Environmental Information Document Review Checklist

Environmental Information Document Project Name:	*Page*	*Adequate*	*Inadequate*	*Not Applicable*
A. Proposed Project and Funding Status				
1. Project Purpose and Need (select at least one)				
a. Water Quality/Water Quantity Problems				
b. Public Health Concerns				
c. Inadequate System or System Components				
d. More Stringent Effluent Limits (**wastewater only**)				
(1) Existing Effluent Limitations				
(2) Proposed Effluent Limitations				
e. Other (specify:)				
2. Project Description				
a. Project Summary				
b. Planning Area Description (including a map with facilities)				
c. Planning Period (time period)				
d. Description of Project Construction Phases				
e. Owner and Operator of the Facilities				
f. Location of the Facilities				
g. 8.5 X 11 inch, Black and White Project Map Suitable for Distribution				
h. capacity				
3. Relevant Design Parameters				
a. Description of Major Unit Processes				
b. Flow Diagram				
c. Sewer/Water Pipe Lengths, Sizes, and Locations				
d. Basic Design Criteria				
e. Design Storm(s)				
f. Description of Major Storm Water Components (Structural and Non-Structural)				
g. Estimated Pollutant Removal Capability (i.e., performance criteria of structural components)				

h. Other				
i. Calculate annual energy requirements*				
j. Determine source of energy and GHG emissions*				
k. Calculate annual water requirements*				
l. Water efficiency measures?*				
m. Energy Efficiency measures?*				
n. Renewable Energy produced?*				
o. Green infrastructure?*				
p. Reuse program implemented?				
p. Proposed Total Project Cost				
q. Portion of Total Project Cost Funded by EPA				
r. List of Amount, Sources, and Status of All Funding Sources				
B. Existing Environment As Pertains to Project				
1. Public Health Problems Due to Water Quality				
2. Water Quality Problems, Fish Kills, etc.				
3. Water Quantity Problems (drought, arid conditions, groundwater overdrafts, location of water source from site?)				
3. Surface & Ground water Hydrology				
4. Drinking Water Sources and Supply				
5. Physiography, Topography, Geology & Soils				
6. Federally Endangered & Threatened Species				
7. Air Quality (non-attainment area needs state sign-off)				
8. Environmental Justice Information				
a. Conditions, Minority & Low Income Areas (include median family income)				
b. Census Maps				
9. Land Use & Development, Percent Impervious Cover, Pollutant Sources				
10. Identification of Floodplains and Wetlands				
C. Existing Wastewater/Drinking Water/Storm Water System				
1. General Description of Wastewater Collection & Treatment and Storm Water System & Map				

2. Existing Wastewater System (**wastewater only**)				
a. Wastewater Flows: Current Average, Peak, Wet Weather				
b. Influent Characteristics				
c. Major Industrial Users				
d. Residuals (sludge) Disposal				
e. Service Area				
f. Infiltration and Inflow				
g. Present capacity (is there excess capacity in digesters?)				
h. Calculate annual energy requirements*				
i. Determine source of energy and GHG emissions*				
j. Calculate annual water requirements*				
k. Water efficiency measures?*				
l. Energy Efficiency measures?*				
m. Renewable Energy produced?*				
n. Green infrastructure?*				
o. Reuse programs implemented?				
D. Existing Drinking Water System (drinking water only)				
1. Description of Treatment and Distribution System				
a. Water Demand: Average, Peak				
b. Surface Water Source (intake locations, permitted and actual withdrawal)				
c. Ground water Source (wells & well fields)				
d. Water Storage				
e. Raw Water Characteristics				
f. Residuals (sludge) and Backwash Disposal				
g. Service Area				
h. Calculate annual energy requirements*				
i. Determine source of energy and GHG emissions*				
j. Calculate annual water requirements*				
k. Water efficiency measures?*				
l. Energy Efficiency measures?*				
m. Renewable Energy produced?*				

