describe how the company or plant determined the collection point is “representative” of all of the collection points in the “Part G Comments” tab located at the end of Part G.

SAMPLE FREQUENCY

Collect one sample of untreated leachate (and one sample of treated leachate if appropriately identified by responses in Question G2-4) once per week for four weeks, or as soon thereafter as sufficient leachate is available for collection, from each pond/impoundment unit and landfill. Please note that the samples must be collected at least five days after the previous sample was collected. If the pond/impoundment or landfill does not generate leachate weekly, please collect the samples as soon as the leachate is generated, but allow at least five days between samples.

Example1: If a plant collects only untreated leachate from a pond/impoundment unit, and the samples are obtained from a single leachate collection point, the plant is required to collect a total of four samples.

Example 2: If a plant collects both untreated and treated leachate from both a pond/impoundment unit and a landfill, and each separately has a single leachate collection point and they have separate treatment systems, the plant is required to collect a total of sixteen samples.

SAMPLE ANALYSES

After receiving the analytical results from the laboratory, enter the analytical data into the “Part G Sampling Results” tab. Report all results, including those below the reporting limit. Identify results that are less than the *method detection limit* (MDL), and results that are between the detection and *reporting limits*. For example, if the MDL is equal to 5 ng/L, the reporting limit is equal to 15 ng/L, and the value reported by the laboratory is 12 ng/L, report 12 ng/L as the measured value and identify and describe any qualifiers on the data in the corresponding column. If the measured value is not detected, list the detection limit value and select the less than (<) symbol in the non-detect indicator column.

QUALITY ASSURANCE/QUALITY CONTROL

Follow the method-specified quality assurance/quality control analyses and attach a data review summary once the analyses are complete.

CBI? ☐ Yes

G3-2. Please attach an aerial photograph or drawing showing the entire waste management unit (i.e., pond/impoundment unit or landfill) that shows the boundaries and identifies all leachate collection points and the active and inactive areas of the pond/impoundment or landfill. Also, indicate the leachate sample location(s) used for this sample collection in the aerial photograph or drawing of the pond/impoundment unit or landfill.

○ I have attached the aerial photograph

○ I did not attach the aerial photograph. Explain why: __________

CBI? ☐ Yes

G3-3. Please identify the leachate sample locations used for this sample collection in the block diagram previously requested in Question F4-2.

☐ Leachate sampling collection locations identified on the block diagram requested in Part F, Question F4-2.

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: G
Section Title: 4. Sample Collection Information

Instructions: Complete Table G-1 for each *pond/impoundment* unit and *landfill* that requires *leachate* sampling and is used for the storage, treatment, and/or disposal of *residues* or by-products (or *sludges* or water streams containing the residues or by-products) from the combustion of coal or petroleum coke, including, but not limited to, *fly ash*, *bottom ash*, boiler slag, or flue gas desulfurization (FGD) system residues. This includes liquid-borne material and solid material. Enter the pond/impoundment unit or landfill ID in the first column of Table G-1 (use pond/impoundment unit and landfill IDs assigned in Table A-4 and Table A-6). Please provide all free response answers in the highlighted yellow areas.

Collect daily rainfall data starting two weeks prior to collection of the first sample through the day of the last sample collected and enter the date and inches of rainfall in Table G-2.

G4-1. In Table G-1, provide a description of the sample collection location, the date the sample was collected, the flow rate of the leachate stream from the collection point (select the units of the flow rate), and identify if the leachate stream is treated or untreated. If the leachate sample is treated, provide the leachate treatment system ID previously identified in Table F-5.

Table G-1. Sample Collection Information

CBI?	Pond/Impoundment Unit or Landfill ID (Use IDs from Tables A-4 and A-6)	Sample Collection Location	Sample Collection Location Description	Date of Sample Collection (mm/dd/yyyy)
	Example	Untreated pond/impoundment; Leachate Treatment System ID:	***Common header area***	***01/25/10***
☐ Yes		Sample Collection Location; Leachate Treatment System ID:		
☐ Yes		Sample Collection Location; Leachate Treatment System ID:		
☐ Yes		Sample Collection Location; Leachate Treatment System ID:		
☐ Yes		Sample Collection Location; Leachate Treatment System ID:		

CBI?
☐ Yes

G4-2. In Table G-2, provide the inches of rainfall accumulated at the plant on a daily basis starting two weeks prior to the collection of the first leachate sample through the last day of sample collection.

Table G-2. Rainfall Data

Date (mm/dd/yyyy)	Inches of Rainfall

Date (mm/dd/yyyy)	Inches of Rainfall

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: G
Section Title: 5. Waste Information

Instructions: Complete Table G-3 for each *pond/impoundment* unit and *landfill*, including those located on non-adjoining property, that is used for the storage, treatment, and/or disposal of *residues* or by-products (or *sludges* or water streams containing the residues or by-products) from the combustion of coal or petroleum coke, including, but not limited to, *fly ash*, *bottom ash*, boiler slag, or flue gas desulfurization (FGD) system residues. This includes liquid-borne material and solid material. Enter the pond/impoundment unit or landfill ID in the first column of Table G-3 (use pond/impoundment unit and landfill IDs assigned in Table A-4 and Table A-6). Please provide all free response answers in the highlighted yellow areas.

Make a copy of Section 5 to complete as many tables as needed to provide information for all pond/impoundment units and landfills, including those located on non-adjoining property, using the "Copy Section 5" button below.

Copy Section 5

G5-1. In Table G-3, indicate all process wastes, residues or by-products that are stored, treated, and/or disposed of in each pond/impoundment unit and/or landfill [Check all that apply]. Please provide any additional wastes not listed by selecting "Other" and specifying the process waste, residue, or by-product in the highlighted yellow space provided. Complete as many rows of the table as needed to represent all pond/impoundment units and landfills at the plant. If more rows are needed, make additional copies of Table G-3 and complete as many tables as needed to provide information for all pond/impoundment units and landfills identified in Table A-4 and A-6.

Table G-3. Waste Information

	Pond/Impoundment Unit or Landfill ID (Use IDs from Tables A-4 and A-6)	**Type and Amount of Waste**									
CBI? ☐ Yes		☐ Fly ash		tons	☐ FGD Calcium Sulfate (Gypsum)		tons	☐ Other:			tons
		☐ Bottom ash		tons	☐ FGD Calcium Sulfate - Not Pozzolanic		tons	☐ Other:			tons
		☐ Boiler slag		tons	☐ FGD Pozzolanic Material		tons	☐ Other:			tons
CBI? ☐ Yes		☐ Fly ash		tons	☐ FGD Calcium Sulfate (Gypsum)		tons	☐ Other:			tons
		☐ Bottom ash		tons	☐ FGD Calcium Sulfate - Not Pozzolanic		tons	☐ Other:			tons
		☐ Boiler slag		tons	☐ FGD Pozzolanic Material		tons	☐ Other:			tons
CBI? ☐ Yes		☐ Fly ash		tons	☐ FGD Calcium Sulfate (Gypsum)		tons	☐ Other:			tons
		☐ Bottom ash		tons	☐ FGD Calcium Sulfate - Not Pozzolanic		tons	☐ Other:			tons
		☐ Boiler slag		tons	☐ FGD Pozzolanic Material		tons	☐ Other:			tons
CBI? ☐ Yes		☐ Fly ash		tons	☐ FGD Calcium Sulfate (Gypsum)		tons	☐ Other:			tons
		☐ Bottom ash		tons	☐ FGD Calcium Sulfate - Not Pozzolanic		tons	☐ Other:			tons
		☐ Boiler slag		tons	☐ FGD Pozzolanic Material		tons	☐ Other:			tons
CBI? ☐ Yes		☐ Fly ash		tons	☐ FGD Calcium Sulfate (Gypsum)		tons	☐ Other:			tons
		☐ Bottom ash		tons	☐ FGD Calcium Sulfate - Not Pozzolanic		tons	☐ Other:			tons
		☐ Boiler slag		tons	☐ FGD Pozzolanic Material		tons	☐ Other:			tons

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name
Pond/Impoundment Unit or Landfill ID: Insert ID
Sample Collection Location: Sample Collection Location

Part: G
Section Title: Laboratory Analytical Data Form

Instructions: Complete Table G-4 for each untreated and treated sample collection locations. Enter the pond/impoundment unit or landfill ID (use pond/impoundment unit and landfill IDs assigned in Table A-4 and Table A-6) and the sample collection location (identified previously in Table G-1) in the spaces provided above. Also, identify the name of the analytical laboratory that conducted the analyses and provide the sample collection location description previously identified in Table G-1. Report all results, including those below the reporting limit. Identify results that are less than the method detection limit (MDL), and results that are between the detection and reporting limits. For example, if the MDL is equal to 5 ng/L, the reporting limit is equal to 15 ng/L, and the value reported by the laboratory is 12 ng/L, report 12 ng/L as the measured value and identify and describe any qualifiers on the data in the corresponding column. If the measured value is not detected, list the detection limit value and select the less than (<) symbol in the non-detect indicator column. Please provide all free response answers in the highlighted yellow areas.

Make a copy of Sampling Results Table for the each pond/impoundment unit and landfill chosen for the leachate sample collection using the "Copy Sampling Results Table" button below.

CBI?
☐ Yes

Name of analytical laboratory:

☐ Data review summary attached.

Copy Sampling Results Table

CBI?
☐ Yes

Sample collection location description:

CBI?
☐ Yes

Table G-4. Leachate Sampling Analytical Data Form

Name of Analyte	CAS Number	Non-Detect Indicator	Concentration* (µg/L)	Analytical Method Used	Method Detection Limit (MDL) (µg/L)	Reporting Limit (µg/L)	Qualifiers for the Measurement
Example - Arsenic	***7440-38-2***	Non-Detec	***350***	EPA Method 200.7 Other:	***2***	***10***	***Detected in laboratory blank at less than 5 times the sample result***
Aluminum	7429-90-5	Non-Detec		Analytical Method Other:			
Antimony	7440-36-0	Non-Detec		Analytical Method Other:			
Arsenic	7440-38-2	Non-Detec		Analytical Method Other:			
Barium	7440-39-3	Non-Detec		Analytical Method Other:			
Beryllium	7440-41-7	Non-Detec		Analytical Method Other:			
Boron	7440-42-8	Non-Detec		Analytical Method Other:			
Cadmium	7440-43-9	Non-Detec		Analytical Method Other:			

Calcium	7440-70-2	Non-Detec		Analytical Method Other:			
Chromium	7440-47-3	Non-Detec		Analytical Method Other:			
Cobalt	7440-48-4	Non-Detec		Analytical Method Other:			
Copper	7440-50-8	Non-Detec		Analytical Method Other:			
Iron	7439-89-6	Non-Detec		Analytical Method Other:			
Lead	7439-92-1	Non-Detec		Analytical Method Other:			
Magnesium	7439-95-4	Non-Detec		Analytical Method Other:			
Manganese	7439-95-4	Non-Detec		Analytical Method Other:			
Molybdenum	7439-98-7	Non-Detec		Analytical Method Other:			
Nickel	7440-02-0	Non-Detec		Analytical Method Other:			
Selenium	7782-49-2	Non-Detec		Analytical Method Other:			
Silver	7440-22-4	Non-Detec		Analytical Method Other:			
Sodium	7440-23-5	Non-Detec		Analytical Method Other:			
Sulfate	No CAS	Non-Detec		Analytical Method Other:			
Thallium	7440-28-0	Non-Detec		Analytical Method Other:			
Tin	7440-31-5	Non-Detec		Analytical Method Other:			
Titanium	7440-32-6	Non-Detec		Analytical Method Other:			
Vanadium	7440-62-2	Non-Detec		Analytical Method Other:			
Zinc	7440-66-6	Non-Detec		Analytical Method Other:			
Mercury	7439-97-6	Non-Detec		Analytical Method Other:			
Chlorides	No CAS	Non-Detec		Analytical Method Other:			
Total dissolved solids (TDS)	No CAS	Non-Detec		Analytical Method Other:			
Total suspended solids (TSS)	No CAS	Non-Detec		Analytical Method Other:			
pH	No CAS	Non-Detec		Analytical Method Other:			

*If not detected, list the detection limit value and select the less than (<) symbol in the non-detect indicator column.

Plant Name: Insert Plant ID
Plant ID: Insert Plant Name

Part: G
Section Title: Part G Comments

Instructions: Cross reference your comments by question number and indicate the confidential status of your comment by checking the box next to "Yes" under "CBI?" (Confidential Business Information).

	Question Number	Comment
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		

Approved: May 20, 2010

CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		

Part G Drop Downs

Analytical Method
Analytical Method
40 CRF Part 136-approved
EPA Method 200.7
EPA Method 200.8
EPA Method 1631E
Other

Sample Collection Location
Sample Collection Location
Treated pond/impoundment
Untreated pond/impoundment
Treated Landfill
Untreated Landfill

Non-Detect Drop Down
Non-Detect Drop Down
<

OMB Control Number: 2040-0281
Approval Expires: 05/31/2013

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Steam Electric Questionnaire

PART H - NUCLEAR POWER GENERATION

Table of Contents

Approved: May 20, 2010

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

PART H. NUCLEAR POWER GENERATION

INSTRUCTIONS

Complete Part H of the questionnaire for your plant. As you are completing the electronic form, note the following: When you enter your plant name and plant ID on the Part H TOC tab, all name and ID fields throughout Part H will automatically populate. Refer to the overall questionnaire instructions, the glossary, and the acronym list for assistance with completing Part H.

