



DRINKING WATER STATE REVOLVING FUND (DWSRF) LOAN PROGRAM

PRELIMINARY ENGINEERING REPORT REQUIREMENTS

The Preliminary Engineering Report (PER) is a document that provides the information necessary for the State Revolving Fund (SRF) Loan Program to determine the technical, economic, and environmental adequacy of the proposed drinking water infrastructure project in accordance with Indiana Code 4-4-11 and 13-18-21. Approval of a PER by the SRF Loan Program is for administrative purposes only and does not relieve the public water system of its responsibility to properly design, build, and effectively operate and maintain the drinking water system. An electronic version of this document is available at www.srf.in.gov.

PER SUBMITTAL REQUIREMENTS:

1. All correspondence to the SRF Loan Program, including the PER, must be sent with a transmittal letter signed by Authorized Signatory
2. PER and all correspondence must be dated
3. PER must be 3-hole punched and in binder
4. Three copies of PER must be submitted
5. A table of contents, list of graphics, list of tables and list of appendices, if applicable, must be included;
6. Submit PER to:
DWSRF Program Administrator
State Revolving Fund Loan Program
100 N. Senate Avenue, Rm. 1275
Indianapolis, IN 46204

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CHAPTER 1 - PROJECT LOCATION

1. On a USGS Quadrangle map(s), identify the location of the:
 - a. Proposed project areas (water line routes, wells, tanks, etc.) and overall study area
 - b. Existing service area
 - c. Future 20-year service area
 2. Specify the Quadrangle map(s) name, Section(s), Township(s) and Range(s).
 3. Identify whether the Participant owns or has legal access to the land where the proposed project will be located. Include a statement indicating if the proposed project will be constructed within the city/county/town right-of-way. If it is not, the Participant will need to provide evidence that it has, or will have by a mutually agreeable date, the required property rights prior to closing an SRF loan.
 4. Include a North arrow and Bar Scale on all graphics
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CHAPTER 2 - CURRENT NEEDS

1. Describe the existing system in terms of age, condition, date of most recent rehabilitation/replacement of facilities.
 - a. Distribution system – possible needs
 - i. Facilities at end of useful life
 - ii. Pressure and flow
 - iii. Dead ends
 - iv. Operational problems
 - v. New lines to serve existing homes; identify the drinking water problem facing these homes
 - b. Supply – possible needs
 - i. Facilities at end of useful life
 - ii. Undersized
 - iii. Operational problems
 - c. Storage - possible needs
 - i. Facilities at end of useful life
 - ii. Undersized
 - iii. Operational problems
 - d. Treatment – possible needs
 - i. Facilities at end of useful life
 - ii. Undersized
 - iii. Operational problems
 - e. Document needs with:
 - i. Indiana Department of Environmental Management violations
 - ii. Connection ban / early warning
 - iii. Agreed or administrative order
 - iv. New requirements
 - v. Letter from County Health Department
2. Identify current population
3. Identify existing consumption for the last 12 months and show calculations:
 - a. Pumped vs. sold
 - b. Estimated public water use (flushing, fire protection, etc.)
 - c. Percent water loss
 - d. Domestic, commercial/institutional, industrial
 - e. Average design flow

- f. Peak design flow, including peaking factor, peak daily demand, and one hour peak demand
 - g. WTP flow and backwash water (if applicable)
4. Describe current significant water users
 - a. Commercial
 - b. Industrial
 - c. Institutional (schools, jails, hospitals, etc.)
 5. Provide layouts / site maps of existing drinking water system
-

CHAPTER 3 - FUTURE NEEDS

1. Provide 20-year population projection with explanation for reasonable growth, based upon:
 - a. Census data
 - b. Building permits
 - c. Current development trends – indicate if development is platted
 - d. Future significant users
2. Identify 20-year design flows (refer to Table I)
 - a. Domestic
 - b. Commercial/Institutional
 - c. Industrial
 - d. Average design flow
 - e. Average daily water demand
 - f. Peak design flow, including peaking factor, peak daily demand, and one hour peak demand
3. Describe the 20-year needs of system
 - a. Distribution system
 - b. Supply
 - c. Storage
 - d. Treatment

