



Water Conservation Plan Form Commercial / Industrial Use

GENERAL INFORMATION

DRAFT

8/2004

Applicant Name: _____

Facility Name: _____

CUP Number: _____

Date Plan Submitted: _____

Agent's Name: _____

Section 12.3.2.1 of the Applicant's Handbook States:

All individual permit applicants for commercial/industrial-type water uses must submit a water conservation plan for their facility to the District at the time of permit application. At a minimum, the plan must contain the following specific activities designed to conserve water:

- (a) An audit of the amount of water used in the applicant's various operational processes, landscaping practices and household facilities. Subsequent implementation of a leak detection and repair program will be required within the first year of permit issuance if analysis of the audit results indicates such measures would be cost effective. New permittees must conduct such an audit within two-years after permit issuance;
- (b) A program for making technological, procedural and/or programmatic improvements to the applicant's facilities and processes to decrease water consumption. Appendix I provides an outline of water conservation measures which the applicant may undertake to meet this requirement. Individual provisions in Appendix I are not requirements per se, and do not exclude alternative conservation measures the applicant may which to propose to the District;
- (c) An analysis of the economic, environmental and technical feasibility of reusing reclaimed water, recycling water on-site, utilizing the lowest acceptable quality water source and providing reclaimed water for reuse or stormwater for use;

- (d) Develop and implement an employee awareness and consumer education program concerning water conservation; and
- (e) Procedures and timeframes for implementation and for periodic assessment and revision of the water conservation plan.

In evaluating each proposed water conservation plan, the District will consider:

- The specific proposed use relative to other similar uses
- Available technology
- Economic feasibility

Section I – WATER AUDIT

New Applicants:

An audit must be conducted within 2-years following permit issuance.

New applicants are defined as new facilities and does not include existing violations or late renewals which are reclassified as “new uses”.

Renewing, Existing Violations and Expired Applicants:

An audit must be conducted prior to or as part of the CUP application process.

Purpose of Water Audit:

To help focus water conservation efforts via determination of system efficiency and identification of sources of water and revenue loss.

Minimum Required Information in Water Audit:

- Water audit component summary
- Unaccounted for water determination
- Leak detection cost feasibility
- Corrective active plan

WATER AUDIT COMPONENT SUMMARY

The following guidelines are designed to assist the applicant in collecting sufficient data necessary to conduct the required water audit. Each of the following components must be summarized unless it was submitted as part of the Consumptive Use Permit application. These summaries will allow you to accurately complete the Unaccounted For Water Worksheet and the Leak Detection Evaluation Worksheet.

Information to Summarize

- (a) Meter data (production and internal submeters)
- (b) Sources of water (wells, surface water, purchased potable water, reclaimed water)
- (c) Location, type and size of production facility meters
- (d) Length, material (pvc, steel) and type (above or below ground) of distribution system
- (e) High water use equipment and processes
- (f) How water is used in each unique process including details of how water is used by various equipment processes
- (g) Quality of water needed for each process
- (h) Equipment maintenance and replacement records
- (i) Prior water related surveys
- (j) Quantity of water being discharged
- (k) Location within facility and process stream of any pretreatment
- (l) Location of final effluent discharge (utility, receiving water body etc.)

UNACCOUNTED FOR WATER WORKSHEET

- The applicant must account for water flowing in and out of the facility for production, cooling, rinsing, transport, reaction, scrubbing, domestic uses, landscape irrigation and any other purposes.

Prepare a water balance model (diagram(s)) showing all the water flowing into the facility and leaving the facility. Within the facility, show the volumes of water used for each use (including landscape irrigation and domestic uses).

- What is the total annual amount of groundwater pumped in the last calendar year?

_____ million gallons

- Based upon internal submeters, estimate the volume of water (million gallons per day) used in the following processes.