Please provide all free response answers in the highlighted yellow areas. Throughout Part H, you may need to make copies of certain sections/questions. Instructions are provided throughout Part H regarding making copies. Note that process wastewater codes or wastewater treatment system names must be populated on the copied tab or section, located in the upper right corner under "Plant ID" and "Plant Name", in order to correlate the requested information with the process wastewater or wastewater treatment system.

Use the Part H Comments tab to do the following: provide additional information as requested in certain questions within Part H; indicate atypical data (e.g., if 2009 information is not representative of normal operations); and note methods used to make best engineering estimates in the event that exact data are not available.

Note: The following acronyms are used throughout Part H:
PWR - Pressurized water reactor
BWR - Boiling water reactor

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: H
Section Title: 1. Nuclear Generating Unit Data

Instructions: Complete Section 1 (Questions H1-1 through H1-3) for each nuclear electric generating unit that the plant operated during 2009. Provide all free response answers in the highlighted yellow areas.

CBI? ☐ Yes

H1-1. Did the plant operate one or more units using nuclear energy as the fuel source to generate electricity in 2009?

○ Yes (Continue)
○ No (Skip to next Questionnaire Part)

CBI? ☐ Yes

H1-2. Did the plant generate any *process wastewater* (with the exception of wastewater from service water treatment systems) during 2009 that is associated with the production of electricity from nuclear generating units? Examples include, but are not limited to, containment sump water and water generated from cooling system leaks or loss of coolant accidents (LOCA).

○ Yes (Continue)
○ No (Skip to next Questionnaire Part)

CBI? ☐ Yes

H1-3. In Table H-1, provide information for all *process wastewater* associated with the production of electricity from the nuclear electric generating units that the plant operated during 2009. Indicate the nuclear generating unit(s) that are associated with each process wastewater. [Check all boxes that apply.] If the process wastewater is associated with the entire plant, all nuclear units should be checked. If the plant generated a process wastewater that is not in the drop down menu, include the name and description of the process wastewater in the space provided and indicate the nuclear generating unit(s) that are associated with the process wastewater.

Approved: May 20, 2010

Table H-1. Process Wastewater Associated with Nuclear Electric Generating Units

Process Wastewater Code	Process Wastewater	Nuclear Unit(s) Associated with Process Wastewater
NUC-1	Process Wastewater; Nonradioactive/Radioactive; Other, specify:	☐ SE Unit 1 ☐ SE Unit 4 ☐ SE Unit 7 ☐ SE Unit 2 ☐ SE Unit 5 ☐ SE Unit 8 ☐ SE Unit 3 ☐ SE Unit 6 ☐ SE Unit 9 ☐ Other, specify:
NUC-2	Process Wastewater; Nonradioactive/Radioactive; Other, specify:	☐ SE Unit 1 ☐ SE Unit 4 ☐ SE Unit 7 ☐ SE Unit 2 ☐ SE Unit 5 ☐ SE Unit 8 ☐ SE Unit 3 ☐ SE Unit 6 ☐ SE Unit 9 ☐ Other, specify:
NUC-3	Process Wastewater; Nonradioactive/Radioactive; Other, specify:	☐ SE Unit 1 ☐ SE Unit 4 ☐ SE Unit 7 ☐ SE Unit 2 ☐ SE Unit 5 ☐ SE Unit 8 ☐ SE Unit 3 ☐ SE Unit 6 ☐ SE Unit 9 ☐ Other, specify:
NUC-4	Process Wastewater; Nonradioactive/Radioactive; Other, specify:	☐ SE Unit 1 ☐ SE Unit 4 ☐ SE Unit 7 ☐ SE Unit 2 ☐ SE Unit 5 ☐ SE Unit 8 ☐ SE Unit 3 ☐ SE Unit 6 ☐ SE Unit 9 ☐ Other, specify:
NUC-5	Process Wastewater; Nonradioactive/Radioactive; Other, specify:	☐ SE Unit 1 ☐ SE Unit 4 ☐ SE Unit 7 ☐ SE Unit 2 ☐ SE Unit 5 ☐ SE Unit 8 ☐ SE Unit 3 ☐ SE Unit 6 ☐ SE Unit 9 ☐ Other, specify:
NUC-6	Process Wastewater; Nonradioactive/Radioactive; Other, specify:	☐ SE Unit 1 ☐ SE Unit 4 ☐ SE Unit 7 ☐ SE Unit 2 ☐ SE Unit 5 ☐ SE Unit 8 ☐ SE Unit 3 ☐ SE Unit 6 ☐ SE Unit 9 ☐ Other, specify:
NUC-7	Process Wastewater; Nonradioactive/Radioactive; Other, specify:	☐ SE Unit 1 ☐ SE Unit 4 ☐ SE Unit 7 ☐ SE Unit 2 ☐ SE Unit 5 ☐ SE Unit 8 ☐ SE Unit 3 ☐ SE Unit 6 ☐ SE Unit 9 ☐ Other, specify:

NUC-8	Process Wastewater ▼ Nonradioactive/Radioactive ▼ Other, specify:	☐ SE Unit 1 ☐ SE Unit 4 ☐ SE Unit 7 ☐ SE Unit 2 ☐ SE Unit 5 ☐ SE Unit 8 ☐ SE Unit 3 ☐ SE Unit 6 ☐ SE Unit 9 ☐ Other, specify:
NUC-9	Process Wastewater ▼ Nonradioactive/Radioactive ▼ Other, specify:	☐ SE Unit 1 ☐ SE Unit 4 ☐ SE Unit 7 ☐ SE Unit 2 ☐ SE Unit 5 ☐ SE Unit 8 ☐ SE Unit 3 ☐ SE Unit 6 ☐ SE Unit 9 ☐ Other, specify:
NUC-10	Process Wastewater ▼ Nonradioactive/Radioactive ▼ Other, specify:	☐ SE Unit 1 ☐ SE Unit 4 ☐ SE Unit 7 ☐ SE Unit 2 ☐ SE Unit 5 ☐ SE Unit 8 ☐ SE Unit 3 ☐ SE Unit 6 ☐ SE Unit 9 ☐ Other, specify:
NUC-11	Process Wastewater ▼ Nonradioactive/Radioactive ▼ Other, specify:	☐ SE Unit 1 ☐ SE Unit 4 ☐ SE Unit 7 ☐ SE Unit 2 ☐ SE Unit 5 ☐ SE Unit 8 ☐ SE Unit 3 ☐ SE Unit 6 ☐ SE Unit 9 ☐ Other, specify:
NUC-12	Process Wastewater ▼ Nonradioactive/Radioactive ▼ Other, specify:	☐ SE Unit 1 ☐ SE Unit 4 ☐ SE Unit 7 ☐ SE Unit 2 ☐ SE Unit 5 ☐ SE Unit 8 ☐ SE Unit 3 ☐ SE Unit 6 ☐ SE Unit 9 ☐ Other, specify:
NUC-13	Process Wastewater ▼ Nonradioactive/Radioactive ▼ Other, specify:	☐ SE Unit 1 ☐ SE Unit 4 ☐ SE Unit 7 ☐ SE Unit 2 ☐ SE Unit 5 ☐ SE Unit 8 ☐ SE Unit 3 ☐ SE Unit 6 ☐ SE Unit 9 ☐ Other, specify:
NUC-14	Process Wastewater ▼ Nonradioactive/Radioactive ▼ Other, specify:	☐ SE Unit 1 ☐ SE Unit 4 ☐ SE Unit 7 ☐ SE Unit 2 ☐ SE Unit 5 ☐ SE Unit 8 ☐ SE Unit 3 ☐ SE Unit 6 ☐ SE Unit 9 ☐ Other, specify:
NUC-15	Process Wastewater ▼ Nonradioactive/Radioactive ▼ Other, specify:	☐ SE Unit 1 ☐ SE Unit 4 ☐ SE Unit 7 ☐ SE Unit 2 ☐ SE Unit 5 ☐ SE Unit 8 ☐ SE Unit 3 ☐ SE Unit 6 ☐ SE Unit 9 ☐ Other, specify:
NUC-16	Process Wastewater ▼ Nonradioactive/Radioactive ▼ Other, specify:	☐ SE Unit 1 ☐ SE Unit 4 ☐ SE Unit 7 ☐ SE Unit 2 ☐ SE Unit 5 ☐ SE Unit 8 ☐ SE Unit 3 ☐ SE Unit 6 ☐ SE Unit 9 ☐ Other, specify:

NUC-17	Process Wastewater / Nonradioactive/Radioactive Other, specify:	☐ SE Unit 1 ☐ SE Unit 4 ☐ SE Unit 7 ☐ SE Unit 2 ☐ SE Unit 5 ☐ SE Unit 8 ☐ SE Unit 3 ☐ SE Unit 6 ☐ SE Unit 9 ☐ Other, specify:
NUC-18	Process Wastewater / Nonradioactive/Radioactive Other, specify:	☐ SE Unit 1 ☐ SE Unit 4 ☐ SE Unit 7 ☐ SE Unit 2 ☐ SE Unit 5 ☐ SE Unit 8 ☐ SE Unit 3 ☐ SE Unit 6 ☐ SE Unit 9 ☐ Other, specify:
NUC-19	Process Wastewater / Nonradioactive/Radioactive Other, specify:	☐ SE Unit 1 ☐ SE Unit 4 ☐ SE Unit 7 ☐ SE Unit 2 ☐ SE Unit 5 ☐ SE Unit 8 ☐ SE Unit 3 ☐ SE Unit 6 ☐ SE Unit 9 ☐ Other, specify:
NUC-20	Process Wastewater / Nonradioactive/Radioactive Other, specify:	☐ SE Unit 1 ☐ SE Unit 4 ☐ SE Unit 7 ☐ SE Unit 2 ☐ SE Unit 5 ☐ SE Unit 8 ☐ SE Unit 3 ☐ SE Unit 6 ☐ SE Unit 9 ☐ Other, specify:
NUC-21	Process Wastewater / Nonradioactive/Radioactive Other, specify:	☐ SE Unit 1 ☐ SE Unit 4 ☐ SE Unit 7 ☐ SE Unit 2 ☐ SE Unit 5 ☐ SE Unit 8 ☐ SE Unit 3 ☐ SE Unit 6 ☐ SE Unit 9 ☐ Other, specify:
NUC-22	Process Wastewater / Nonradioactive/Radioactive Other, specify:	☐ SE Unit 1 ☐ SE Unit 4 ☐ SE Unit 7 ☐ SE Unit 2 ☐ SE Unit 5 ☐ SE Unit 8 ☐ SE Unit 3 ☐ SE Unit 6 ☐ SE Unit 9 ☐ Other, specify:
NUC-23	Process Wastewater / Nonradioactive/Radioactive Other, specify:	☐ SE Unit 1 ☐ SE Unit 4 ☐ SE Unit 7 ☐ SE Unit 2 ☐ SE Unit 5 ☐ SE Unit 8 ☐ SE Unit 3 ☐ SE Unit 6 ☐ SE Unit 9 ☐ Other, specify:
NUC-24	Process Wastewater / Nonradioactive/Radioactive Other, specify:	☐ SE Unit 1 ☐ SE Unit 4 ☐ SE Unit 7 ☐ SE Unit 2 ☐ SE Unit 5 ☐ SE Unit 8 ☐ SE Unit 3 ☐ SE Unit 6 ☐ SE Unit 9 ☐ Other, specify:
NUC-25	Process Wastewater / Nonradioactive/Radioactive Other, specify:	☐ SE Unit 1 ☐ SE Unit 4 ☐ SE Unit 7 ☐ SE Unit 2 ☐ SE Unit 5 ☐ SE Unit 8 ☐ SE Unit 3 ☐ SE Unit 6 ☐ SE Unit 9 ☐ Other, specify:

NUC-26	Process Wastewater Other, specify:	Nonradioactive/Radioactive	☐ SE Unit 1 ☐ SE Unit 4 ☐ SE Unit 7 ☐ SE Unit 2 ☐ SE Unit 5 ☐ SE Unit 8 ☐ SE Unit 3 ☐ SE Unit 6 ☐ SE Unit 9 ☐ Other, specify:
NUC-27	Process Wastewater Other, specify:	Nonradioactive/Radioactive	☐ SE Unit 1 ☐ SE Unit 4 ☐ SE Unit 7 ☐ SE Unit 2 ☐ SE Unit 5 ☐ SE Unit 8 ☐ SE Unit 3 ☐ SE Unit 6 ☐ SE Unit 9 ☐ Other, specify:
NUC-28	Process Wastewater Other, specify:	Nonradioactive/Radioactive	☐ SE Unit 1 ☐ SE Unit 4 ☐ SE Unit 7 ☐ SE Unit 2 ☐ SE Unit 5 ☐ SE Unit 8 ☐ SE Unit 3 ☐ SE Unit 6 ☐ SE Unit 9 ☐ Other, specify:
NUC-29	Process Wastewater Other, specify:	Nonradioactive/Radioactive	☐ SE Unit 1 ☐ SE Unit 4 ☐ SE Unit 7 ☐ SE Unit 2 ☐ SE Unit 5 ☐ SE Unit 8 ☐ SE Unit 3 ☐ SE Unit 6 ☐ SE Unit 9 ☐ Other, specify:
NUC-30	Process Wastewater Other, specify:	Nonradioactive/Radioactive	☐ SE Unit 1 ☐ SE Unit 4 ☐ SE Unit 7 ☐ SE Unit 2 ☐ SE Unit 5 ☐ SE Unit 8 ☐ SE Unit 3 ☐ SE Unit 6 ☐ SE Unit 9 ☐ Other, specify:
NUC-31	Process Wastewater Other, specify:	Nonradioactive/Radioactive	☐ SE Unit 1 ☐ SE Unit 4 ☐ SE Unit 7 ☐ SE Unit 2 ☐ SE Unit 5 ☐ SE Unit 8 ☐ SE Unit 3 ☐ SE Unit 6 ☐ SE Unit 9 ☐ Other, specify:
NUC-32	Process Wastewater Other, specify:	Nonradioactive/Radioactive	☐ SE Unit 1 ☐ SE Unit 4 ☐ SE Unit 7 ☐ SE Unit 2 ☐ SE Unit 5 ☐ SE Unit 8 ☐ SE Unit 3 ☐ SE Unit 6 ☐ SE Unit 9 ☐ Other, specify:
NUC-33	Process Wastewater Other, specify:	Nonradioactive/Radioactive	☐ SE Unit 1 ☐ SE Unit 4 ☐ SE Unit 7 ☐ SE Unit 2 ☐ SE Unit 5 ☐ SE Unit 8 ☐ SE Unit 3 ☐ SE Unit 6 ☐ SE Unit 9 ☐ Other, specify:
NUC-34	Process Wastewater Other, specify:	Nonradioactive/Radioactive	☐ SE Unit 1 ☐ SE Unit 4 ☐ SE Unit 7 ☐ SE Unit 2 ☐ SE Unit 5 ☐ SE Unit 8 ☐ SE Unit 3 ☐ SE Unit 6 ☐ SE Unit 9 ☐ Other, specify:

NUC-35	Process Wastewater ▼ Nonradioactive/Radioactive ▼ Other, specify:	☐ SE Unit 1 ☐ SE Unit 4 ☐ SE Unit 7 ☐ SE Unit 2 ☐ SE Unit 5 ☐ SE Unit 8 ☐ SE Unit 3 ☐ SE Unit 6 ☐ SE Unit 9 ☐ Other, specify:
NUC-36	Process Wastewater ▼ Nonradioactive/Radioactive ▼ Other, specify:	☐ SE Unit 1 ☐ SE Unit 4 ☐ SE Unit 7 ☐ SE Unit 2 ☐ SE Unit 5 ☐ SE Unit 8 ☐ SE Unit 3 ☐ SE Unit 6 ☐ SE Unit 9 ☐ Other, specify:

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name
Process wastewater code: Process Wastewater Code

Part: H
Section Title: 2. Process Wastewater Generation

Instructions: Complete Section 2 (Questions H2-1 and H2-2) for each *process wastewater* generated on site during 2009 that is associated with the operation of the nuclear generating units. Please provide all free response answers in the highlighted yellow areas.

Make a copy of Section 2 for each type of process wastewater generated in 2009 and previously identified in Table H-1 using the "Copy Section 2" button below. Enter the process wastewater code from Table H-1 in the space provided above.

CBI?
☐ Yes

H2-1. Indicate in Table H-2 if the *process wastewater* flow is continuous or not continuous. For process wastewater with a continuous flow, indicate the flow rate, typical volume generated annually, and duration for the process wastewater that was generated in 2009. For process wastewater without a continuous flow, indicate the typical flow rate, typical volume generated annually in gallons, duration, and frequency with which the process wastewater is generated.

Table H-2. Process Wastewater Flows

Process Wastewater Flow	Flow Rate (gpm)	Typical Volume Generated Annually (gallons)	Typical Duration	Typical Frequency (e.g., 1 time every 3 years)
◯ Continuous			hpd dpy	
◯ Not Continuous			hpd dpy	time(s) every year(s)

CBI?
☐ Yes

H2-2. Indicate how the untreated process wastewater is handled. If recycled, indicate to which process the process wastewater is recycled. [Check all boxes that apply.]

☐ Immediately recycled back to a plant process. Please describe how the process wastewater is reused
- ☐ In cooling towers
- ☐ As reactor coolant (BWR)
- ☐ As primary coolant (PWR)
- ☐ As secondary coolant (PWR)
- ☐ Other specify: __________

☐ Discharged to surface water following on-site treatment, including those located on non-adjoining property.

Please provide the NPDES permitted outfall number (from Part A Section 2.2) __________

☐ Discharged to surface water untreated. Please provide NPDES permitted outfall number (from Part A Section 2.2) __________

☐ Transferred to publicly or privately owned treatment works

☐ Transported to an offsite vendor waste processor

☐ Transported to approved licensed burial ground

☐ Other, explain: __________

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name
Wastewater Treatment System Name: Insert Treatment System Name

Part: H
Section Title: 3. Wastewater Treatment Systems

Instructions: Complete Section 3 (Questions H3-1 through H3-7) for each *wastewater treatment system* that the plant operated in 2009 to treat any *process wastewater* associated with nuclear generating units and reported in Table H-1. Please provide all free response answers in the highlighted yellow areas.

Make copies of Section 3 for each wastewater treatment system that the plant operated in 2009 using the "Copy Section 3" button below. Enter the wastewater treatment system name in the space provided above.

Copy Section 3

CBI? ☐ Yes

H3-1. Does this wastewater treatment system treat radioactive waste?

◯ Yes

◯ No

CBI? ☐ Yes

H3-2. Indicate all process wastewater that is *treated* with this wastewater treatment system using the codes provided in Table H-1. [Check all boxes that apply.]

☐ NUC-1	☐ NUC-5	☐ NUC-9	☐ NUC-13	☐ NUC-17	☐ NUC-21	☐ NUC-25	☐ NUC-29	☐ NUC-33
☐ NUC-2	☐ NUC-6	☐ NUC-10	☐ NUC-14	☐ NUC-18	☐ NUC-22	☐ NUC-26	☐ NUC-30	☐ NUC-34
☐ NUC-3	☐ NUC-7	☐ NUC-11	☐ NUC-15	☐ NUC-19	☐ NUC-23	☐ NUC-27	☐ NUC-31	☐ NUC-35
☐ NUC-4	☐ NUC-8	☐ NUC-12	☐ NUC-16	☐ NUC-20	☐ NUC-24	☐ NUC-28	☐ NUC-32	☐ NUC-36

CBI? ☐ Yes

H3-3. Provide the typical and maximum flow rate for the wastewater treatment system for 2009. In addition, provide the duration and frequency of the discharges, and other dispositions off site, from the wastewater treatment system in 2009. If the flow rate in 2009 is not typical of previous years, please note this in the "Part H Comments" tab at the end of part.

______ Typical flow rate in 2009, gpm

______ Maximum flow rate in 2009, gpm

______ Duration of effluent transfers from treatment system in 2009, hpd

______ Frequency of effluent transfers from treatment system in 2009, dpy

Approved: May 20, 2010

CBI?
☐ Yes

H3-4. Complete a row in Table H-3 for each treatment technology used in this wastewater treatment system. If the technology is not listed, select other and identify it separately in the yellow box provided. Indicate the pollutants targeted for removal for each wastewater treatment technology. [Check all boxes that apply.] If you check "metals" or "other" specify the type of metal or type of other pollutant in the yellow boxes provided. Separate multiple entries with commas. Of the pollutants identified for each treatment technology, indicate up to three effluent limitations that drive/will drive the operation of this wastewater treatment technology. Provide the pollutant, the limitation, and the unit (mg/L, ug/L, or μCi/mL).

Table H-3. Characteristics of Wastewater Treatment Technologies Present in the Wastewater Treatment System

Wastewater Treatment Technology	Pollutants Targeted for Removal by the Technology		Which Effluent Limitation Drives/Will Drive the Operation of the Technology		
			Pollutant	Limitation	Unit
Wastewater Treatment Technology	☐ Chlorine or other oxidizing agents				
	☐ Nitrogen compounds (ammonia, nitrate, nitrite)				
	☐ Carbohydrazine	☐ Boron			
	☐ Hydrazine	☐ Tritium			Units
	☐ Organic acids	☐ Strontium-90			
	☐ TSS	☐ Cesium-137			Units
	☐ Oil and grease	☐ Other Radionuclides			Units
Other, specify (below):	☐ Metals, specify:				
	☐ Other , specify:				
Wastewater Treatment Technology	☐ Chlorine or other oxidizing agents				
	☐ Nitrogen compounds (ammonia, nitrate, nitrite)				
	☐ Carbohydrazine	☐ Boron			
	☐ Hydrazine	☐ Tritium			Units
	☐ Organic acids	☐ Strontium-90			
	☐ TSS	☐ Cesium-137			Units
	☐ Oil and grease	☐ Other Radionuclides			Units
Other, specify (below):	☐ Metals, specify:				
	☐ Other , specify:				

Wastewater Treatment Technology Other, specify (below):	☐ Chlorine or other oxidizing agents ☐ Nitrogen compounds (ammonia, nitrate, nitrite) ☐ Carbohydrazine ☐ Boron ☐ Hydrazine ☐ Tritium ☐ Organic acids ☐ Strontium-90 ☐ TSS ☐ Cesium-137 ☐ Oil and grease ☐ Other Radionuclides ☐ Metals, specify: ☐ Other , specify:			Units Units Units
Wastewater Treatment Technology Other, specify (below):	☐ Chlorine or other oxidizing agents ☐ Nitrogen compounds (ammonia, nitrate, nitrite) ☐ Carbohydrazine ☐ Boron ☐ Hydrazine ☐ Tritium ☐ Organic acids ☐ Strontium-90 ☐ TSS ☐ Cesium-137 ☐ Oil and grease ☐ Other Radionuclides ☐ Metals, specify: ☐ Other , specify:			Units Units Units
Wastewater Treatment Technology Other, specify (below):	☐ Chlorine or other oxidizing agents ☐ Nitrogen compounds (ammonia, nitrate, nitrite) ☐ Carbohydrazine ☐ Boron ☐ Hydrazine ☐ Tritium ☐ Organic acids ☐ Strontium-90 ☐ TSS ☐ Cesium-137 ☐ Oil and grease ☐ Other Radionuclides ☐ Metals, specify: ☐ Other , specify:			Units Units Units

Wastewater Treatment Technology Other, specify (below):	☐ Chlorine or other oxidizing agents ☐ Nitrogen compounds (ammonia, nitrate, nitrite) ☐ Carbohydrazine ☐ Boron ☐ Hydrazine ☐ Tritium ☐ Organic acids ☐ Strontium-90 ☐ TSS ☐ Cesium-137 ☐ Oil and grease ☐ Other Radionuclides ☐ Metals, specify: ☐ Other , specify:			Units Units Units
Wastewater Treatment Technology Other, specify (below):	☐ Chlorine or other oxidizing agents ☐ Nitrogen compounds (ammonia, nitrate, nitrite) ☐ Carbohydrazine ☐ Boron ☐ Hydrazine ☐ Tritium ☐ Organic acids ☐ Strontium-90 ☐ TSS ☐ Cesium-137 ☐ Oil and grease ☐ Other Radionuclides ☐ Metals, specify: ☐ Other , specify:			Units Units Units
Wastewater Treatment Technology Other, specify (below):	☐ Chlorine or other oxidizing agents ☐ Nitrogen compounds (ammonia, nitrate, nitrite) ☐ Carbohydrazine ☐ Boron ☐ Hydrazine ☐ Tritium ☐ Organic acids ☐ Strontium-90 ☐ TSS ☐ Cesium-137 ☐ Oil and grease ☐ Other Radionuclides ☐ Metals, specify: ☐ Other , specify:			Units Units Units

CBI?
☐ Yes

H3-5. Is the plant currently constructing/installing or planning to begin constructing/installing by December 31, 2020 any additional treatment technologies not mentioned in question H3-4 to the wastewater treatment system? If so, indicate in Table H-4 below the type of technology and the pollutants the technology will target. [Check all boxes that apply.] If you check "metals" or "other" specify the type of metal or type of other pollutant in the yellow boxes provided. Separate multiple entries with commas.