Table I: Design Treatment Plant Flows (gallons per day)

Domestic (D)	
Commercial (C)	
Industrial (I)	
Total D,C, I	
Average Design Flow	
Peak D,C, I	
Peaking Factor	
Peak Design Flow	

CHAPTER 4 - EVALUATION of ALTERNATIVES

1. Identify a range of feasible alternatives, including:
 - a. No action
 - b. Optimum operation of existing facility
 - c. Rehabilitation vs. replacement
 - d. Expansion / upgrade
 - e. Reducing water loss should be evaluated if project proposes new wells, new treatment or new storage facilities

- f. Regionalization
 - g. Treatment alternatives
 - h. Sludge handling and disposal (if applicable)
 - i. Discharge option (if applicable)
2. Provide a rationale for selection of recommended alternative:
 - a. Monetary
 - b. Technical
 - c. Reliability
 - d. Ability to implement
 - e. Environmental impacts

CHAPTER 5 – EVALUATION of ENVIRONMENTAL IMPACTS

1. Follow the “SRF PER Environmental Evaluation Section: Procedures and Language” and the “SRF Environmental Graphics Guidance”. The most recent versions are available at www.srf.in.gov and by request.
 2. Provide a description of the proposed facility sites and line routes. Regardless, if the proposed project will be located in an easement or existing right-of-way describe those areas, particularly vegetation and disturbance history.
 3. Ensure all maps and graphics identify proposed project elements (water lines, structures, access roads, etc.) and have a North arrow and Bar Scale.
 4. Compare the potential negative environmental impacts among the alternatives, including that of doing nothing, within each of the following categories:
 - a. Disturbed / Undisturbed land
 - b. Historic Properties
 - c. Wetlands
 - d. Surface Water
 - e. Groundwater
 - f. 100-year Floodplain
 - g. Plants and Animals
 - h. Farmland
 - i. Air Quality
 - j. Open Space and Recreational Opportunities
 - k. Lake Michigan Coastal Management Zone
 - l. National Natural Landmarks
 5. List specific mitigation measures which will eliminate or minimize the environmental impacts enumerated above.
 6. Include the “Induced Impacts” language if the project proposes increasing capacity of treatment plants or lines.
 7. Consider the cumulative impacts of the entire proposed system including all succeeding phases if a proposed project is to be completed in several distinct phases
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CHAPTER 6 - PROPOSED PROJECT

1. Describe the selected plan components and how the current and future needs of the utility will be met
2. Provide raw water analysis (if applicable)
 - a. A raw water analysis is needed when new treatment is proposed
3. Address potential discharges (if applicable)
 - a. Volume and strength
 - b. Permits needed
 - c. Wastewater treatment plant capacity certification letter
4. Provide hydraulic model (if applicable)
 - a. A model is helpful when proposed project involves distribution system pressure and flow needs.
5. Complete a Preliminary Design Summary (see Attachment E, Preliminary Design Summary)
 - a. Identify existing and proposed components
6. Provide layout or map of the proposed project, including North arrow and Bar Scale
7. Provide component costs (quantity and unit cost), non-construction costs, and contingencies (refer to Tables II and III).