n. Green Infrastructure?				
E. Existing Storm Water System (storm water only)				
1. Detailed Description of Existing Storm Water System				
a. Description of Major Structural Components				
b. Description of Non-Structural Components/Actions-full cost pricing				
c. Design Parameters/Performance Criteria/Permits.				
d. Existing capacity and reuse program				
e. Green infrastructure?*				
F. Existing System Performance				
1. National Pollutant Discharge Elimination System (NPDES) Violations				
2. Safe Drinking Water Act Violations				
3. Other System Problems				
G. Need for Proposed Project				
1. Expanded Description of Need				
2. Land Use Projections/Impervious Cover/Pollutant Sources				
3. Population Forecast/Projections				
4. Calculations and Assumptions for Forecasted Flow and Waste load				
5. Future Environment Without the Project				
H. Analysis of Alternatives				
1. Development of Alternatives				
a. No-action				
b. Optimum Utilization of existing facility				
* (1) Renewable Energy Produced?				
* (2) Reuse Program Implemented?				
*(3) Water and Energy Efficiency measures?				
* (4) Green Infrastructure?				
c. New Construction Alternatives				
d. Source Reduction				
e. Non-structural and Structural Storm Water System Components				
2. Alternative Screening (discussion for each				

alternative)				
a. Criteria for Evaluating Alternatives				
b. Assigning Weights for Criteria				
i. Present Worth or Equivalent Annual Cost				
ii. Reliability				
iii. Complexity				
iv. Environmental Factors				
v. Feasibility (constraints)				
vi. Flexibility				
vii. Water/Energy use comparison*				
3. Identification of Preferred Alternative				
I. Environmental Consequences and Mitigation Measures for Preferred, No Action, and Alternative Options				
1. Direct				
2. Secondary impacts of future growth & development				
a. GHG Emissions*				
b. Water/Energy use comparison*				
3. Unavoidable Adverse Impacts				
4. Minimization of Adverse Impacts				
5. Mitigation				
6. Cross-cutter Environmental Laws and Coordination and Consultation Process				
a. Archeological Resources				
b. Air Quality				
c. Coastal Barrier Resources				
d. Coastal Zones				
e. Endangered Species				
f. Environmental Justice				
g. Floodplains				
h. Wetlands				
i. Protected Farmlands				
j. Fish and Wildlife				
k. National Historic Resources				
l. Drinking Water Supplies				
m. Wild and Scenic Rivers				
n. Essential Fish Habitat				
7. Intergovernmental Review per Executive Order 12372				
8. Necessary Permits (NPDES, wetlands) issued				

9. Necessary Inter-municipal Agreements Executed				
J. Public Participation				
1. Summary of Public Participation				
2. Documentation of any Public Participation				
a. Public Meeting Date & Record if applicable				
c. Copy of any Publication/Copy of Newspaper Advertisement				

*Encouraged but not required

Appendix A: Additional Information on Suggested SI Measures

1. Calculate annual energy requirements (relates to A.3.i.; C.2.h.; D.1.h.))

A facility's energy bill or their service provider can provide this information.

OR

A facility can track its energy use with ENERGYSTAR's Portfolio Manager (https://www.energystar.gov/istar/pmpam/).

2. Determine source of energy and GHG emissions (relates to A.3.j.; C.2.i.; D.1.i.; I2.a.)

A facility's service provider can provide this information.

OR

A facility can use EPA's Power Profiler (http://www.epa.gov/cleanenergy/energy-and-you/how-clean.html) to:

- Determine power grid region based on ZIP code and electric utility
- Compare the fuel mix and air emissions rates of the electricity in facility's region to the national average
- Determine the air emissions impacts of electricity use

OR

A facility can find out what their sources of energy are and calculate their GHG emissions with ENERGYSTAR's Portfolio Manager (https://www.energystar.gov/istar/pmpam/).

3. Calculate annual water requirements (relates to A.3.k.; C.2.j.; D.1.j.)

The National Renewable Energy Laboratory's 2003 document, "Consumptive Water Use

of U.S. Power Production" (http://www.nrel.gov/docs/fy04osti/33905.pdf) lists how many gallons of water are consumed per kWh of electricity consumed by the end-user, for each State; the quantity is based on the State's energy-mix. Weighted total site water for Arizona, for example, is 7.85 gallons per kWh, meaning that for every kWh of electricity consumer in AZ, 7.85 gallons of water were also consumed through the production of that energy.