Table H-4. Characteristics of Planned Wastewater Treatment Technologies in the Wastewater Treatment System

Wastewater Treatment Technology	Pollutants Targeted for Removal by the Technology	
	☐ Chlorine or other oxidizing agents	
	☐ Nitrogen compounds (ammonia, nitrate, nitrite)	
	☐ Carbohydrazine	☐ Boron
Wastewater Treatment Technology ▼	☐ Hydrazine	☐ Tritium
	☐ Organic acids	☐ Strontium-90
	☐ TSS	☐ Cesium-137
	☐ Oil and grease	☐ Other Radionuclides
Other, specify (below):	☐ Metals, specify:	
	☐ Other , specify:	
	☐ Chlorine or other oxidizing agents	
	☐ Nitrogen compounds (ammonia, nitrate, nitrite)	
	☐ Carbohydrazine	☐ Boron
Wastewater Treatment Technology ▼	☐ Hydrazine	☐ Tritium
	☐ Organic acids	☐ Strontium-90
	☐ TSS	☐ Cesium-137
	☐ Oil and grease	☐ Other Radionuclides
Other, specify (below):	☐ Metals, specify:	
	☐ Other , specify:	

Wastewater Treatment Technology	☐ Chlorine or other oxidizing agents ☐ Nitrogen compounds (ammonia, nitrate, nitrite) ☐ Carbohydrazine ☐ Boron ☐ Hydrazine ☐ Tritium ☐ Organic acids ☐ Strontium-90 ☐ TSS ☐ Cesium-137 ☐ Oil and grease ☐ Other Radionuclides ☐ Metals, specify: ☐ Other , specify:
Other, specify (below):	

Wastewater Treatment Technology	☐ Chlorine or other oxidizing agents ☐ Nitrogen compounds (ammonia, nitrate, nitrite) ☐ Carbohydrazine ☐ Boron ☐ Hydrazine ☐ Tritium ☐ Organic acids ☐ Strontium-90 ☐ TSS ☐ Cesium-137 ☐ Oil and grease ☐ Other Radionuclides ☐ Metals, specify: ☐ Other , specify:
Other, specify (below):	

CBI?
☐ Yes

H3-6. What is the ultimate destination of the ***treated*** process wastewater from this wastewater treatment system? If recycled, indicate how the treated process wastewater is recycled. [Check all boxes that apply].

☐ Recycled back to a plant process. Please describe how the treated process wastewater is reused

- ☐ In cooling towers
- ☐ As reactor coolant (BWR)
- ☐ As primary coolant (PWR)
- ☐ As secondary coolant (PWR)
- ☐ Other specify: ______

☐ Discharged to surface water following on-site treatment, including those located on non-adjoining property.

Please provide the NPDES permitted outfall number (from Part A Section 2.2) ______

☐ Transferred to publicly or privately owned treatment works

☐ Transported to an offsite vendor waste processor

☐ Transported to approved licensed burial ground

☐ Other, explain: ______

CBI?
☐ Yes

H3-7. If you indicated in question H3-6 that the ultimate destination of the treated process wastewater was to recycle part of it back to the plant, but not all of it, indicate the typical and maximum flow rates during 2009 for the recycled part of the treated process wastewater. In addition, provide the duration and frequency of the effluent transfers from the wastewater treatment system in 2009 for the recycled portion of the treated process wastewater. If the flow rate in 2009 is not typical of previous years, please note this in the "Part H Comments" tab at the end of part.

______ Typical flow rate in 2009, gpm

______ Maximum flow rate in 2009, gpm

______ Duration of effluent transfers from treatment system in 2009, hpd

______ Frequency of effluent transfers from treatment system in 2009, dpy

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: H
Section Title: Part H Comments

Instructions: Cross reference your comments by question number and indicate the confidential status of your comment by checking the box next to “Yes” under "CBI?" (Confidential Business Information).

	Question Number	Comment
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		

Approved: May 20, 2010

CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		

Part H Drop Downs

Process Wastewater
Select
Auxiliary building sump/drain wastewater
Boiler blowdown
Boiler metal cleaning waste
Chemical and volume control system (CVCS) purge (PWR)
Condensate clean-up system purge (PWR)
Containment/drywell building sump/drain wastewater
Contaminated stormwater
Filter backwash
Ion exchange wastewater
Laboratory drain wastewater
Laundry wastewater
Leachate
Leaks from primary coolant system (PWR)
Leaks from radiological waste treatment system(s)
Leaks from reactor coolant system (BWR)
Loss of coolant accidents
Personnel and equipment decontamination wastewater
Primary coolant purge (PWR)
Reactor coolant purge (BWR)
Reactor water clean-up system purge (BWR)
Reverse osmosis reject water
Sample station drain wastewater
Secondary coolant purge (PWR)
Solidification process wastewater
Steam turbine cleaning washwater
Turbine building floor drain wastewater
Yard drain wastewater
Other (specify name and description)

Process Wastewater Code
Select
NUC-1
NUC-2
NUC-3
NUC-4
NUC-5
NUC-6
NUC-7
NUC-8
NUC-9
NUC-10
NUC-11
NUC-12
NUC-13
NUC-14
NUC-15
NUC-16
NUC-17
NUC-18
NUC-19
NUC-20
NUC-21
NUC-22
NUC-23
NUC-24
NUC-25
NUC-26
NUC-27
NUC-28
NUC-29
NUC-30
NUC-31
NUC-32
NUC-33
NUC-34
NUC-35
NUC-36

Nonradioactive/Radioactive
Select
Nonradioactive
Radioactive

Type of Process Wastewater
Select
Both radioactive and nonradioactive wastewater
Nonradioactive wastewater only
Radioactive wastewater only

Units
Select
mg/L
ug/L
µCi/mL

Wastewater Treatment Technology
Select
Aerobic biological reactor
Anaerobic biological reactor
Centrifugation
Chemical precipitation/flocculation
Constructed wetlands
Cross flow filtration
Degasification
Dechlorination
Evaporation
Hollow fiber filtration
Ion exchange
Ion exchange membrane
Ion-specific filtration
Neutralization
Oil/water separator
Oil skimming
Reverse osmosis
Settling pond
Settling tank
Slow sand filter
Specially-prepared activated carbon
Super absorbent polymers
Temporary storage for radionuclide decay
Ultrafiltration
Wet oxidation
Other specify

OMB Control Number: 2040-0281
Approval Expires: 05/31/2013

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Steam Electric Questionnaire

PART I - ECONOMIC AND FINANCIAL DATA

Table of Contents

Approved: May 20, 2010

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

PART I. ECONOMIC AND FINANCIAL DATA

INSTRUCTIONS

Complete Part I of the questionnaire for your *plant*. As you are completing the electronic form, note the following: When you enter your plant name and plant ID on the Part I TOC tab, all name and ID fields throughout Part I will automatically populate. Refer to the overall questionnaire instructions and the list of abbreviations for additional assistance with completing Part I. Refer to the glossary for definitions of selected economic and financial terms used in this Part.

You may wish to assemble the following documents in order to efficiently fill out this part of the questionnaire:

(1) For the entity/entities that own your *plant*: income statements, balance sheet statements, and cash flow statements for the last three fiscal years.

(2) For your *plant*: data on electricity generated, operating expenses, income statement, balance sheet, and other operational statements for the last three fiscal years of operation.

Please provide all free response answers in the highlighted yellow areas.

Use the Part I Comments tab to do the following: provide additional information as requested in certain questions within Part I; indicate atypical data (e.g., if the analytical data provided from the sample collection is not representative of normal operations); and note methods used to make estimates based on professional judgment in the event that exact data are not available.

In cases where a plant has multiple *immediate parent firms* and where it is not possible to identify a primary parent firm based on equity share, you may make copies of Section 2 of this questionnaire and provide the requested information for each immediate parent listed in Section 1.

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: I
Section Title: 1. Immediate Parent Economic and Financial Information

Instructions: Throughout Section 1, provide financial information for the *immediate parent firm* or, in case where multiple entities have financial participation or interest in the *plant*, for every entity with an equity stake (or any other form of financial participation or interest) in this plant. For the purpose of this questionnaire, the immediate parent is the first entity in the plant's ownership structure. A plant may have more than one *immediate parent* if more than one firm owns or has another form of financial participation or interest in the generating units located at the plant. Please provide all free response answers in the highlighted yellow areas.

CBI?
☐ Yes

I1-1. In Table I-1, provide the following information for the *immediate parent firm* or, in case where multiple entities have financial participation or interest in the plant, for every entity with an equity stake (or any other form of financial participation or interest) in this *plant*. If the financial participation shares vary by generating units at the plant, please estimate the plant-level share based on the relative electricity generation capacity (*nameplate capacity*) of all units at this plant.

Table I-1. Immediate Parent Firm Financial Information

Number	Name of Immediate Parent	Mailing Address	% Ownership or Financial Interest in Plant in 2009	NAICS	DUNS Number	Fiscal Year Start (mm)	Fiscal Year End (mm)	Year	Total Revenue ('000$)	Revenue from Electricity Generation ('000$)	Total Employment (FTE)	Total Electricity Sales (MWh)
								2007	1,200,000	800,000	1,000-1,249	15,400,400
								2008	1,560,000	851,000	1,000-1,249	15,851,700
Example	*ABC LLC*	*123 A Street, City, State, ZIP*	*34.50%*	*2211*	*123456789*	January	December	2009	1,720,000	867,000	1,250-1,499	15,110,890
								2007	552,000	502,800	250-499	6,570,000
								2008	550,000	513,100	250-499	6,858,000
Example	*EFG Inc.*	*12500, Some Blvd., City, State, ZIP*	*45%*	*2211*	*587426985*	January	December	2009	487,000	479,200	250-499	6,253,000
								2007	126,000	20,000	250-499 250	235,200
								2008	120,000	10,000	250-499 265	259,100
Example	*XYZ Corp.*	*789 Z Street, City, State, ZIP*	*20.50%*	*2211*	*925486982*	April	March	2009	89,000	11,500	100-249 207	231.985
								2007			Select	
								2008			Select	
1						Select	Select	2009			Select	
								2007			Select	
								2008			Select	
2						Select	Select	2009			Select	
								2007			Select	
								2008			Select	
3						Select	Select	2009			Select	

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: I

Section Title: 2. Primary Immediate Parent Firm Economic and Financial Information

Instructions: Throughout Section 2, EPA is interested in obtaining financial and economic data regarding the plant owner to support a detailed evaluation of the economic impacts of the regulations on firms that own steam electric power generation assets. When answering questions in Section 2, please provide data for the *immediate parent firm* and not only for the steam electric *plant* covered in this questionnaire.

If the plant has multiple owners (immediate parent firms identified in Question I1-1), please report detailed information in Questions I2-1 through I2-13 only for the entity that has the largest equity stake (or the largest share of financial participation or interest) in the steam electric portion of the *plant*. This *immediate parent firm* is referred to as the "primary immediate parent" firm in the remainder of this section.

For example, a hypothetical steam electric plant has three generation units, two of which are steam. Table I-2 below provides the distribution of plant capacity and ownership shares for this plant. Since ABC LLC has the largest ownership share in the steam electric capacity at this hypothetical plant, the detailed information requested in the remainder of this section would be provided for ABC LLC.

Table I-2. Distribution of Plant Capacity and Ownership Shares for Example Plant

Plant	Unit 1 (non-steam)	Unit 2 (steam)	Unit 3 (steam)	Ownership Share of Plant Steam Electric Capacity[(1)]
% of Plant Total Capacity	45%	35%	20%	
Immediate parent firm	Ownership Share			
EFG Inc.	100%			0%
ABC LLC.		***70%***	***50%***	***63%***
XYZ Corp.		30%	50%	37%

[(1)] details of ownership share calculations:

EFG Inc. share: 0% since only has shares in non-steam generation capacity

ABC LLC share: 0.70 x 0.35 / (0.35+0.20) + 0.50 x 0.20 / (0.35+0.20) = 0.63

XYZ Corp. share: 0.30 x 0.35 / (0.35+0.20) + 0.50 x 0.20 / (0.35+0.20) = 0.37

In cases where a *plant* has multiple *immediate parent firms* and where it is not possible to identify a primary parent firm based on equity shares, you may make copies of Section 2 of this questionnaire, using the "Copy Section 2" button below, and provide the requested information for each immediate parent listed in Section 1. In the example above, you have the option of providing information for both ABC LLC and XYZ Corp.

CBI?
☐ Yes

I2-1. Please select the primary *immediate parent firm* for which you are providing detailed information in this section. (Lists immediate parent firm(s) provided in Question I1-1)

Select

CBI?
☐ Yes

I2-2. Please indicate the type of ownership for the primary *immediate parent firm*.

Other, specify:

CBI?
☐ Yes

I2-3. Please indicate the state in which the primary *immediate parent firm* is organized as a legal entity.

CBI?
☐ Yes

I2-4. Please indicate the legal structure of the plant's ownership.

CBI?
☐ Yes

I2-5. Has the primary *immediate parent firm* engaged in revenue generating activities other than electricity generation during the period of FY 2007 through FY 2009?

NOTE: Economic activities other than generation of electricity may include, but are not limited to, production activities or the leasing of land. Please include only those economic activities that are carried out by the plant's owner; do not include activities carried out on the plant's property by third parties for which the plant's owner does not incur cost or receive revenue.

○ Yes (Continue to Question I2-5)
○ No (Skip to Question I2-6)

CBI?
☐ Yes

I2-6. Please provide a description of each of the entity's revenue generating activities other than generation of electricity and the revenue and costs associated with this(ese) activity(ies).

Table I-3. Description of Each Entity's Other Revenue Generating Activities

FY	Description of Economic Activity	Revenue ('000$)	Costs ('000$)
Economic activities not associated with electricity generation (e.g., manufacturing production, leasing of land)			
2007			
2008			
2009			

CBI?
☐ Yes

I2-7. Has the *immediate parent firm* submitted data to FERC in *Form 1* for the period of FY 2007 through FY 2009? FERC Form No. 1 (FERC Form 1) is an annual regulatory requirement for Major electric utilities, licensees and others (18 C.F.R. § 141.1) and is designed to collect financial and operational information from electric utilities, licensees and others subject to the jurisdiction of the Federal Energy Regulatory Commission. If you answer YES, please attach a copy of your FERC Form 1 report for 2009 in pdf format to your submittal to ensure that EPA has the most recent data for your firm. EPA will also be using the data you already reported on your FERC Form 1 filing for 2007 and 2008 to support its economic impact and other analyses.