Table II: Construction Costs (dollars)

Item	Quantity	Unit Cost	Total Cost
<i>Proposed Item #1</i>			
Contingencies			
Construction Costs Sub-total			

Table III: Total Project Costs (dollars)

Administrative and Legal	
Land & Rights-of-way Acquisition	
Relocation	
Engineering Fees	
Design	
Construction	
Other	
Project Inspection	
Costs Related to Start-up	
Non Construction Costs Sub-total	
Construction Costs Sub-total (Table II)	
Total Project Cost	

8. Include a Project Schedule/Milestone dates for:

- a. Plans & Specifications submittal to Indiana Department of Environmental Management
 - b. Land and easement acquisition
 - c. Bid advertisement
 - d. Loan closing
 - e. Contract award
 - f. Initiation of construction
 - g. Substantial completion of construction
 - h. Initiation of operation
9. Discuss phasing (if applicable).
10. Discuss Sustainable Infrastructure / Green Initiatives in PER or as an appendix to PER (if applicable).
- a. Complete the SRF Loan Programs SI/GI Category Checklist (Attachment F)
 - b. Identify on the Checklist, the proposed/selected components
 - c. In an attachment to the Checklist:
 - i. Describe how the project will incorporate/meet the intent of each proposed component
 - ii. Provide the estimated additional cost associated with incorporating each selected component
 - iii. If a component is marked as N/A or unmarked, describe why it was not feasible or not considered
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CHAPTER 7 - LEGAL, FINANCIAL, and MANAGERIAL CAPABILITIES

1. Submit signed Resolutions: (refer to Attachments A and B):
 - a. Signatory Authorization
 - b. PER Acceptance
 2. Include the completed SRF Financial Information Form (Refer to Attachment C)
 3. Submit prior to SRF Loan Closing:
 - a. Proof that the Participant has secured all needed land and easements
 - b. Copies of signed agreements with significant users (if applicable)
 - c. Copies of signed water agreement if the Participant currently buys or sells water or proposes to buy or sell water from another public water system
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CHAPTER 8 - PUBLIC PARTICIPATION

1. Conduct a Public Hearing to discuss the proposed project (Refer to Attachment D)
2. Submit the Publisher's Affidavit and a copy of the Public Hearing notice from the newspaper
 - a. The notice should:
 - i. Be placed in the newspaper once 10 days prior to the Public Hearing
 - ii. State what will be discussed at the Public Hearing
 - iii. State when and where the Public Hearing will be held
 - iv. State the PER is available for public review 10 days prior to Public Hearing, and where and when the PER may be reviewed
 - v. State that written comments will be accepted at the Public Hearing and for five days after the Public Hearing, including an address of where to send written comments
3. Submit a sign-in sheet from the Public Hearing
4. Submit a copy of the minutes from the Public Hearing

5. Submit all written comments submitted by the public, including comments submitted during the public hearing and during the 5-day period following the hearing. Also include any response to comments provided by or on behalf of the Participant. Please state if no written comments were received.
6. Provide prepared, self-sticking mailing labels which include:
 - a. Attendees from the Public Hearing sign-in sheet
 - b. Interested parties (those individuals, industries, groups, organizations who demonstrated an interest in receiving copies of the Environmental Assessment/Finding of No Significant Impact)
 - c. Local media outlets (newspaper, radio, or T.V. station)

**Attachment A: DWSRF Loan Program
Signatory Authorization Resolution**

Whereas, the _____ [insert name of Utility / Political Subdivision] of _____ [insert location], Indiana, (the “Participant”) has plans for a drinking water infrastructure improvement project to meet State and Federal regulations, such as the Safe Drinking Water Act, and the Participant intends to proceed with the construction of such project:

Now, therefore, be it resolved by the Council / Board of Trustees, the governing body of the Participant, that:

1. _____ [insert name] be authorized to make application for a State Revolving Fund Loan (“SRF Loan”) and provide the SRF Loan Program such information, data and documents pertaining to the loan process as may be required, and otherwise act as the authorized representative of the Participant; and
2. The Participant agrees to comply with State and Federal requirements as they pertain to the SRF Loan Program; and
3. Two certified copies of this Resolution be prepared and submitted as part of the Participant’s Preliminary Engineering Report.

Adopted and Passed by the Council / Board of Trustees of the Utility / Political Subdivision of _____ [insert location], Indiana, this _____ [insert day] day of _____ [insert month], of 20____ [insert year].