United States Water Consumption per kWh of Energy Consumed by State

State	Thermoelectric Site Power million kWh/Year	Hydroelectric[1] Site Power million kWh/Year	Thermoelectric Site Water Gallons/kWh	Hydroelectric Site Water Gallons/kWh	Weighted Total Site Water Gallons/kWh
Arizona	62,551	8,763	0.32	64.85	7.85
Nevada	18,104	2,510	0.56	73.33	7.25
California	72,800	9,130	0.05	20.87	4.64
Hawaii	6,102	0	0.04	N/A	0.04

4. Water efficiency measures (relates to A.3.l; C.2.k.; D.1.k.; H.1.b.3.)

WaterSense partnership
A utility can join WaterSense as a **promotional partner**:
(http://www.epa.gov/watersense/partners/join/promote.htm)

Water Conservation Plan
Strategic use of water conservation can help extend the value and life of infrastructure assets used in both water supply and wastewater treatment. These guidelines provide strategies for communities to implement water conservation plans.
http://www.epa.gov/watersense/pubs/guide.htm

Water Use Audits
Water-use or end-use audits can provide water systems and their customers with invaluable information about how water is used and how usage might be reduced through specific conservation strategies.
http://www.epa.gov/watersense/docs/app_a508.pdf (pg. 149)

Leak detection equipment and water loss control:
Inefficiencies in water distribution systems like underground water leakage result in lost water, lost revenue, and unnecessary increases in pumping, treatment and operational costs. To combat water loss, many utilities are developing methods to detect, locate, and correct leaks.
http://www.epa.gov/WaterSense/docs/utilityconservation_508.pdf

Asset Management

For wastewater management utilities, asset management can be defined as managing infrastructure capital assets to minimize the total cost of owning and operating them, while delivering the service levels customer's desire. It is successfully practiced in urban centers, and large and small sewer collection systems to improve operational, environmental, and financial performance (includes such measures as modified flow and energy demand programs and software).
http://www.epa.gov/OWM/assetmanage/index.htm

Universal Metering
Installing meters at unmetered households, replacing meters, improving meters to help track and analyze community water use, and developing an accurate meter reading and system map are various ways a community can use meter to track and reduce water use.
http://www.epa.gov/WaterSense/docs/utilityconservation_508.pdf

Water Rate Reform
Prices signal value to consumers and it is important for prices to reflect the increasing scarcity of water. Pricing water to accurately reflect the true costs of providing high quality water and wastewater services to consumers is needed to both maintain infrastructure and encourage conservation.
http://www.epa.gov/waterinfrastructure/pricing/index.htm

Greywater Ordinance/Building Code
Cities and States across the country are developing ordinances and evolving building codes to allow greywater for irrigation use and for flushing toilets. Here are a few examples:
Model Ordinance: www.oasisdesign.net/downloads/ModelGreywaterOrdinance.doc
City of Tucson: http://www.ci.tucson.az.us/water/docs/graywaterord.pdf
Oregon: www.cbs.state.or.us/bcd/programs/plumbing/alt_methods/Wastewater_Conservation_Systems.pdf

Rainwater Catchment Ordinances/Building Code
Cities and States across the country are developing ordinances and evolving building codes to allow rainwater catchment for outdoor and indoor use. Here are a few examples:
Oregon: www.cbs.state.or.us/bcd/programs/plumbing/alt_methods/Rainwater_Harvesting_Potable.pdf (potable)
www.cbs.state.or.us/bcd/programs/plumbing/alt_methods/Rainwater_Harvesting_Non-potable.pdf (non-potable)
Tucson: http://www.ci.tucson.az.us/water/docs/rainwaterord.pdf
San Francisco:

Environmental Management System
An Environmental Management System (EMS) is a set of processes and practices that enable an organization to reduce its environmental impacts and increase its operating efficiency. This Web site provides information and resources related to EMS for businesses, associations, the public, and state and federal agencies.
http://www.epa.gov/ems/

Water Reuse/Recycling program
Water recycling is reusing treated wastewater for beneficial purposes such as agricultural and landscape irrigation, industrial processes, toilet flushing, and replenishing a ground water basin (referred to as ground water recharge).
http://www.epa.gov/region09/water/recycling/index.html

Pressure Management
Reducing excessive pressures in the distribution system can save a significant quantity of water. Reducing water pressure can decrease leakage, amount of flow through open faucets, and stresses on pipes and joints which may result in leaks. Lower water pressure may also decrease system deterioration, reducing the need for repairs and extending the life of existing facilities. Furthermore, lower pressures can help reduce wear on end-use fixtures and appliances.
http://www.epa.gov/watersense/docs/app_a508.pdf (pg. 151)

Landscape Efficiency
Outdoor water usage drives maximum-day demand, which in turn drives requirements for transmission and treatment facilities. Reducing outdoor usage can thus be a very effective conservation strategy. Outdoor water use can be reduced through efficiency-oriented landscaping principles.
http://www.epa.gov/watersense/docs/app_a508.pdf (pg. 152)

Replace and promotions
In order to accelerate the replacements of older fixtures, utilities can offer rebates and other incentives. Utilities can install water-efficient fixtures by providing fixtures at no cost, giving a rebate for consumer purchased fixtures, or arranging suppliers to provide fixtures at a reduced price. Utilities can design incentive rebate programs that are targeted to the nonresidential and residential sectors, and to indoor and outdoor uses.
http://www.epa.gov/watersense/docs/app_a508.pdf *(pg. 153)*

Water-use standards and regulations
Regulations should be in place to manage water use during droughts or other water-supply emergencies. In some cases, utilities may find it desirable to extend water-use regulations to promote conservation during nonemergency situations.
http://www.epa.gov/watersense/docs/app_a508.pdf (pg. 154)

5. Energy Efficiency measures (A.3.m.; C.2.l.; D.1.l.; H.1.b.3)

Environmental Management System
An Environmental Management System (EMS) is a set of processes and practices that enable an organization to reduce its environmental impacts and increase its operating efficiency. This Web site provides information and resources related to EMS for businesses, associations, the public, and state and federal agencies.
http://www.epa.gov/ems/

Compile Baseline Data
A facility can be benchmarked (only wastewater treatment facilities can be benchmarked)

and track its energy use with ENERGYSTAR's Portfolio Manager (https://www.energystar.gov/istar/pmpam/).

Conduct Energy Audit

Performing an energy audit, or a baseline energy evaluation, is a crucial step to assessing and improving energy efficiency. There are many types of energy audits that can be performed at water and wastewater treatment facilities, ranging from general walk-through audits to more comprehensive systematic process audits analyzing one or more end uses. http://www.epa.gov/region09/waterinfrastructure/audit.html

Implement Energy Efficiency improvements:

Facilities have many options to conserve energy ranging from changing light bulbs and upgrading pumps and motors to installing co-generation systems and renewable energy technologies. Here are a few examples:

1) Shift to off peak hours

2) Water Efficiency

3) Reduced friction in valves and pipes

4) More efficient motors: install energy efficient motors, properly-sized and maintained motors

5) More efficient pumps: use variable frequency drives, maintain pumps, automate pump operations, and reduce friction losses.

6) More efficient aeration Systems: variable and multiple speed blowers, properly-sized blowers

7) More efficient lighting: utilize natural light, reduce lighting levels, use motion-based/occupancy-based lighting, and use compact fluorescent bulbs.

8) More efficient HVAC: seal leaks, properly size, consider occupancy.