○ Yes, attach FERC Form 1. (Skip to Question I2-12)

☐ FERC Form 1 is NOT attached. Explain why:

○ No (Continue to Question I2-7)

Approved: May 20, 2010

CBI?
☐ Yes

I2-8. In Table I-4, please provide the income statement information for the *immediate parent firm*. This information may be available from SEC filings, depending on how the firm presents its statement, if your *immediate parent firm* is a publicly traded company.

Table I-4. Income Statement Information

	FY 2007	FY 2008	FY 2009
Total revenue ('000$)			
Revenue from electric power generation and sales			
Revenue from sources indirectly related to the generation of electricity (e.g., sale of steam or ash, waste combustion)			
Other revenue (i.e., total revenue from activities described in Question I2-5)			
Total expenses ('000$)			
Operation expenses			
Maintenance expenses			
Depreciation, depletion, and amortization expense			
Interest expense (Total. Firms with debt should have interest expenses)			
Income taxes (Total federal, state, and local income taxes)			
All other expenses (i.e. including total cost of activities described in Question I2-5)			
After-tax income (Subtract Total operating expenses from Total revenue)			

CBI?
☐ Yes

I2-9. In Table I-5, please provide the following balance sheet information for the *immediate parent firm*. This information may be available from SEC filings, depending on how the firm presents its statement, if your *immediate parent firm* is a publicly traded company.

Table I-5. Balance Sheet Information

	FY 2007	FY 2008	FY 2009
Assets ('000$)			
Inventories (Raw materials, supplies, fuels, etc.)			
Other current assets (Prepared expenses, cash, accounts receivable, etc.			
Non-current assets (land, buildings, equipment, machinery, other physical capital and intangibles, capital stocks and bonds, etc., including expansions and renovations and net of depreciation and amortization)			
Liability/Equity ('000$)			
Current liabilities (Liabilities due for payment within the reporting year)			
Non-current liabilities (Including long-term debt, such as bonds, debentures, and bank debt)			
Owner equity (Total assets minus total (current and non-current) liabilities)			

CBI?
☐ Yes

I2-10. In Table I-6, please provide the following <u>cash flow</u> information for the *immediate parent firm*. This information may be available from SEC filings, depending on how the firm presents its statement, if your *immediate parent firm* is a publicly traded company.

Table I-6. Cash Flow Information

	FY 2007	FY 2008	FY 2009
Cash flow from operating activities ('000$)			
Net income from operations			
Non-cash charges (credits) to income			
Depreciation and depletion			
Amortization of electricity generating plants			
Net change in accounts receivable/ accounts payable			
Change in inventories			
Net change in other current assets/current liabilities			
Net cash provided by (used in) operating activities			
Cash flow from investing activities ('000$)			
Capital expenditures			
Capital expenditures for electric plant and equipment			
Investments			
Other cash flows from investing activities			
Net cash provided by (used in) investing activities			
Cash flow from financing activities ('000$)			
Cash flows provided by (used in) financing activities			
Net increase/decrease in cash and cash equivalents			

CBI?
☐ Yes

I2-11. In Table I-7, please provide the following information regarding the *immediate parent's* sources of electric energy during each year. This information may be available from SEC filings, depending on how the firm presents its statement, if your immediate parent firm is a publicly traded company.

Table I-7. Sources of Energy

	FY 2007	FY 2008	FY 2009
Gross energy generation (MWh)			
Purchases from utilities and power marketers (MWh)			
Cost of purchases from utilities and power marketers ('000$)			
Purchases from nonutilities (MWh)			
Cost of purchases from nonutilities ('000$)			
Total sources of electric energy (MWh) including net energy exchanged			

CBI?

☐ Yes

I2-12. In Table I-8, please provide the following information regarding the *immediate parent's* disposition of electric energy generated, purchased, exchanged, and wheeled during each year. This information may be available from SEC filings, depending on how the firm presents its statement, if your immediate parent firm is a publicly traded company.

Table I-8. Disposition of Electricity

	FY 2007	FY 2008	FY 2009
Sales for resale (MWh)			
Revenue from sales for resale ('000$)			
Sales to end users (MWh)			
Revenue from sales to end users ('000$)			
Electric energy furnished without charge (MWh)			
Electric energy used by the parent (MWh)			
Total uses of electric energy (MWh) including energy losses			

CBI?

☐ Yes

I2-13. In Table I-9, please provide the following information regarding the fraction of the immediate parent's electricity sales (on a MWh basis) subject to different pricing terms.

NOTE: EPA is looking for information regarding the approximate share of electricity that is sold under various terms and conditions to help in conducting economic impact and other types of analyses. You may provide approximate shares based on information readily available from immediate parent's filings and statements.

Table I-9. Electricity Sales

	Example	FY 2007	FY 2008	FY 2009
% sales subject to cost-of-service based regulated pricing	***60%***	%	%	%
% contracted sales	***30%***	%	%	%
% sales subject to short-term auction pricing	***10%***	%	%	%
TOTAL	***100%***	0 %	0 %	0 %

CBI?

☐ Yes

I2-14. If the share of contracted sales indicated in Question I2-12 is greater than 0% in FY2009, please indicate in Table I-10 the approximate shares of the *immediate parent firm's* contracted electricity sales (on a MWh basis) that are of different durations and terms.

Table I-10. Approximate shares of the Immediate Parent's Contracted Electricity Sales

	Example	FY 2009
% contracted sales in FY 2009 subject to contract pricing under contracts of one year or less duration.	***80 %***	%
% sales in FY 2009 subject to contract pricing under contracts more than one year in duration	***20 %***	%
Contracted sales under contracts more than one year in duration that include clauses permitting price adjustments based on changes in environmental regulatory	☑ None ☐ All ☐ Other, specify: ________ %	☐ None ☐ All ☐ Other, specify: %

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: I
Section Title: 3. Ultimate Parent Economic and Financial Information

Instructions: Throughout Section 3, please provide information for the *ultimate parent firm* of each immediate parent firm identified in Question I1-1 or, in case of joint ownership or partnership in the immediate parent firm, for the entity having the largest equity stake in the immediate parent firm. Please provide all free response answers in the highlighted yellow areas.

For the purpose of this questionnaire, the *ultimate parent firm* is the highest level domestic business entity in a plant's ownership structure. A firm that is owned by another U.S. firm is not an ultimate domestic parent firm. In contrast, a U.S. firm that is owned by a foreign firm is an ultimate domestic parent firm.

NOTE: EPA is interested in financial information about ultimate parent firm of entity(ies) that own or have financial participation or interest in your *plant* to conduct regulatory and economic impact analyses and to identify the relevant firm size category for corporate entities potentially affected by the regulations.

CBI?
☐ Yes

I3-1. Is (are) the *ultimate parent firm(s)* the same as the *immediate parent(s)* identified in Question I1-1?

○ Yes (Skip to Section 4.1)
○ No (Continue to Question I3-2)

CBI?
☐ Yes

I3-2. In Table I-11, please provide the following information for the *ultimate parent firm* of each immediate parent firm identified in Question I1-1 or, in case of joint ownership or partnership in the *immediate parent firm*, for the entity having the largest equity stake in the *immediate parent firm*. If the *ultimate parent firm* is the same as the *immediate parent firm*, you may indicate so in column 2 and do not need to provide the information requested in columns 3 through 10 of the table. This information may be available from SEC filings, if your *ultimate parent firm* is a publicly traded company.

Table I-11. Ultimate Parent Firm Financial Information

Immediate Parent (from Question I-1)	Name of Ultimate Parent	Mailing Address	% Financial Interest in Immediate Parent in 2009	NAICS	DUNS Number	Fiscal Year Start (mm)	Fiscal Year End (mm)	Year	Total Revenue ('000$)	Total Employment (FTE)	Total Electricity Sales (MWh)
EFG Inc.	☑ Same as Immediate Parent					Select	Select	2007			
								2008			
								2009			
ABC LLC.	*U.S. DIAMOND CORP* ☑ Same as Immediate Parent	*2255 5th Avenue, City, State, ZIP*	*85%*	*5239*	*885785963*	October	September	2007	*52,358,000*	*25,875*	*45,400,400*
								2008	*55,582,000*	*25,786*	*45,851,700*
								2009	*56,889,200*	*26,850*	*55,110,890*
XYZ Corp.	☑ Same as Immediate Parent					Select	Select	2007			
								2008			
								2009			
Select	☐ Same as Immediate Parent					Select	Select	2007			
								2008			
								2009			
Select	☐ Same as Immediate Parent					Select	Select	2007			
								2008			
								2009			
Select	☐ Same as Immediate Parent					Select	Select	2007			
								2008			
								2009			

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: I
Section Title: 4.1 Basic Plant Economic and Financial Information

Instructions: Throughout Section 4.1, please provide the requested economic and financial information for the *plant*. Please provide all free response answers in the highlighted yellow areas.

NOTE: For Section 4.1, EPA is interested in obtaining financial and economic data regarding the specific plant covered by this questionnaire.

CBI?
☐ Yes

I4-1. What is the Fiscal Year period covered by plant-level financial and operational information provided in this section?

Start (dd/mm) ____ / ____
End (dd/mm) ____ / ____

CBI?
☐ Yes

I4-2. In Table I-12, please indicate the number of months in each fiscal year for which you have financial and operational information for your *plant*. In some cases, such as new plants, records may cover only part of a year.

Table I-12. Number of Months in Each Fiscal Year

	FY 2007	FY 2008	FY 2009
Number of Months			

CBI?
☐ Yes

I4-3. At any time during the three reporting years, did the *plant* engage in revenue generating activities other than generation of electricity?

NOTE: Economic activities other than generation of electricity may include, but are not limited to, production activities or the leasing of land. Please include only those economic activities that are carried out by the plant's owner; do not include activities carried out on the plant's property by third parties for which the plant's owner does not incur cost or receive revenue. If such third party activities are significant, you may note them in the comments section at the end of Part I.

○ Yes (Continue to Question I4-4)
○ No (Skip to Question I4-7)

CBI?
☐ Yes

I4-4. In Table A-13, please provide a description of each of the *plant*'s economic activities other than electricity generation.

Table I-13. Description of Economic Activities

Fiscal Year	Description of Economic Activity(ies)
Economic activities not associated with electricity generation (e.g., manufacturing production, leasing of land)	
2007	
2008	
2009	

CBI?
☐ Yes

I4-5. Is(are) this(ese) business activity(ies) associated with (a) specific generating unit(s)?

○ Yes (Continue to Question I4-6)

○ No (Skip to Question I4-7)

CBI?
☐ Yes

I4-6. In Table I-14, please provide the following information for each of these generating units. Use steam electric generating unit IDs assigned in Table A-8.

Table I-14. Financial Data by Steam Electric Unit

SE Unit ID		Revenue ('000$)	Costs ('000$)
Select	FY 2007		
	FY 2008		
	FY 2009		
Select	FY 2007		
	FY 2008		
	FY 2009		
Select	FY 2007		
	FY 2008		
	FY 2009		
Select	FY 2007		
	FY 2008		
	FY 2009		
	FY 2007		

Select	FY 2008		
	FY 2009		
	FY 2007		
Select	FY 2008		
	FY 2009		

CBI?
☐ Yes

I4-7. In Table I-15, please provide information on total *plant* employment in terms of full-time equivalent employees (FTE).

Table I-15. Plant Employment Information

	FY 2007	FY 2008	FY 2009
Total Employment (FTE)			

CBI?
☐ Yes

I4-8. In Table I-16, please provide *gross and net electricity generated* by the *plant* on a fiscal year basis.

NOTE: If your fiscal year coincides with the calendar year, please indicate so below and skip this question. The requested information is already provided in Question A1-14 of questionnaire on a calendar year basis.

☐ This plant's fiscal year coincides with calendar years (i.e., fiscal year period is January 1 – December 31). Refer to answer to Question A1-14 for the requested data.

Table I-16. Gross and Net Electricity Generated by Plant

	FY 2007	FY 2008	FY 2009
Gross Electricity Generated (MWh)			
Net Electricity Generated (MWh)			

CBI?
☐ Yes

I4-9. In Table I-17, please provide information regarding capital outlays for plant and equipment for the *plant*.

Table I-17. Capital Outlays for Plant

	FY 2007	FY 2008	FY 2009
Capital outlays for plant and equipment ('000$)			

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: I
Section Title: 4.2 Detailed Plant Financial Information

Instructions: In Section 4.2, please provide financial information for the *plant*. Your parent firm may not customarily compile financial reports at the level of the plant. In that case, you may estimate plant-level information from data reported at the level of reporting closest to your plant. This may be a division, the *immediate parent firm*, or some other business unit. You should report information about your plant either from existing reports or by estimating plant-level data. If you have to estimate plant-level data, you may use any method and information that, in your judgment, will yield the best estimate of plant-level data and describe the method in Question I4-12. If no such method or information is available, you may follow the default methodology outlined below.

Default Methodology: Please estimate plant-level data by using aggregate data from the financial reports for the business unit that is closest to your plant in terms of business activity performed. Please estimate plant data by multiplying that business unit's numbers corresponding to electricity generation activities by the ratio of your plant's net generation to the business unit's net generation. For example, if you have aggregate data for a business unit consisting of three plants, each with 100 MWh in net generation, the plant-level data are estimated based on 1/3 of the aggregate data.

