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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

The public reporting and recordkeeping burden for this collection of information is estimated to average 168 hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed survey to this address.

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:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	
41															
42			<u>Leachate Collection and Leak Detection Systems</u>												
43															
44		CBI?		F2-4.	Does the pond/impoundment unit have a system to collect <i>leachate</i> (including leaks, seepage, toe drains, or similar releases)?										
45		<input type="checkbox"/> Yes													
46															
47				<input type="radio"/> Yes											
48					<input type="checkbox"/> Leachate collection system										
49					<input type="checkbox"/> Leak detection system										
50					<input type="checkbox"/> Other collection system (specify):										
51															
52				<input type="radio"/> No	(Skip to Question F2-9)										
53															
54		CBI?		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.										
55		<input type="checkbox"/> Yes													
56															
57						gpd									
58					AND										
59						gpy									
60						Over									days
61					Description of estimation method:										
62															
63															
64		CBI?		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.										
65		<input type="checkbox"/> Yes													
66				<input type="radio"/> Yes											
67					<input type="checkbox"/> Uncontaminated stormwater										gpy
68					<input type="checkbox"/> Rainfall										gpy
69					<input type="checkbox"/> Select										gpy
70															
71															
72															
73					If other, explain:										
74				<input type="radio"/> No											
75															

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:
 - 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.
 - 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:

	A	B	C	D	E	F	G	H	I	J
1	OMB Control Number: 2040-0281				Plant ID:		Insert Plant ID			
2	Approval Expires: 05/31/2013				Plant Name:		Insert Plant Name			
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15	PART F - MANAGEMENT PRACTICES FOR PONDS/IMPOUNDMENTS AND LANDFILLS									
16	Table of Contents									
17										
18										
19										
20										
21	Section Title						Tab Name			
22										
23	Part F Instructions						Part F Instructions			
24	Pond/Impoundment and Landfill Use						Part F Section 1			
25	Pond/Impoundment Management Practices						Part F Section 2			
26	Landfill Management Practices						Part F Section 3.1			
27	Landfill Costs						Part F Section 3.2			
28	Leachate Treatment System Design						Part F Section 4.1			
29	Leachate Treatment System Flows						Part F Section 4.2			
30	Leachate Treatment System Units						Part F Section 4.3			
31	Leachate Treatment Unit Information						Part F Section 4.4			
32	Leachate Treatment System Costs						Part F Section 4.5			
33	Leachate Treatment System Equipment						Part F Section 4.6			
34	Groundwater Monitoring Practices						Part F Section 5			
35	Part F Comments						Part F Comments			
36	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-adjointing property and equipment that is under operational control of the facility, including non-adjointing 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 it is 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*.