



Preliminary Engineering Report -PER-

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Preliminary Engineering Report

-PER-

- Outlines technical & financial needs of project
- Prepared by consulting engineer
- Submitted for RD initial application
- With Environmental Report (ER)
- Recognize it's planning, not final design

PER Purpose

- Establishment of need
- Evaluate alternatives
- Project cost estimate
- Operating budget
- Defines Scope of Project
- Inter-related with entire funding process
 - Underwriting
 - Eligibility
 - Environmental Report



PER Outline

Follow RUS Bulletin 1780-2 (updated 4/4/13
now only one Bulletin)

1. Project planning area
2. Existing facilities
3. Need for project
4. Alternatives considered
5. Selection of an alternative
6. Proposed project (recommended alternative)
7. Conclusions and recommendations

1. Project Planning

- Project purpose
- Location of proposed facilities
- Proposed hook ups (service area)
 - (District Map)
- Population data/growth
- Location of construction
- Map of service area / district

2. Existing Facilities

- Describe system/facilities
 - Current service area, storage, sources, treatment process
 - Location map (show existing facilities)
 - Condition/capacity of existing facilities
 - Finances
- Previous extensions or related work

Equivalent Dwelling Units EDUs

- EDUs match RD information (Form A) as provided to Area Specialist
- Provide gpd/EDU flow/consumption
 - Reasonable; standards
 - Impacts of large, commercial or industrial users
 - Breakdown existing and future; average day, max day, and peak hour

3. Need for Project

- Explain why project is necessary and the impacts if the project is not completed
- Existing system O&M
 - Water losses, infiltration/inflow (sewer), inefficient design
- Growth - sufficient capacity
- Health or sanitary need with documentation
 - Health Department or DEC letter



Health and Sanitary Need

- Letter of support is no longer sufficient
- 3 requirements

Health and Sanitary

Letter from DOH/DEC/Other must indicate:

1. Which standards will be addressed by the project (cite codes or regulations, NOV not required);
2. The primary purpose of the project is to upgrade existing facilities or construct new facilities required to meet applicable health or sanitary standards;
3. The completion of the project will alleviate the health or sanitary problem.

Health and Sanitary

- Submitted with PER or separately. RD Area Specialist sends info to State Engineer for review.
- If not acceptable, SE discusses with Engineer &/or regulatory agency
- SE confirm with RD Area Specialist once acceptable

Fire Flow - Metering

- Not a health and sanitary need
- Project can provide fire flow, but not as the primary purpose of the project
- If fire flow deficiency creates health concern, e.g. pressures below sanitary code
- Facility/project must have metering

4. Alternatives Considered

- List all potential alternatives
 - Feasible
 - No action is NOT an alternative
 - Cannot have no other alternatives
 - Eliminated alternatives infeasible or unpopular
 - Sustainability

Detailed evaluation of remaining feasible alternatives

- Description
- Analysis of advantages and disadvantages
- Preliminary cost estimate
 - Construction and non-construction capital cost
 - Projected operations and maintenance cost (O&M)
 - Design criteria, environmental impacts, pros/cons)
 - Life cycle cost analysis for feasible alternatives

5. Selection of an Alternative

- Identify chosen alternative(s)
- Justify reasons
 - Construction and O&M costs priority
 - Lowest life cycle cost
 - Technical or non-monetary reasons
 - Layout of project



Analysis for Alternative Selection

- Free and open competition
- Selection of materials / types of treatment
- Layout
- Evaluate in PER vs. bid alternates

Life Cycle Cost Analysis

- $LCA = \text{Capital} + O\&M - \text{Salvage}$
- Present Worth: $P = A \left\{ \frac{[(1+i)^N - 1]}{i(1+i)^N} \right\}$
 - “P” is present worth and “A” is annual O&M
 - “i” is discount rate (use “real” discount rate from OMB A-94, exh. C)
 - “N” is planning period

Construction Cost Estimates

- Preliminary design/layout - location of project/services within municipality
- All treatment components considered?
- Cost estimates impact:
 - engineering fees, admin costs
 - seasonal issues –construction period

O&M Costs/Operator Requirements

- O&M responsibility (own/operate/maintain)
- Alternative within capabilities of applicant
 - Operator requirements
 - Access to maintenance sources
- Best possible O&M cost estimates
 - Affects life cycle cost estimates
 - Operating costs – energy, laboratory
 - O&M values vary for each alternative

6. Proposed Project (Recommended Alternative)

- Preliminary design (to some level)
- Schedule/permits
- Sustainability (new)
- Total project cost estimate
- Annual operating budget

Annualized Cost per EDU Breakdown

- Total project cost estimate
 - (detailed, current, less than 6 months old)
 - RD Form E – Project Budget
 - Administration
 - Engineering
 - Construction
 - Contingencies