CBI?
☐ Yes

I4-10. In Table I-18, please provide the following balance sheet information for the *plant*. As needed, you may estimate plant-level data based on balance sheet information for the relevant business unit or immediate parent.

☐ Plant-level balance sheet data have been estimated for the purpose of answering this questionnaire. Provide details in Question I4-12.

Table I-18. Balance Sheet Information for Plant

	FY 2007	FY 2008	FY 2009
Assets ('000$)			
Inventories (Raw materials, supplies, fuels, etc.)			
Other current assets (Prepared expenses, cash, accounts receivable, etc.			
Land and buildings (Original land cost and cost of buildings, including expansions and renovations, net of depreciation)			

Other non-current assets (Equipment, machinery, other physical capital and intangibles, capital stocks and bonds, etc., net of depreciation and amortization)			
Liability/Equity ('000$)			
Current liabilities (Liabilities due for payment within the reporting year)			
Non-current liabilities (Including long-term debt, such as bonds, debentures, and bank debt)			
Owner equity (Total assets minus total (current and non-current) liabilities			

CBI?

☐ Yes

I4-11. In Table I-19, please provide the following <u>income statement</u> information for the *plant*. As needed, you may estimate plant-level data based on income statement information for the relevant division, business unit or immediate parent.

☐ Plant-level income statement data have been estimated for the purpose of answering this questionnaire. Provide details in Question I4-12.

Table I-19. Income Statement for Plant

	FY 2007	FY 2008	FY 2009
Total revenue ('000$)			
Revenue from electric power generation and sales			
Revenue from sources indirectly related to the generation of electricity (e.g., sale of steam or ash, waste combustion)			
Other revenue (i.e., total revenue from the economic activities described in Question I4-4) (describe below)			
Total expenses ('000$)			
Fuel expenses			
Other operating expenses			
Total maintenance expenses			
Total sales and customer accounts, service, and informational expenses			
Cost of contract work			
Interest expense			
Taxes			

Depreciation			
All other expenses, including fixed expenses (describe below)			

CBI?
☐ Yes

I4-12. If you estimated balance sheet and/or income statement for the *plant* in questions I4-10 and I4-11, please indicate the methodology used.

☐ Used default methodology described in Instructions to Section 4.2 (i.e., based on ratio of net generation)
☐ Used alternative methodology (describe below)

Methodology description:

CBI?
☐ Yes

I4-13. In Table I-20, please provide the following information regarding the cost of steam electricity generation for the *plant*. If the information for steam electricity generation is the same as reported above for the plant as a whole, please indicate so below and skip this question.

☐ Expenses for steam electricity generation are the same as for the plant as a whole.

NOTE: This information represents a subset of the total expenses reported in Question I4-11; the data are for steam electricity generation more specifically.

Table I-20. Cost of Steam Electricity Generation

	FY 2007	FY 2008	FY 2009
Fuel expenses			
Other operating expenses			
Total maintenance expenses			
Total sales and customer accounts, services, and informational expenses			
Taxes			
Depreciation			
Total administrative and general expenses			

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: I
Section Title: 5.1 Basic Steam Electric Generating Unit Economic and Financial Information

Instructions: Please provide the economic and financial information requested for each steam electric generating unit at your *plant*. Use steam electric generating unit IDs assigned in Table A-8. Please provide all free response answers in the highlighted yellow areas.

CBI?
☐ Yes

I5-1. In Table I-21, please provide information for each non-retired (as of January 1, 2007) steam electric generating unit of your plant. Use steam electric generating unit IDs assigned in Table A-8.

NOTE: If a generating unit is owned by more than one entity, please provide the name(s) of the *immediate parent firm(s)* and their respective equity shares (or financial participation or interest) in this generating unit.

Table I-21. Basic Financial Steam Electric Generating Information

SE Unit ID	Remaining undepreciated value ('000$)		Immediate parent firm(s) in 2009	Nonutility status of each steam electric generating unit
Example	***FY 2007***	***250,000***	***ABC LLC. (70%) XYZ Corp. (30%)***	☐ Cogenerator ☐ FERC qualifying cogenerator ☐ FERC qualifying small power producer ☐ FERC exempt wholesale generator ☐ Cogenerator not qualified under PURPA ☐ Other (specify): ☑ Check here if not applicable
	FY 2008	***225,000***		
	FY 2009	***200,000***		
Select	**FY 2007**			☐ Cogenerator ☐ FERC qualifying cogenerator ☐ FERC qualifying small power producer ☐ FERC exempt wholesale generator ☐ Cogenerator not qualified under PURPA ☐ Other (specify): ☐ Check here if not applicable
	FY 2008			
	FY 2009			
Select	**FY 2007**			☐ Cogenerator ☐ FERC qualifying cogenerator ☐ FERC qualifying small power producer ☐ FERC exempt wholesale generator ☐ Cogenerator not qualified under PURPA ☐ Other (specify): ☐ Check here if not applicable
	FY 2008			
	FY 2009			
Select	**FY 2007**			☐ Cogenerator ☐ FERC qualifying cogenerator ☐ FERC qualifying small power producer ☐ FERC exempt wholesale generator ☐ Cogenerator not qualified under PURPA ☐ Other (specify): ☐ Check here if not applicable
	FY 2008			
	FY 2009			
	FY 2007			☐ Cogenerator ☐ FERC qualifying cogenerator ☐ FERC qualifying small power producer

Select	FY 2008			☐ FERC exempt wholesale generator ☐ Cogenerator not qualified under PURPA ☐ Other (specify): ☐ Check here if not applicable
	FY 2009			
Select	FY 2007			☐ Cogenerator ☐ FERC qualifying cogenerator ☐ FERC qualifying small power producer ☐ FERC exempt wholesale generator ☐ Cogenerator not qualified under PURPA ☐ Other (specify): ☐ Check here if not applicable
	FY 2008			
	FY 2009			
Select	FY 2007			☐ Cogenerator ☐ FERC qualifying cogenerator ☐ FERC qualifying small power producer ☐ FERC exempt wholesale generator ☐ Cogenerator not qualified under PURPA ☐ Other (specify): ☐ Check here if not applicable
	FY 2008			
	FY 2009			
Select	FY 2007			☐ Cogenerator ☐ FERC qualifying cogenerator ☐ FERC qualifying small power producer ☐ FERC exempt wholesale generator ☐ Cogenerator not qualified under PURPA ☐ Other (specify): ☐ Check here if not applicable
	FY 2008			
	FY 2009			
Select	FY 2007			☐ Cogenerator ☐ FERC qualifying cogenerator ☐ FERC qualifying small power producer ☐ FERC exempt wholesale generator ☐ Cogenerator not qualified under PURPA ☐ Other (specify): ☐ Check here if not applicable
	FY 2008			
	FY 2009			
Select	FY 2007			☐ Cogenerator ☐ FERC qualifying cogenerator ☐ FERC qualifying small power producer ☐ FERC exempt wholesale generator ☐ Cogenerator not qualified under PURPA ☐ Other (specify): ☐ Check here if not applicable
	FY 2008			
	FY 2009			
Select	FY 2007			☐ Cogenerator ☐ FERC qualifying cogenerator ☐ FERC qualifying small power producer ☐ FERC exempt wholesale generator ☐ Cogenerator not qualified under PURPA ☐ Other (specify): ☐ Check here if not applicable
	FY 2008			
	FY 2009			

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: I
Section Title: 5.2 Steam Electric Generating Unit Operating Information

Instructions: Throughout Section 5.2, please provide information regarding operations for each steam electric generating unit. Please provide all free response answers in the highlighted yellow areas.

CBI?
☐ Yes

I5-2. In Table I-22, please provide the following information regarding operations for each steam electric generating unit. Use steam electric generating unit IDs assigned in Table A-8.

Table I-22. Steam Electric Generating Unit Operating Information

SE Unit ID	Fiscal Year	Primary Energy Source	Number of Days in Operation	Plan to Continue Operating the Unit During the Next FY?	Capacity Utilization (% of rated capacity)	*Gross Electricity Generated* (MWh)	Net Electricity Generated (MWh)	Net Peak Demand on Unit – MW (60 minutes)	Quantity of Fuel Burned (Units)[a]	Average Cost of Fuel Per Unit of Fuel Burned ($/unit)
	FY 2007									
Select	FY 2008									
	FY 2009			Select						
	FY 2007									
Select	FY 2008									
	FY 2009			Select						
	FY 2007									
Select	FY 2008									
	FY 2009			Select						
	FY 2007									
Select	FY 2008									
	FY 2009			Select						
	FY 2007									
Select	FY 2008									
	FY 2009			Select						
	FY 2007									
Select	FY 2008									
	FY 2009			Select						
	FY 2007									
Select	FY 2008									
	FY 2009			Select						
	FY 2007									
Select	FY 2008									
	FY 2009			Select						
	FY 2007									
Select	FY 2008									
	FY 2009			Select						
	FY 2007									

Select	FY 2008									
	FY 2009			Select						

a – (coal in tons of 2,000 lbs; oil in barrels of 42 gals; gas in mcf; nuclear or other – indicate)

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: I
Section Title: 5.3 Planned and Forced Outages and Annual Operating Cost

Instructions: In Section 5.3, please provide information on the duration of planned and forced outages and annual operating cost for each steam electric generating unit. Please provide all free response answers in the highlighted yellow areas.

CBI?
☐ Yes

I5-3. In Table I- 23, please provide information on the duration of planned and forced outages for each steam electric generating unit. Use steam electric generating unit IDs assigned in Table A-8.

Table I-23. Planned and Forced Outages

SE Unit ID	Fiscal Year	Total Duration of Planned/Scheduled Routine Maintenance Outages (hours/year)	Total Duration of Outages Planned/ Scheduled to Address Major Upgrades [a] (hours/year)	Duration of Forced/Unscheduled Outages for this Unit (hours/year)
	FY 2007			
Select	FY 2008			
	FY 2009			
	FY 2007			
Select	FY 2008			
	FY 2009			
	FY 2007			
Select	FY 2008			
	FY 2009			
	FY 2007			
Select	FY 2008			
	FY 2009			
	FY 2007			
Select	FY 2008			
	FY 2009			

Approved: May 20, 2010

Select	**FY 2007**			
	FY 2008			
	FY 2009			
Select	**FY 2007**			
	FY 2008			
	FY 2009			
Select	**FY 2007**			
	FY 2008			
	FY 2009			
Select	**FY 2007**			
	FY 2008			
	FY 2009			
Select	**FY 2007**			
	FY 2008			
	FY 2009			

a – Such as repowering, FGD/SCR installation, etc.

CBI?
☐ Yes

I5-4. In Table I-24, please provide the following annual operating cost information for each generating unit (refers to steam electric generating unit IDs assigned in Table A-8, as entered in Question I5-3).

Table I-24. Annual Operating Cost

SE Unit ID	Fiscal Year	Total Costs ($)[a]	Fuel Costs ($)	*Variable O&M* Costs ($)[b]
Select	FY 2007			
	FY 2008			
	FY 2009			
Select	FY 2007			
	FY 2008			
	FY 2009			
Select	FY 2007			
	FY 2008			
	FY 2009			
Select	FY 2007			
	FY 2008			
	FY 2009			
Select	FY 2007			
	FY 2008			
	FY 2009			
Select	FY 2007			
	FY 2008			
	FY 2009			
Select	FY 2007			
	FY 2008			
	FY 2009			

Select	**FY 2007**			
	FY 2008			
	FY 2009			
Select	**FY 2007**			
	FY 2008			
	FY 2009			
Select	**FY 2007**			
	FY 2008			
	FY 2009			

a - Total costs may include other operating costs (other than fuel costs or *variable O&M*) such as the scheduled maintenance of boiler and electric plant and the scheduled maintenance of generating and electric equipment, which are considered fixed O&M for the purpose of this questionnaire.

b - Refer to the glossary for a list of costs to be considered as *variable O&M* costs (e.g., fuel handling and steam expense and electric expense (other than other direct costs).

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: I
Section Title: Part I Comments

Instructions: Cross reference your comments by question number and indicate the confidential status of your comment by checking the box next to "Yes" under "CBI?" (Confidential Business Information).

	Question Number	Comment
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		

CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		

Illinois Pollution Control Board
R2014-10
Testimony of Keir Soderberg
References

USEPA Operating Procedure - Pore Water Sampling (2013, 02-28)

U.S. Environmental Protection Agency
Region 4, Science and Ecosystem Support Division
Athens, Georgia

OPERATING PROCEDURE

Title: **Pore Water Sampling**

Effective Date: February 28, 2013	**Number:** SESDPROC-513-R2

Author

Name: Mel Parsons
Title: Life Scientist
Signature: Mel Parsons Date: 2/20/13

Approval

Name: John Deatrick
Title: Chief, Ecological Assessment Branch
Signature: John Deatrick Date: 2/20/13

Name: Bobby Lewis
Title: Field Quality Manager, Science and Ecosystem Support Division
Signature: Date: 2/20/13

Revision History

The top row of this table shows the most recent changes to this controlled document. For previous revision history information, archived versions of this document are maintained by the SESD Document Control Coordinator on the SESD local area network (LAN).