	Process	Amount Groundwater Used (mgd)	Amount Surface Water Used (mgd)
1.	Process (manufacturing)		
2.	Boiler make-up		
3.	Cooling / heating		
4.	Domestic Use		
5.	Landscape Use		
6.	Other (explain) _____ _____		
7.	Total Use		
8.	Total annual use (multiply mgd x 365 days)	mgd	mgd

- Total unaccounted for ground water _____ mgd
(Question 2 minus Question 3-line 8)

- Percent of unaccounted for water _____ %
(Question 4 divided by Question 2 x 100)

6. Explain the methodology for estimating the groundwater volumes used.

7. What is the volume (million gallons per day) of groundwater lost within the facility?

Water Use	Groundwater Loss (mgd)
Steam evaporation	
Reservoir seepage or evaporation	
Cooling tower evaporation, drift and/or blowdown	
Firefighting	
Flushing of mains	
Failed meters	
Inaccurate meters	
Other (explain) _____	
Total Unaccounted for Water	
Total annual unaccounted for water (multiply mgd x 365 days)	

8. Explain the methodology for estimating groundwater volumes lost.

LEAK DETECTION EVALUATION WORKSHEET

- To demonstrate the cost effectiveness of a leak detection and repair program, complete the following worksheet.

Refer to the question numbers on the Unaccounted for Water Worksheet (UAW).

		Amount	Units
1.	Total annual unaccounted for water in system <i>(Question 4 UAW)</i>		mgy
2.	Estimated amount of total due to leakage <i>(SJRWMD typically estimates 50% of unaccounted for water)</i>		mgy
3.	Estimated recoverable leakage <i>(typically 80% of Question 2 UAW)</i>		mgy
4.	Purchase cost of water per year (if applicable)	\$	per/ 1,000 gallons
5.	Cost of chemicals for treatment per year	\$	per/1,000 gallons
6.	Cost of electricity for pumpage per year	\$	per/1,000 gallons
7.	Total production cost per year <i>(add lines 4 – 6)</i>	\$	per/1,000 gallons
8.	Average production cost per 1,000 gallons <i>(line 7 divided by line 1 of UAW x 1000)(????)</i>	\$	dollars
9.	One-year benefits from recovered leakage <i>(line 8 x line 3, divided by 1000)</i>	\$	dollars
10.	Total benefits from recovered leakage over two years <i>(line 9 x 2)</i>	\$	dollars
11.	Estimated cost of leak detection	\$	dollars
12.	Estimated time for cost recovery		years

**Section II –
TECHNOLOGICAL, PROCEDURAL AND/OR PROGRAMMATIC
IMPROVEMENTS MANAGEMENT**

Water Use Monitoring:

1. Are your production wells currently equipped with individual meters?

YES

NO

If yes,

What type of meter is used?

Totalizing in-line flow meter

Pump hour meter

Other (explain) _____

How often are your meters calibrated? _____

If no,

What type of meter(s) will be installed to meet District monitoring requirements?

2. Are specific processes or equipment monitored with submeters?

YES

NO

If yes,

(a) List the processes and equipment that are monitored with submeters.

(b) What types of submeters are used within each process?

(c) Provide a map or schematic diagram showing the location of each submeter and describe the process(es) each submeter monitors.

If no,

(a) Propose an implementation schedule to install submeters on processes and equipment in your facility to determine water usage within your facility. List processes and equipment that will be fitted with submeters.

Process Water:

1. What percentage of your groundwater withdrawals are used for process cooling? _____%

Check any of the following process cooling water conservation measures you have undertaken or plan to undertake. List implementation dates.

- Modifying equipment to operate a closed-loop cooling system Date _____
- Operating bleed-off on a continuous basis instead of using a "batch" method Date _____
- Installing conductivity and flow meters on make-up and bleed-off lines Date _____
- Replacing water-cooled equipment with air-cooled equipment Date _____
- Installing automatic controls to turn off units when they are not in use. Date _____
- Installing of sidestream filtration to improve water quality and decrease maintenance Date _____
- Using alternative treatment chemicals to reduce blowdown Date _____
- Increasing cycles of concentration ozone Date _____
- Recycling single-pass cooling water Date _____

- Using of a lower quality water source Date _____
- Other (explain _____
_____ Date _____

2. What percentage of your groundwater withdrawals are used for boiler or steam operations? _____%

Check any of the following boiler or steam water conservation measures you have undertaken or plan to undertake. List implementation dates.