Council / Board of Trustees

[insert name], President

Attest: _____
[insert name], Secretary / Clerk Treasurer

Approved and signed by the Mayor of _____ [insert location], Indiana this _____ [insert day] day of _____ [insert month], of 20____ [insert year].

[insert name], Mayor

Attest: _____
[insert name], Secretary / Clerk Treasurer

**Attachment B: DWSRF Loan Program
PER Acceptance Resolution**

Whereas, the _____ [insert Utility / Political Subdivision] of _____ [insert location], Indiana, has caused a Preliminary Engineering Report (“PER”), dated _____, to be prepared by the consulting firm of _____; and

Whereas, said PER has been presented to the public at a public hearing held on _____ [insert date], at _____ [insert location], for public comment; and

Whereas, the _____ [insert Utility / Political Subdivision] Council / Board of Trustees finds that there was not sufficient evidence presented in objection to the recommended project in the PER.

Now, therefore be it resolved that:

1. The PER dated _____ [insert date] _____ be approved and adopted by the _____ [insert Utility / Political Subdivision] Council / Board of Trustees; and
2. Said PER be submitted to the State Revolving Fund Loan Program for review and approval.

Adopted and Passed by the Council / Board of Trustees of the Utility / Political Subdivision of _____ [insert location], Indiana, this _____ [insert day] day of _____ [insert month], of 20____ [insert year].

Council / Board of Trustees

[insert name], President

Attest: _____
[insert name], Secretary / Clerk Treasurer

Approved and signed by the Mayor of _____ [insert location], Indiana this _____ [insert day] day of _____ [insert month], of 20____ [insert year].

[insert name], Mayor

Attest: _____
[insert name], Secretary / Clerk Treasurer

**Attachment C: DWSRF Loan Program
Financial Information Form**

Proposed Project Costs:

Supply / wells cost	\$ _____
Transmission / distribution System cost	\$ _____
Treatment cost	\$ _____
Storage cost	\$ _____
Subtotal construction cost	\$ _____

Contingencies (should not exceed 10% of construction cost) \$ _____

Non-construction costs \$ _____
e.g., engineering, legal and financial services related to the project, land costs, start-up costs, and construction inspection

Total Proposed Project Cost \$ _____

The following are not SRF Loan Program eligible:

Previously funded SRF components that have not met useful life	\$ _____
Materials and work done on private property	\$ _____
Grant applications and income surveys done for other agencies	\$ _____
Expenses incurred as a part of forming a utility, Regional Sewer / Water District, or Conservancy District	\$ _____

Total Ineligible Costs \$ _____

List other grant / loan funding sources and amounts

Other grants	\$ _____
Other loans	\$ _____
Hook-on fees	\$ _____
Cash on hand	\$ _____

Total Other Funding Sources \$ _____

Requested SRF Loan \$ _____

Estimated post-project user rate for 4,000 gallons \$ _____

Anticipated SRF interest rate _____

Financial Advisor:

Firm Contact _____

Name _____

Bond Counsel:

Firm Contact _____

Name _____

**Attachment D: DWSRF Loan Program
Public Notice**

Notice of Public Hearing

[Name of water system/community]

Preliminary Engineering Report (PER) to obtain assistance from the Drinking Water State Revolving Fund (DWSRF) Loan Program

The [name of water system/community] will hold a public hearing at [time] on [date] at [place], [address]. The [name of water system/community]'s engineering consultant will present the recommended upgrades to [name of water system/community]'s drinking water infrastructure, which will include [general description], as described in the PER. The project will be funded through a DWSRF loan.

At this hearing, there will be the opportunity for questions and comments from the public. Participation is welcomed and encouraged. If special assistance is required at the meeting, please contact [phone#, name]. Copies of the PER are available for public viewing starting [date of notice] through [date 5 days following hearing] at [location]. Written comments regarding this project should be sent to [contact name, mailing address] prior to [date, 5 days following hearing].