History	Effective Date
SESDPROC-513-R2, Pore Water Sampling, replaces SESDPROC-513-R1. **General:** Corrected any typographical, grammatical and/or editorial errors. **Revision History:** Changes were made to reflect the current practice of only including the most recent changes in the revision history. **Section 3.4**: Item 4 was revised to reflect practice of using individual single-use preservative vials instead of preservatives prepared by ASB.	**February 28, 2013**
SESDPROC-513-R1, Pore Water Sampling, replaces SESDPROC-513-R0.	**January 29, 2013**
SESDPROC-513-R0, Pore Water Sampling, Original Issue	**February 05, 2007**

TABLE OF CONTENTS

1 General Information

1.1 Purpose

The purpose of this operating procedure is to describe the procedures, methods and considerations to be used when obtaining a sediment pore water sample.

1.2 Scope/Application

This document describes procedures generic to all pore water sampling methods to be used by field personnel when collecting and handling samples in the field. On the occasion that Science and Ecosystem Support Division (SESD) personnel determine that any of the procedures described in this section are inappropriate, inadequate or impractical and that another procedure must be used to obtain a pore water sample, the variant procedure will be documented in the field logbook, along with a description of the circumstances requiring its use. Mention of trade names or commercial products in this operating procedure does not constitute endorsement or recommendation for use.

1.3 Documentation/Verification

This procedure was prepared by persons deemed technically competent by SESD management, based on their knowledge, skills and abilities and has been tested in practice and reviewed in print by a subject matter expert. The official copy of this procedure resides on the SESD local area network (LAN). The Document Control Coordinator is responsible for ensuring the most recent version of the procedure is placed on the LAN and for maintaining records of review conducted prior to its issuance.

1.4 References

International Air Transport Authority (IATA). Dangerous Goods Regulations, Most Recent Version.

M.H.E. Products. 2003. PushPoint Sampler (US Pat. # 6,470,967) Operators Manual and Applications Guide, Version 2.01. East Tawas, MI. http://www.mheproducts.com

SESD Operating Procedure for Control of Records, SESDPROC-002, Most Recent Version.

SESD Operating Procedure for Sample and Evidence Management, SESDPROC-005, Most Recent Version.

SESD Operating Procedure for Logbooks, SESDPROC-010, Most Recent Version.

SESD Operating Procedure for Surface Water Sampling, SESDPROC-201, Most Recent Version.

SESD Operating Procedure for Pump Operation, SESDPROC-203, Most Recent Version.

SESD Operating Procedure for Field Equipment Cleaning and Decontamination, SESDPROC-205, Most Recent Version.

SESD Operating Procedure for Field Equipment Cleaning and Decontamination at the FEC, SESDPROC-206, Most Recent Version.

SESD Operating Procedure for Groundwater Sampling, SESDPROC-301, Most Recent Version.

SESD Operating Procedure for Potable Water Supply Sampling, SESDPROC-305, Most Recent Version.

Title 49 Code of Federal Regulations, Pts. 171 to 179, Most Recent Version.

USEPA. ASBLOQAM. Analytical Support Branch Laboratory Operations and Quality Assurance Manual. Region 4, Science and Ecosystem Support Division, Athens, GA. Most Recent Version.

USEPA. SHEMP. Safety, Health and Environmental Management Program Procedures and Policy Manual. Science and Ecosystem Support Division, Region 4, Athens, GA. Most Recent Version.

SESD Operating Procedure for Field Sampling Quality Control, SESDPROC-011, Most Recent Version.

1.5 General Precautions

1.5.1 Safety

Proper safety precautions must be observed when collecting pore water samples. Refer to the SESD Safety, Health and Environmental Management Program Procedures and Policy Manual (most recent version) and any pertinent site-specific Health and Safety Plans (HASP) for guidelines on safety precautions. These guidelines, however, should only be used to complement the judgment of an experienced professional. When using this procedure, minimize exposure to potential health hazards through the use of protective clothing, eye wear and gloves. Address chemicals that pose specific toxicity or safety concerns and follow any other relevant requirements, as appropriate.

1.5.2 Procedural Precautions

The following precautions should be considered when collecting pore water samples:

- Special care must be taken not to contaminate samples. This includes storing samples in a secure location to preclude conditions which could alter the properties of the sample. Samples shall be custody sealed during long-term storage or shipment.

- Collected samples are in the custody of the sampler or sample custodian until the samples are relinquished to another party.
- If samples are transported by the sampler, they will remain under his/her custody or be secured until they are relinquished.
- Shipped samples shall conform to all U.S. Department of Transportation (DOT) rules of shipment found in Title 49 of the Code of Federal Regulations (49 CFR parts 171 to 179), and/or International Air Transportation Association (IATA) hazardous materials shipping requirements found in the current edition of IATA's Dangerous Goods Regulations.
- Documentation of field sampling is done in a bound logbook. Chain-of-custody documents shall be filled out and remain with the samples until custody is relinquished.
- All shipping documents, such as bills of lading, will be retained by the project leader and stored in a secure place.

1.5.3 Records

Information generated or obtained by SESD personnel will be organized and accounted for in accordance with SESD records management procedures found in SESD Operating Procedure for Control of Records, SESDPROC-002 (most recent version). Field notes, recorded in a bound field logbook, will be generated, as well as chain-of-custody documentation, in accordance with SESD Operating Procedure for Logbooks, SESDPROC-010 (most recent version), and SESD Operating Procedure for Sample and Evidence Management, SESDPROC-005 (most recent version).

2 Sampling Methodology

2.1 General

The pore water sampling techniques and equipment described in this procedure are designed to minimize effects on the chemical and physical integrity of the sample. If the procedures in this section are followed, a representative sample of the pore water should be obtained.

2.2 Collection Considerations

The physical location of the investigator when collecting a sample may dictate the equipment to be used. Wading is the preferred method for reaching the sampling location, particularly if the stream has a noticeable current (i.e., is not impounded). However, wading may disrupt bottom sediments causing biased results; therefore, the sampler should enter the area downstream of the sampling location and collect sample facing upstream. If the stream is too deep to wade, the pore water sample may be collected from a platform such as a boat or by SCUBA diving. If sampling from a boat or in water deeper than the length of the sampler, extensions may be utilized. The device is suitable for use only in fine-grained material (no gravel or cobble).

2.3 Summary of Procedure

Sediment pore water is collected using a pore water extracting device (Figure 1). The most common type used is the PushPoint™ sampler (M.H.E. Products 2003), made out of stainless steel tubing. The sampling end of the pore water device is inserted into the sediment to the desired depth, and pore water is extracted using a syringe or peristaltic pump. Other similar devices may be used providing that the integrity of the sample is maintained and no ambient surface water is allowed in contact with the sample.

2.4 Sampling Equipment

A PushPoint™ or similar sampler typically consists of a pointed tubular stainless steel tube with a screened zone at one end and a sampling port at the other. The pointed end with the screened zone consists of a series of very fine interlaced machined slots to allow pore water to enter the sampler. A removable guard rod adds rigidity to the sampler during sediment insertion. The length of the screened zone will depend on the site specific study design. Depending on the data quality objectives (DQO) of the study, filters may be placed over the screened zone if additional screening is needed. Pore water is collected through the opposite end of the device by connecting flexible tubing and using a syringe or peristaltic pump to extract the sample. Teflon® tubing is the preferred tubing to be used for collecting pore water samples. However, other tubing may be used, depending upon the DQOs for the specific application.

There are many modifications that can be incorporated into the procedure to satisfy data quality objectives for a specific application. The procedures discussed in the following sections provide guidance on the basic operation of pore water sampling devices and issues to consider when collecting pore water.

An alternative system is available in SESD inventory for use in soft sediments in water deeper than wading depth. A well screen and short riser approximately ¾" in diameter has external threads to fasten to the bottom of a custom flange and internal threads to accept a tubing compression adapter. The accompanying rimmed flange has a coupling with both top and bottom threads. The well screen is screwed into the bottom of the flange coupling and Teflon® tubing is attached to the tubing compression adapter which is threaded into the well screen. The tubing is then inserted through the pipe or well casing which is then screwed into the upper coupling threads. The entire assembly can be deployed in water up to ten feet of depth from a well anchored boat.

2.5 Pore Water Sampler Deployment Considerations

It is critical in the collection of pore water to avoid surface water intrusion. Water will flow in a path of least resistance. If space is created around the sides of the sampling end of the pore water device during deployment, surface water may flow down the outside of the device to the screened area and into the intended sample. Therefore, the pore water device should be used with a sampling flange (Figure 2), especially when collecting pore water near the sediment-surface water interface. If pore water is collected from deep in the sediments, a flange may not be necessary. When inserted though the sampling platform, or flange, the body of the pore water device should form a water tight seal to eliminate surface water intrusion during sample collection. Flanges should include a cutting ring to enhance sealing. Flange systems can be augmented by flexible plastic sheeting of appropriate material. The sheeting can be weighted to conform to the stream bottom by sediments obtained from other areas of the stream or banks away from the sampling location.

The flange can be made of any material that will not cross contaminate the intended sample. If both inorganic and organic analyses are required, the flange should be made of inert material such as stainless steel or Teflon®. The size of the flange depends on the volume of pore water to be collected. If large volumes of pore water are to be collected, use a large flange size. A useful estimate can be made for planning by taking the entire required water volume, tripling it to assume 33% porosity, and then calculating the dimensions of a sphere or cylinder of this volume. The flange should cover at least this estimated volume. If it is not practical to use a large flange, then multiple devices may be deployed and smaller volumes can be collected from several devices for a composite sample. If multiple devices are deployed, they should be spaced an appropriate distance apart so they will not interfere with one another.

For irregular surfaces a flange can be improvised from polyethylene sheeting weighted by shovelled nearby stream sediments. Several of the flanges in SESD inventory have a threaded nut and washer to facilitate sealing the flange to a polyethylene sheet for this purpose.

In general, the volume of pore water that can be collected at a given location is limited. Collecting large volumes of pore water will ultimately result in the collection of water from the overlying water body. Often, minimum required volumes must be negotiated with the laboratory to limit the volumes withdrawn.

Where significant differences in parameters such as pH or conductivity exist between the surface water and pore water, a check can be made at the end of sampling to assess whether surface water intrusion has occurred by measuring the pore water parameters at the beginning and conclusion of sampling.

2.6 Pore Water Collection

The flange is first placed at the desired sampling point with the push-point removed to allow water to escape from under the flange. The flange rim should be carefully worked into the sediment until the flange is flush with the sediment surface. The pore water device should then be inserted through the compression adapter on the flange and into the sediment as carefully as possible (Figure 2). When the sampler is inserted to the desired depth, the compression adapter should be tightened. The push-point's guard rod can then be withdrawn. Do not reinsert the guard rod into the sampler for any reason until the sampler has been cleaned (sediment particles rolled between the two metal surfaces will lock the parts together and permanently damage the sampler.)

When deploying the pore water device, care must be taken not to disturb the sampling area. If the sampler is wading in the water body, the sampler should lean out and insert the pore water device as far as possible away from where the sampler is standing to reduce potential effects of the sampler on the integrity of the pore water sample. Depth of penetration of the pore water device into the sediment depends on the objectives of the specific investigation.

After the pore water device has been successfully deployed, attach the sample tubing to the sampling port of the pore water device. Short pieces of Silastic® tubing can be used to splice Teflon® sample tubing to a push-point sampler, taking care to butt the tubing to the sampler at the center of the splice. Then attach the other end of the tubing to a sample withdrawing device, such as a syringe or a peristaltic pump (according to SESD Operating Procedure for Pump Operation, SESDPROC-203). Before collecting a pore water sample, be sure to purge out all air and surface water from the pore water device and sample tubing with the appropriate amount of pore water. If utilizing a syringe for collection, a three-way valve with a side syringe must be utilized for the surface water purge in order not to cross contaminate the sampling syringe.

2.6.1 Peristaltic Pump/Vacuum Jug Collection

The peristaltic pump/vacuum jug can be used for sample collection of organic or inorganic samples because it allows for the sample to be collected without coming in contact with the pump head tubing, maintaining the integrity of the sample. This is accomplished by placing a Teflon® transfer cap assembly onto the neck of a pre-cleaned standard 1-liter amber glass container (Figure 3). Teflon® tubing (¼-inch O.D.) connects the container to both the pump and the sample source. The pump creates a vacuum in the container, thereby drawing the sample into the container without it coming into contact with the pump head tubing.

Because the sample is exposed to a vacuum and is agitated as it enters the vacuum jug, this method cannot be used for collection of samples for volatile organic compounds. An alternative method for collecting volatile organics involves filling the Teflon® tubing with sample by running the pump for a short period of time. Once the tubing is full of water, the tubing is removed from the pore water sampler and, then pinched off at the pump in order to maintain the vacuum and disconnected from the pump head tubing. The water is then allowed to carefully drain, by gravity, into the sample vials. Alternatively, without disconnecting the tubing from the pump head, the contained sample can be pushed out of the tubing, into the sample vials, by reversing the peristaltic pump at very low speed. Great care must still be taken with this method in order not to agitate the sample during the transfer process or transfer water that has been in contact with the Silastic® tubing into the vials.

Because pore water is typically collected from an anaerobic environment, it is preferable, especially when collecting samples for nutrient analysis, to maintain the integrity of the sample by minimizing exposure to air. This can be accomplished by purging the sample container with an inert gas such as nitrogen or argon prior to sampling. In addition, if analyzing for nutrients or metals, the container can be pre-preserved in order to minimize exposure of the sample to ambient conditions.