- Regularly checking steam traps and lines for leaks Date _____
- Returning steam condensate to boiler Date _____
- Installation of an automatic blowdown control to better manage the treatment of make-up water Date _____

3. What percentage of your groundwater withdrawals are used for process rinse water and reaction baths? _____%

Check any of the following rinse and reaction bath water conservation measure you have undertaken or plan to undertake. List implementation dates.

- Using water recycled from other plant processes Date _____
- Using reclaimed water Date _____
- Using measured amounts of water instead of continuous stream flows Date _____
- Installing timers or shut-off valves to turn off water flow when processes are not in use Date _____
- Installing low volume / high pressure nozzles Date _____
- Using an automatic conductivity control to monitor rinse water concentration Date _____
- Using countercurrent rinses Date _____
- Using air-assisted rinses Date _____
- Reclaiming spent rinse water Date _____
- Other (explain) _____
_____ Date _____

4. What percentage of your groundwater withdrawals are used for fume and gas scrubbers? _____%

Check any of the following scrubber water conservation measures you have undertaken or plan to undertake. List implementation dates.

- Reducing flow rates Date _____
- Using recycled, reclaimed water or other lower quality source water Date _____
- Using or treating water discharged from the scrubbers Date _____
- Other (explain) _____
_____ Date _____

5. What percentage of your groundwater withdrawals are used for equipment, vehicle and/or surface washing? _____%

Check any of the following water conservation measures you have undertaken or plan to undertake. List implementation dates.

- Washing less often Date _____
- Discontinuing use of water for cleaning Date _____
- Using recycled water or reclaimed water for cleaning Date _____
- Installing a pre-rinse using recycled water Date _____
- Installing water controlled solenoids Date _____
- Increasing conveyor speed Date _____
- Reducing nozzle sizes Date _____
- Replacing worn jets Date _____
- Using high pressure rinses Date _____
- Other (explain) _____
_____ Date _____

6. What percentage of your groundwater withdrawals are used for other equipment and processing activities? _____%

Check any of the following other-equipment and/or process water conservation measures you have undertaken or plan to undertake. List implementation dates.

- Insulating hot water pipes Date _____
- Shutting off water to unused areas/equipment Date _____
- Switching from steam carpet cleaning to powder methods Date _____
- Overhauling steam traps on sterilizers Date _____
- Shutting off air conditioner to unused areas Date _____
- Handling waste materials in dry mode Date _____
- Other (explain) _____
_____ Date _____

7. What percentage of your groundwater withdrawals are used for domestic and/or kitchen facilities? _____%

Are your domestic facilities presently equipped with low flow plumbing fixtures?

YES NO

If yes,

Are the facilities equipped with the following low flow plumbing fixtures:

- | | | | |
|--|------------------------------|-----------------------------|------------------------------|
| ≤ 1.6 gallon per flush (gpf) toilets | YES <input type="checkbox"/> | NO <input type="checkbox"/> | N/A <input type="checkbox"/> |
| ≤ 1.0 gpf urinals | YES <input type="checkbox"/> | NO <input type="checkbox"/> | N/A <input type="checkbox"/> |
| ≤ 2.5 gallons per minute (gpm) showerheads | YES <input type="checkbox"/> | NO <input type="checkbox"/> | N/A <input type="checkbox"/> |
| ≤ 2.5 gpm kitchen faucets | YES <input type="checkbox"/> | NO <input type="checkbox"/> | N/A <input type="checkbox"/> |
| ≤ 2.0 gpm bathroom faucets | YES <input type="checkbox"/> | NO <input type="checkbox"/> | N/A <input type="checkbox"/> |

If any of these facilities is not equipped with low flow plumbing devices, propose an implementation schedule for converting these fixtures to low flow devices or provide an economic feasibility study explaining why you cannot convert to low flow devices.