**Attachment E: DWSRF Loan Program
Preliminary Design Summary**

INSTRUCTIONS: List existing and proposed design information.

1. General information
 - 1.1. Project name:
2. Design information
 - 2.1. Current population:
 - 2.2. Design year and population:
 - 2.3. Average Design Flow:
 - 2.3.1. Domestic:
 - 2.3.2. Commercial:
 - 2.3.3. Industrial:
 - 2.4. Peak design flow:
3. Water supply
 - 3.1. Surface water
 - 3.1.1. Location:
 - 3.1.2. Type:
 - 3.1.3. Volume:
 - 3.2. Ground water:
 - 3.2.1. Number of wells:
 - 3.2.2. Location:
 - 3.2.3. Type and diameter
 - 3.2.4. Capacity:
 - 3.2.5. Well house:
 - 3.2.6. Aquifer type:
 - 3.3. Emergency power:
4. Flow meters
 - 4.1. Type:
 - 4.2. Location:
5. Treatment
 - 5.1. Provide raw water analysis
 - 5.2. Pumps
 - 5.2.1. Number:

5.2.2. Capacity:

5.3. Clarification

5.3.1. Rapid mixing

5.3.1.1. Number:

5.3.1.2. Size:

5.3.1.3. Detention time:

5.3.2. Flocculation

5.3.2.1. Number:

5.3.2.2. Size:

5.3.2.3. Detention time:

5.3.2.4. Flocculation speed:

5.3.2.5. Velocity:

5.3.3. Sedimentation

5.3.3.1. Number:

5.3.3.2. Size:

5.3.3.3. Detention:

5.3.3.4. Baffle location:

5.3.3.5. Overflow rate:

5.3.3.6. Velocity:

5.3.3.7. Sludge removal:

5.4. Filtration

5.4.1. Type:

5.4.2. Number and size of units:

5.4.3. Peak flow rate:

5.4.4. Average flow rate:

5.4.5. Backwash rate:

5.4.6. Backwash pumps (number and capacity):

5.4.7. Backwash tank capacity:

5.4.8. Wastewater tank capacity:

5.4.9. Method of cleaning:

5.4.10. Disposal of backwash solids:

5.5. Aeration

5.5.1. Type:

- 5.5.2. Loading rate:
- 5.6. Iron and Manganese Control
 - 5.6.1. Type:
- 5.7. Softening
 - 5.7.1. Type:
 - 5.7.2. Chemical feed location:
 - 5.7.3. Sludge removal and disposal method:
 - 5.7.4. Number and size of brine tank:
 - 5.7.5. Brine waste disposal:
- 6. Disinfection
 - 6.1. Type of disinfectant used:
 - 6.2. Type of chemical feed system:
 - 6.3. Capacity:
 - 6.4. Disinfectant dosage:
 - 6.5. Contact time:
 - 6.6. Point of application:
 - 6.7. Automatic switchover:
 - 6.8. Ventilation provided:
 - 6.9. Safety equipment:
 - 6.10. Testing equipment:
 - 6.11. Housing:
- 7. Controls
 - 7.1. Type:
- 8. Water storage
 - 8.1. Type:
 - 8.2. Number:
 - 8.3. Capacity:
 - 8.4. High and low water level:
 - 8.5. Elevation at bottom of tank:
 - 8.6. Available pressure:
 - 8.7. Booster pump:
- 9. Distribution system
 - 9.1. Type of pipe material:

- 9.2. Diameter and lengths:
- 9.3. Number of hydrants:
- 9.4. Number and size of valves:
- 9.5. Separation distance from sanitary sewers:
- 9.6. Separation distance from other water mains:
- 9.7. Fire protection:

10. Miscellaneous

- 10.1. Laboratory equipment:
- 10.2. Safety equipment:
- 10.3. Fence location and type:
- 10.4. Emergency power:
- 10.5. Sampling facilities:
- 10.6. Utility building:

**Attachment F: SRF Loan Program
Sustainable Infrastructure / Green Initiative (SI/GI) Checklist**

I. SRF Loan Participant Information

Participant Name: _____

Project Name/Location: _____

Date this list was last updated by the Participant: _____

The following list is provided as a resource for SRF Loan Programs participants and consultants. The SRF Loan Programs may accept components and technologies other than those listed below. Participants are encouraged to introduce additional sustainable infrastructure/green technologies for the SRF Loan Programs to consider. The SRF Loan Programs do not encourage, endorse or prescribe a method of construction, system design, technology or equipment. It is the participant's responsibility to obtain the necessary approvals and permits and properly design, build and effectively operate and maintain the proposed facilities covered in the Preliminary Engineering Report (PER). The SI/GI interest rate discount for each project will be determined by the SRF Loan Programs at SRF loan closing. For requirements and additional information regarding the 0.5% maximum SI/GI interest rate discount, please contact the SRF Loan Programs.

II. Categories

Please mark, from the categories below, all the SI/GI components that are proposed for the project. In addition, please answer the following questions for each component under each category (1-4) in a separate attachment:

1. Describe how the project will incorporate this component;
2. Provide the estimated additional cost associated with incorporating this component as part of the project;
3. If a component is marked N/A or unmarked, describe why it was not feasible or not considered.

1. Energy Reduction/Alternative Source Components:

- 1.1. Design reduces carbon footprint.
- 1.2. Site planning for facilities includes sustainable building components.
- 1.3. The design includes an energy reduction plan with at least a 20% reduction goal
- 1.4. Project utilizes a SCADA system to reduce energy consumption and enhance process control.
- 1.5. Fifty percent of the construction work uses clean fuel construction vehicles.

2. Wetland, Water Reuse and Reduction Components:

- 2.1. The project creates, restores or expands a wetland.
- 2.2. The project utilizes storm water capture/rain harvesting.
- 2.3. The project reduces water loss, infiltration & inflow, and recycles stream volumes.
- 2.4. The treatment facility incorporates water conservation and side stream reduction.

3. Site and Material Reuse Components:

- 3.1. New construction occurs on a previously disturbed area.
- 3.2. The design takes into account the deconstruction of the new facilities.
- 3.3. Offsite reuse of either treated wastewater or a biosolids treatment process significantly reduces residuals disposal.

- 3.4. The project beneficially utilizes recycled materials.
- 3.5. The specifications include an incentive clause for construction waste reduction, cut/fill earth work balance.
- 3.6. Low-impact construction technology is utilized to minimize impacts to the existing surface.

4. Life -Cycle Cost and Cost Effectiveness Analysis Component:

To properly evaluate a project’s long-term costs a life-cycle cost comparison of feasible alternatives is strongly recommended. Total life-cycle cost for each alternative includes estimated costs associated with operation and maintenance (O&M) costs during the service life (20 years) discounted to its present value and added to the capital cost estimate, together known as Net Present Value (NPV)*. The resulting NPV allows participants to assess the true cost of construction projects. The Participant may realize significant costs savings by choosing an alternative that requires fewer chemicals and less energy and manpower to operate.

- Prepare a comparison of the feasible alternatives for the project including proposed SI/GI components, NPV analysis, technical and operational reliability and environmental impacts. Consideration must be given for selection of alternatives acceptable to the public affected by the project.

**SRF Loan Programs will provide the participant/applicant an estimated interest rate to be used in the life- cycle analysis.*

III. Proposed Additional SI/GI Component(s)

Both items below must be checked if the project includes SI/GI component(s) not described in the above four categories:

- An attachment is included that lists the proposed new components.
- An attachment is included that responds to the following for the proposed new components:
 1. Describe how the project will incorporate each component;
 2. Provide the estimated additional cost associated with incorporating each component as part of the project.