An alternative, when collecting samples for metals, nutrients or other sample analysis not affected by the Silastic® tubing and exposure to air is not a concern, is to collect the sample directly from the discharge of the pump head tubing after an adequate purge has been demonstrated. When collecting samples in this manner, there are several considerations to be aware of. The pump head tubing (Silastic®, etc.) must be changed after each sample and a rinsate blank must be collected from a representative piece of the pump head tubing (only one blank per investigation). Also, precautions must be taken to ensure that the end of the discharge tubing is not allowed to touch the ground or other surface to ensure the integrity of the sample collected in this manner.

2.6.2 Syringe

An alternative to using the pump and vacuum container is to use a syringe as the mechanism to draw the pore water through the sampling device. The tubing from the sampling port of the pore water device can be directly attached to a syringe with a three-way valve and a side syringe and the pore water sample can be manually withdrawn from the sediment. The valve is first switched to the side syringe, which is used for purging air and any ambient surface water in the system prior to sampling. The volume to be purged is determined by the length and diameter of the sampling device and attached tubing. Once the sampler has been purged, the valve is switched to the sampling syringe and the sample is drawn into the syringe. The syringe can be used as the final sample container or the pore water can be transferred to another container, depending on project objectives and analytical requirements.

2.7 Quality Control

If possible, a control or background sample should be collected from a location not affected by the possible contaminants of concern and submitted with the other samples. In streams or other bodies of moving water, the control sample should be collected upstream of the sampled area. For impounded bodies of water, particularly small lakes or ponds, it may be difficult or inappropriate to obtain an unbiased control from the same body of water from which the samples are collected. In these cases, it may be appropriate to collect a background sample from a similar impoundment located near the sampled body of water if there is a reasonable certainty that the background location has not been impacted. Equipment blanks should be collected if equipment is field cleaned and reused on-site or, if necessary, to document that low-level contaminants were not introduced by pumps, bailers or other sampling equipment.

2.8 Specific Sampling Equipment Quality Assurance Techniques

All equipment used to collect pore water samples shall be cleaned as outlined in the SESD Operating Procedure for Field Equipment Cleaning and Decontamination, SESDPROC-205 (most recent version) or SESD Operating Procedure for Field Equipment Cleaning and Decontamination at the FEC, SESDPROC-206 (most recent version) and repaired, if necessary, before being stored at the conclusion of field studies. Cleaning procedures utilized in the field or field repairs shall be thoroughly documented in field records.

3 Special Sampling Considerations

3.1 Volatile Organic Compounds (VOC)

Pore water samples for VOC analysis must be collected in 40 ml glass vials with Teflon® septa. The vial may be either preserved with concentrated hydrochloric acid or they may be unpreserved. Preserved samples have a two week holding time, whereas, unpreserved samples have only a seven day holding time. During most sampling events, preserved vials are used due to their extended holding time. In some situations, however, it may be necessary to use the unpreserved vials. For example, if the surface water sample contains a high concentration of dissolved calcium carbonate, there may be an effervescent reaction between the hydrochloric acid and the water, producing large numbers of fine bubbles. This will render the sample unacceptable. In this case, unpreserved vials should be used and arrangements must be confirmed with the laboratory to ensure that they can accept the unpreserved vials and meet the shorter sample holding times.

Samples for VOC analysis must be collected using either stainless steel or Teflon® equipment. Samples should be collected with as little agitation or disturbance as possible. The vial should be filled so that there is a meniscus at the top of the vial and absolutely no bubbles or headspace should be present in the vial after it is capped. After the cap is securely tightened, the vial should be inverted and tapped on the palm of one hand to see if any undetected bubbles are dislodged. If a bubble or bubbles are present, the vial should be refilled. Care should be taken not to flush any preservative out of the vial during topping off. If, after attempting to refill and cap the vial, bubbles are still present, a new vial should be obtained and the sample re-collected.

3.2 Dissolved Metals Sample Collection

If a dissolved metals pore water sample is to be collected, an in-line filtration should be used. The use of disposable, high-capacity filter cartridges (barrel-type) or membrane filters in an in-line filter apparatus is preferred. The high-capacity, barrel-type filter is preferred due to the higher surface area associated with this configuration.

Potential differences could result from variations in filtration procedures used to process water samples for the determination of trace element concentrations. A number of factors associated with filtration can substantially alter "dissolved" trace element concentrations; these include filter pore size, filter type, filter diameter, filtration method, volume of sample processed, suspended sediment concentration, suspended sediment grain-size distribution, concentration of colloids and colloidally-associated trace elements, and concentration of organic matter. Therefore, consistency is critical in the comparison of short-term and long-term results. Further guidance on filtration may be obtained from Section 4.7.3 of the SESD Groundwater Sampling Procedure (SESDPROC-301).

3.3 Special Precautions for Pore Water Sampling

- A clean pair of new, non-powdered, disposable latex gloves will be worn each time a different location is sampled and the gloves should be donned prior to handling sampling equipment and sampling. The gloves should not come in contact with the media being sampled and should be changed any time during sample collection when their cleanliness is compromised.
- All background or control samples shall be collected and placed in separate ice chests or shipping containers. Sample collection activities shall proceed progressively from the least suspected contaminated area to the most suspected contaminated area. Samples of waste or highly contaminated media must not be placed in the same ice chest as environmental (i.e., containing low contaminant levels) or background samples.
- If possible, one member of the field sampling team should take all the notes and photographs, fill out tags, etc., while the other members collect the samples.
- Samplers must use new, verified, certified clean disposable equipment, or pre-cleaned non-disposable equipment. Non-disposable equipment should be pre-cleaned according to procedures contained in SESD Operating Procedure for Field Equipment Cleaning and Decontamination (SESDPROC-205), for collection of samples for trace metals or organic compound analyses.

3.4 Sample Handling and Preservation Requirements

1. Pore water will typically be collected from sediments using a peristaltic pump and placed directly into the sampling containers. In some cases a syringe may be used to collect the sediment pore water and then transfer the sample into the appropriate container.
2. During sample collection, if transferring the sample from a collection device, make sure that the device does not come in contact with the sample containers.
3. Place the sample into appropriate, labeled containers. Samples collected for VOC analysis must not have any headspace (see Section 3.1).
4. All samples requiring preservation must be preserved as soon as practically possible, soon after sample collection. If pre-preserved VOA vials are used, these will be preserved with concentrated hydrochloric acid prior to departure for the field investigation. For all other chemical preservatives, SESD will use the appropriate chemical preservative generally stored in an individual single-use vial as described in the SESD Operating Procedure for Field Sampling Quality Control (SESDPROC-011). The adequacy of sample preservation will be checked after the addition of the preservative for all samples, except for the samples collected for VOC analysis. If it is determined that a sample is not acceptably preserved, additional preservative should be added to achieve adequate preservation. Preservation requirements for surface water samples are found in the USEPA Analytical Support Branch *Laboratory Operations and Quality Assurance Manual (*USEPA ASBLOQAM).

Figure 1. Pore Water Sampling Device

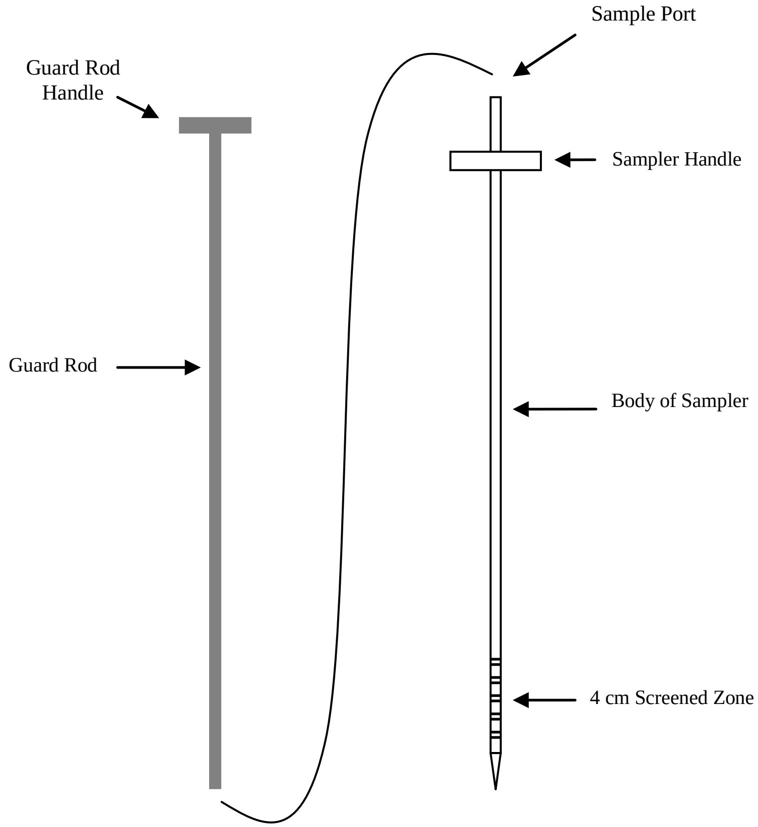

Figure 1A. Disassembled Device

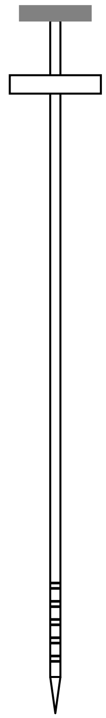

Figure 1B. Assembled Device

Actual length and width of device will vary, depending on sampling needs and site conditions.
Note: cm = centimeter

Figure 2. Pore Water Sampler Deployment Using a Sampling Flange

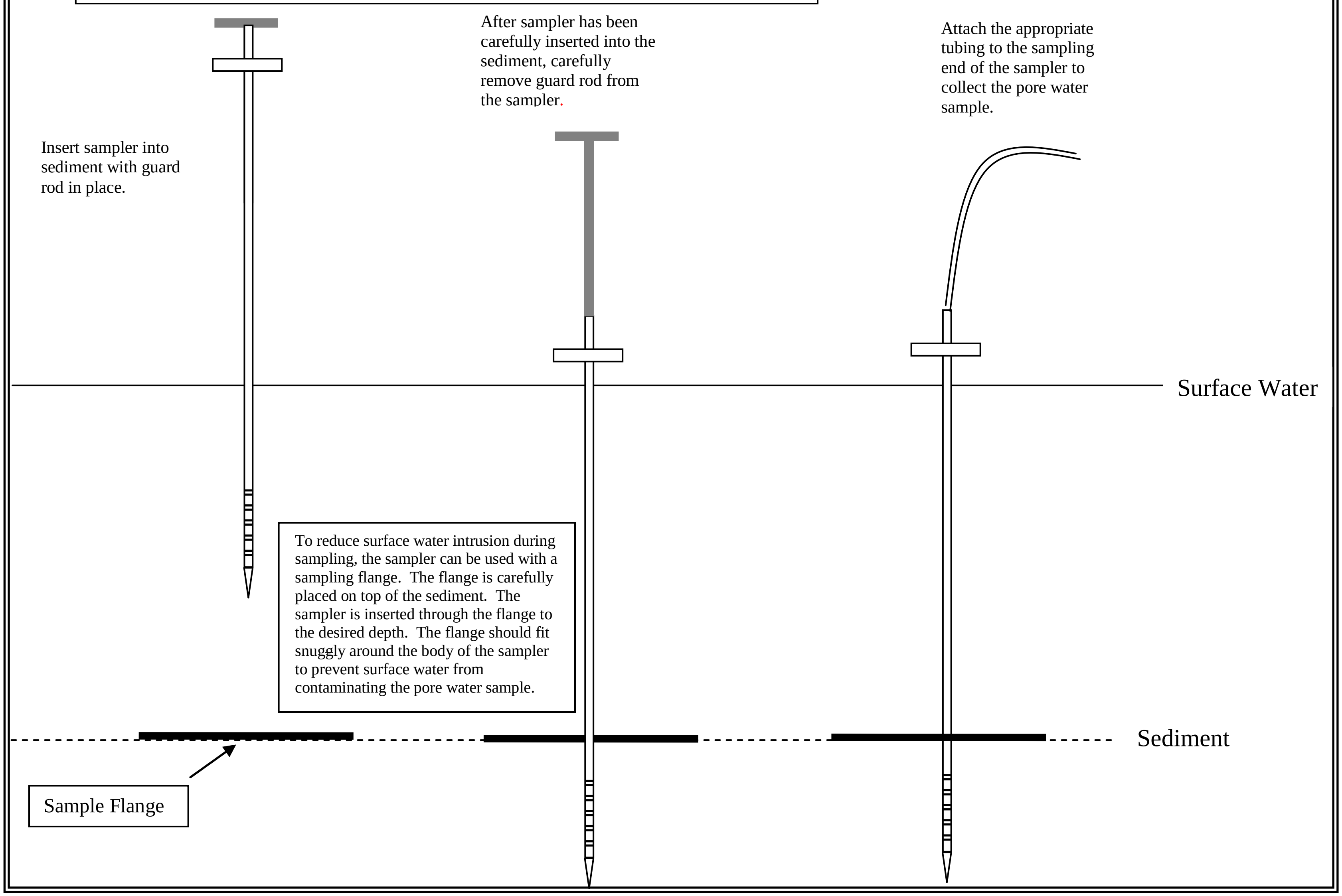

Figure 3. Pore Water Sampler Deployment Using a Peristaltic Pump to Sample