Check any of the following kitchen water conservation measures you have undertaken or plan to undertake. List implementation dates.

- Installing flow reduction devices or shut-off valves on continuous flow faucets or dishwashing machines Date _____
- Running only full dishwasher loads Date _____
- Recycling final rinse water as prewash water Date _____
- Presoaking utensils and dishes before washing Date _____
- Installing a hot water on-demand system at sinks Date _____
- Eliminating use of water for food thawing Date _____
- Installing air-cooled condensers on ice-making machines or elimination of water-cooled ice-making machines Date _____
- Reusing cooling water from ice-making machines Date _____
- Using softened water for ice-making to reduce the amount of bleed-off Date _____
- Reusing steam table water for clean-up Date _____
- Other (explain) _____ Date _____

8. What percentage of your groundwater withdrawals are used for laundry facilities? _____%

Check any of the following laundry water conservation measures you have undertaken or plan to undertake. List implementation dates.

- Installing continuous batch washers Date _____
- Installing a rinse water reclamation system to reuse water Date _____
- Other recycling water where feasible and legal Date _____
- Washing only full loads Date _____
- Reducing water levels in washers Date _____
- Replacing older equipment with low water use model washers Date _____

- Installing coin-operated washing machines in common areas Date _____
- Implementing a laundry towel reduction program Date _____
- Other (explain) _____
_____ Date _____

9. What percentage of your groundwater withdrawals are used for recreational type use such as filling swimming pools? _____%

Check any of the following swimming pool water conservation measures you have undertaken or plan to undertake. List implementation dates.

- Lowering the pool level to reduce water loss Date _____
- Using a cover when the pool is not in use Date _____
- Using excess pool water for irrigation Date _____
- Other (explain) _____
_____ Date _____

10. What percentage of your groundwater withdrawals are used for landscape irrigation? _____%

Check any of the following landscape irrigation water conservation measures you have undertaken or plan to undertake. List implementation dates.

- Making soil improvements (i.e. using compost) Date _____
- Mulching Date _____
- Selecting low water-use trees, shrubs, groundcovers and perennials instead of high water use turf grass Date _____
- Reducing areas planted with turf grass Date _____
- Mowing turf grass higher to promote deeper plant rooting Date _____
- Planning and design of landscape areas for water conservation Date _____
- Using water efficient sprinklers Date _____
- Adjusting sprinklers to avoid watering sidewalks, streets and parking lots Date _____

- Adjusting sprinklers to concentrate water at plant roots instead of on leaves and trunks Date _____
- Eliminating overwatering by using soil moisture monitoring devices to determine when plants need watering Date _____
- Using a nozzle or sprayhead with an automatic shut-off valve for hand watering Date _____
- Adjusting watering schedules based upon the time of the year Date _____
- Inspecting the irrigation system regularly for leaks and repairs Date _____
- Other (explain) _____ Date _____

(a) How many acres of landscape areas are irrigated? _____

(b) Has water efficient landscaping (xeriscape, Florida Friendly or Waterwise principles) been incorporated into the design of the landscape areas?

YES NO

If no,

Propose an implementation schedule for planting or converting existing landscape areas to incorporate water efficient landscaping principles or provide an economic feasibility study as to why this type of planting cannot be done.

(c) List the types of plants planted or proposed for planting in your landscape areas.

(d) Is the irrigation system designed so that plants with similar irrigation requirements are on the same irrigation zone and plants (for example,

annuals, drought tolerant shrubs and turf grasses) with different water needs are on separate irrigation zones?

YES NO

If no,

Propose a plan to redesign the irrigation system and landscape areas so that plants with similar irrigation requirements are irrigated together or provide an explanation as to why this type of design cannot be implemented.

(e) Of the total landscape acreage provided above, what percent is turf grass?

_____ %

Propose a plan to reduce the areas of turf grass and replace these areas with native or drought tolerant plants/vegetation that require less irrigation.