Annualized Cost per EDU Breakdown

- Annual Operating Budget
 - Income
 - Debt repayments
 - Proposed and existing
 - Interest on loans
 - Cost of water/treatment
 - O&M
 - Short lived assets
 - Reserves

Short Lived Assets (SLA)

- reserves to replace/repair components
“... useful life significantly less than the repayment period of the loan.”
- not daily/weekly/monthly O&M type items.
- three periods: 0-5, 5-10, and 10-15 years.
- provide in a tabular form or simply list in PER
- also in 1780-2 (appendix A)

Short Lived Asset Examples

	Years		
<u>Asset</u>	<u>5</u>	<u>10</u>	<u>15</u>
Pumps (years depends on type)	x	x	x
Meters			
Individual	x	x	
Master		x	
Tank Painting			x
Control Valves	x	x	
Disinfection Equipment	x	x	
Computer Equipment/Software	x		
Control Equipment	x		
Gauges		x	
Transmitters		x	
Sensors		x	
Power &/or Specialty Equipment			x
Vehicles		x	
Lab Equipment	x		
Tools	x		
Emergency Generator			x
Tank Cathodic Protection Replacement		x	
Filter Media Replacement			x

Proposed Project with Alternatives (Additions)

- Include alternatives which lack funds
- Itemize/prioritize
- Construction or operation items
- Bid as additive alternatives
- Leave no question in “project scope”
- Construction alternatives covered by ER

7. Conclusions and Recommendations

- Summarize proposed plan of action
- Recommendations statement
- Include recommended alternatives for request of remaining funds at project close

RD Review of PER

- PER submitted to Area Office with initial application
- 6 copies of PER to Area Specialist who forwards to CPD for assignment to SE
- Hardcopy (electronic in addition ok)

RD Review of PER

- Ensure analysis of alternatives
- Make sure preliminary design calculations and assumptions are reasonable and modest
- Make sure costs are reasonable and modest
- Review consultant's recommendations
- Site visit possible

Environmental Requirements

- John Helgren , P.E. – State Environmental Coordinator
- Madeline Crowe – Assistant State Environmental Coordinator



Environmental Regulations RUS 1794

Classifications of Proposals

I. Categorically excluded proposals without an Environmental Report:

Repairs made because of an emergency situation to return damaged facilities to service

Classifications of Proposals

II. Categorically excluded proposals requiring an Environmental Report (Cat Ex w/ ER)

- Facility improvements to meet current needs; modest change from original facility in use, size, capacity, purpose, or location
- New facilities designed to serve not more than an increase of 500 EDUs
- Extension of interceptors, collection, transmission, or distribution lines within 1 mile of existing services

Classifications of Proposals

III. Proposals normally requiring an Environmental Assessment (EA)

- Will create a new or relocate an existing discharge to or withdrawal from surface and ground waters
- Will result in substantial increases in volume or loading of pollutants from an existing discharge into receiving waters
- Will cause a substantial increase in the volume of surface or ground water at an existing site
- Will provide capacity to serve an increase of more than 500 EDUs or increase population by 30%



Environmental Report

- Environmental Report guidance

http://www.rurdev.usda.gov/NY_WEP_environmental.html

- ER is submitted at the same time as the PER
- RUS Bulletin 1794A-602 (National Guide)

http://www.rurdev.usda.gov/RDU_Bulletins_Water_and_environmental.html

- NY RD Guide with 4 Attachments

http://www.rurdev.usda.gov/supportdocuments/NY_WEP_environmental_report_guide_package_for_WEP_projects.pdf



Required attachments for the Environmental Report

- Project location map (Area of Potential Effect – APE)
- Intergovernmental review process
- USGS map
- FEMA floodplain maps
- Federal (National) Wetland maps
- State Wetland maps
- Archaeological Sensitivity Area Map – SHPO “Circles and Squares”
- NYS Office of Parks, Recreation, & Historic Preservation (SHPO) comments
- Archaeological survey if performed
- Agricultural District Map
- Soil Survey Map



Required Attachments

- US Department of the Interior Fish and Wildlife Service – IPAC/7 Steps
- NYS DEC Division of Fish, Wildlife, & Marine Resources – comments
- NYS Department of Agriculture and Markets (Ag. District only)
- State Environmental Quality Review
- NRCS – Important Farmland - checklist and response
- US Army Corps of Engineers – comments
- Sole Source Aquifers -map from EPA Reg. 2
- NYS DEC Regional Permitting – comments
- Department of State Division of Coastal Resources – map
- Adirondack Park Agency – permits
- Wild, Scenic, and Recreational Rivers – map
- Consultation with Native American Tribes or other potential consulting parties (ER will be sent to the Nation by RD)

ER Completion

- ER process done
 - Cat Ex – all items received
 - EA – all items + EA availability + FONSI published
- Project scope changes/revisions
 - ER/PER amendments
 - Agency sign off / permits



Questions?