9) More energy efficiency methods of disinfection

10) Less aeration systems or reduced aeration through alternative operation management

Additional examples and case studies can be found at the following website: http://www.epa.gov/region09/waterinfrastructure/technology.html

Asset Management

For wastewater management utilities, asset management can be defined as managing infrastructure capital assets to minimize the total cost of owning and operating them, while delivering the service levels customer's desire. It is successfully practiced in urban centers, and large and small sewer collection systems to improve operational, environmental, and financial performance (includes such measures as modified flow and energy demand programs and software).
http://www.epa.gov/OWM/assetmanage/index.htm

6. Renewable Energy production (related to A.3.n; C.2.m; D.1.m.; H.1.b.1.)

The Green Power Partnership
A voluntary program that supports the organizational procurement of green power by offering expert advice, technical support, tools and resources.
http://www.epa.gov/greenpower/

Renewable Energy Generation
The EPA Region 9 Sustainable Infrastructure website provides numerous examples of Water and Wastewater facilities powering their operations with solar, wind, and even waste, like FOG (Fats, Oil, and Grease) and food waste, which
http://www.epa.gov/region09/waterinfrastructure/technology.html#renew

Combined heat and power (CHP)
CHP, also known as cogeneration, is an efficient, clean, and reliable approach to generating power and thermal energy from a single fuel source. By installing a CHP system designed to meet the thermal and electrical base loads of a facility, CHP can greatly increase the facility's operational efficiency and decrease energy costs. At the same time, CHP reduces the emission of greenhouse gases, which contribute to global climate change.
http://www.epa.gov/chp/

7. Green infrastructure (related to A.3.o; C.2.n.; D.1.n.; H.1.b.4)

Green infrastructure is an approach to wet weather management that is cost-effective, sustainable, and environmentally friendly. Green Infrastructure management approaches and technologies infiltrate, evapotranspire, capture and reuse stormwater to maintain or restore natural hydrologies.
http://cfpub.epa.gov/npdes/home.cfm?program_id=298

Riparian buffers: http://cfpub.epa.gov/npdes/greeninfrastructure/technology.cfm#ripbuffers
Green streets and highways: http://cfpub.epa.gov/npdes/greeninfrastructure/technology.cfm#greenstreets
Planter boxes: http://cfpub.epa.gov/npdes/greeninfrastructure/technology.cfm#planterboxes
Down spout connection: http://cfpub.epa.gov/npdes/greeninfrastructure/technology.cfm#downspout
Rain gardens: http://cfpub.epa.gov/npdes/greeninfrastructure/technology.cfm#raingardens
Green parking: http://cfpub.epa.gov/npdes/greeninfrastructure/technology.cfm#greenparking
Permeable pavements: http://cfpub.epa.gov/npdes/greeninfrastructure/technology.cfm#permpavements
Rain harvesting: http://cfpub.epa.gov/npdes/greeninfrastructure/technology.cfm#rainharvesting
Swales: http://cfpub.epa.gov/npdes/greeninfrastructure/technology.cfm#vegswales
Pocket wetlands: http://cfpub.epa.gov/npdes/greeninfrastructure/technology.cfm#pocketwetlands
Green roofs: http://cfpub.epa.gov/npdes/greeninfrastructure/technology.cfm#greenroofs
Urban forestry: http://cfpub.epa.gov/npdes/greeninfrastructure/technology.cfm#urbanforestry

8. Reuse programs implemented (related to A.3.p.; C.2.o.; H.1.b.2)

Water recycling is reusing treated wastewater for beneficial purposes such as agricultural and landscape irrigation, industrial processes, toilet flushing, and replenishing a ground water basin (referred to as ground water recharge).
http://www.epa.gov/region09/water/recycling/
Guidelines for Water Reuse: www.epa.gov/ord/NRMRL/pubs/625r04108/625r04108.pdf

9. Water and Energy Use Comparison (related to H.2.b.vii.; I.2.b)

Energy: Ask the grantee to calculate the energy requirements and subsequent GHG emissions associated with the various alternatives.

Water: Ask the grantee to calculate the water consumption caused by energy consumption associated with the various alternatives: Refer to the National Renewable Energy Laboratory's 2003 document, "Consumptive Water Use of U.S. Power Production.
http://www.nrel.gov/docs/fy04osti/33905.pdf