Note: Information on plants that require less irrigation (xeriscape, Florida friendly and Waterwise) is available on the District's web site at www.sjrwmd.com. Follow the link for Water Restrictions/Water Conservation.

(f) Florida Statute, Part VI, Chapter 373.62 requires the installation of rain sensors. Are rainfall shut-off sensors installed on the irrigation system?

YES NO

If yes,

Do the sensors operate individual irrigation controllers or multiple irrigation controllers?

Individual Multiple

If no,

Provide a schedule for installing rainfall shut-off sensors on each irrigation controller on your irrigation system.

(g) Rain-sensors must be maintained and operational in accordance with the manufacturer's specifications on each irrigation controller for CUP duration. Are existing rainfall shut-off sensors regularly checked to ensure that they are working in accordance with the manufacturer's design specifications?

YES NO

If yes,
Describe maintenance check schedule.

If no,
Propose maintenance check schedule.

(h) Summarize your maintenance and repair schedule by indicating when each of the following tasks are done.

(A) weekly (B) monthly (C) every time you irrigate
(D) as needed (E) not feasible (F) not applicable

Develop or update a water use management plan.

A B C D E F

Repeat water use efficiency assessment.

A B C D E F

Monitor flow rates and system pressures for leak and clog detection system-wide.

A B C D E F

Implement a comprehensive leak detection and repair program.

A B C D E F

Inspect and recalibrate all master meters.

A B C D E F

Inspect and recalibrate all sub-meters.

A B C D E F

Computerize records for each meter by type, size, serial number, usage, repair history, etc.

A B C D E F

Install fire line use meters in buildings.

A B C D E F

Install taps for in-line testing of meters of three-inches.

A B C D E F

Increase frequency of meter readings.

A B C D E F

Clean system seals, valves, filters, meters, etc.

A B C D E F

Other maintenance.

(explain): _____

A B C D E F

Section III – LOWEST QUALITY WATER SOURCE

As part of this permit application, the SJRWMD requires that a feasibility analysis of the availability of a lower quality source of water be completed. This analysis includes an evaluation of the availability of reclaimed water, stormwater and surface water, as well as other potentially reliable sources of water.

Section 10.3 (f) and (g) of the Applicant’s Handbook State:

When reclaimed water is readily available it must be used in place of higher quality water sources unless the applicant demonstrates that its use is either not economically, environmentally or technologically feasible.

The lowest quality water source, including reclaimed water or surface water (which includes stormwater), which is addressed in paragraph 40C-2.301(4)(f), must be utilized for each consumptive use.

Reclaimed water is water that meets or exceeds FDEP standards for reuse and that is reused for a beneficial purpose after flowing out of a wastewater treatment facility.

RECLAIMED WATER

Do you currently use or propose to accept reclaimed water for irrigation, process make-up or cooling water, or if you are constructing a facility, will you be utilizing reclaimed water once the facility is constructed?

YES NO

If yes, answer the following questions:

1. Provide the owner and name of the facility providing the reclaimed water.

2. Provide the date that reclaimed water became or will become available. _____

3. Provide the quantity (million gallons per year) of reclaimed water you anticipate to accept for each year of the requested permit duration.

Year	Amount of Reclaimed Water (mgy)

Year	Amount of Reclaimed Water (mgy)

4. List all of the areas in your facility where reclaimed water is used.

5. Is the reclaimed water discharged into a surface water body or is it delivered via a pipeline?

Surface water

Pipeline

If surface water,

Provide the name of the holding pond(s) _____

Is the pond lined? YES NO

Is the pond part of a stormwater management system? YES NO

If yes,

Is the pond interconnected with other ponds? YES NO

If yes,

Does the pond have a control structure that prevents water from flowing out of the holding pond into the other ponds? YES NO

If no, answer the following questions:

1. Provide the name, address and contact person for all wastewater facilities within a 5-mile radius of your site.

2. Have you contacted these individuals about the availability of reclaimed water?

YES NO

Provide a written response from each facility detailing the availability of reclaimed water over the requested permit duration timeframe.

3. If you have determined that it is not feasible to accept reclaimed water at this time, provide documentation showing that it is not economically, environmentally or technologically feasible to accept reclaimed water.

SURFACE WATER

Do you currently use or are you proposing to use any surface water sources for irrigation or process water at your facility?

YES NO

If yes, answer the following questions:

1. List all processes in your facility that use surface water

2. What is the source of the surface water?

- Stormwater management system
- Natural lake
- River
- Other (explain) _____

3. Do you augment the surface water source with groundwater wells?

YES NO

If yes,

Do you monitor the surface water level and begin and cease augmentation at prescribed levels?

YES NO

If yes,

Provide the water level that augmentation begins and the water level augmentation ceases.

If no,

Propose an implementation schedule to establish a water level regulation schedule or provide an explanation of why it cannot be undertaken.

4. Are any other non-potable sources of water used for landscape irrigation?

YES NO

If yes, explain.

GROUNDWATER

Is groundwater used or proposed to be used for irrigation?

YES

NO

If yes, answer the following questions:

1. What is the source of the groundwater?

- Surficial aquifer
- Intermediate aquifer
- Floridan aquifer
- Do not know

If Floridan aquifer,

Is your project located in an area where water in the Floridan aquifer is potable (drinking water quality)?

YES

NO

Do not Know

If yes,

Provide an evaluation of the feasibility of using lower quality water from a reclaimed water source, surface water source or the surficial or intermediate aquifers instead of the Floridan aquifer for irrigation.

2. Are the groundwater wells plumbed directly into the irrigation system?

YES

NO

3. Is the groundwater used for augmentation of a surface water body that is used for irrigation?

YES

NO

If yes,

Provide the name of the surface water body _____

Provide the acreage of the surface water body _____

Is the surface water body lined? YES NO

If yes,
What type of material is the liner? _____

Section IV – CUSTOMER AND EMPLOYEE EDUCATION

The water conservation plan must contain an education program. If you have not implemented a program to date, propose an implementation or provide information why this program cannot be implemented.

If you have undertaken an education program, provide examples of water conservation information you provide to the players and employees.

Using the appropriate letter, indicate which of the following player education and employee awareness activities are currently being implemented and which you plan to implement and when.

(C) Currently implemented (P) Proposed to be implemented

C or P	Activity	Date activity was implemented or is proposed to be implemented
	Using paycheck stuffers to provide water conservation tips and information to employees.	
	Using special mailings, memos or email to provide water conservation tips and information to employees or customers.	
	Using a company newsletter to provide water conservation tips and information.	
	Conducting public tours of your facility.	
	Writing new and/or revising employee operating guides and manuals that describe changes made to implement water conservation activities.	
	Operating information booths that include water conservation literature, at special events.	
	Seeking employees' ideas for water conservation using contests or reward programs.	
	Using a water conservation suggestion box where employees can submit ideas on how the organization can save water.	
	Installing signs in restrooms encouraging water conservation.	
	Displaying table signs encouraging water conservation.	
	Serving water only when requested by customer.	
	Appointing an employee water conservation coordinator to design and implement your internal water conservation plan.	
	Conducting other employee awareness activities (explain)	

2. Of the education and awareness programs you have implemented, which have been particularly effective?

3. Of the education and awareness programs you have implemented, which have not been effective? Why?

Section V – PLAN IMPLEMENTATION SCHEDULE SUMMARY

In this section please summarize the Water Conservation Plan that you have prepared using this form and be sure to apply an implementation schedule for each activity or action you have indicated will occur within your requested CUP duration. Water conservation activities must span the duration of the permit.

Activity	Proposed Date of Implementation

Note: A progress report may be required to be submitted at a time specified in permit conditions to address the implementation of these activities.

Please keep a copy of this plan for your records.

Please sign and date this plan:

Signature

Date

Phone Number