



Exhibit 2
Iowa Department of Natural Resources
Water Supply Engineering Section
Water Supply Preliminary Engineering Report Checklist

1. General Information

- a. Description of existing water supply facilities
- b. Identification of area served
- c. Description of nature and extent of area to be served during design period
- d. Appraisal of future requirements for service, including existing and potential industrial, commercial, institutional and other water supply needs

2. Justification of Project

- Where two or more solutions exist for providing public water supply facilities, discuss the alternatives. Give reasons for selecting the one recommended, including financial considerations, operational requirements, operator qualifications, reliability, and water quality considerations.

3. Soil, Groundwater Conditions, and Foundation Problems

Include a description of:

- a. Character of the soil through which water mains are to be laid
- b. Foundation conditions prevailing at sites of proposed structures
- c. Approximate elevation of ground water in relation to subsurface structures

4. Water Use Data

- a. Description of population trends indicated by available records and estimated population which will be served by the proposed water supply system 20 years in the future in five year intervals
- b. Present water consumption and the projected average and maximum daily demands, including fire flow
- c. Present and/or estimated yield of the sources of supply
- d. Unusual occurrences

5. Flow Requirements

- a. Hydraulic analyses based on flow demands and pressure requirements

- b. Fire flows, when fire protection is provided, meeting the recommendations of the Insurance Services Office or other similar agency for the service area involved

6. Sources of Water Supply

Describe the proposed sources of water supply to be developed, the reasons for their selection, and provide information as follows:

a. Surface Waters

- (1) Hydrological data, stream flow, and weather records
- (2) Safe yield, including all factors that may affect it
- (3) Maximum flood flow
- (4) Description of the watershed
- (5) Summarized quality of the raw water with reference to fluctuations in quality, meteorological conditions, etc.

b. Ground Waters

- (1) Sites considered
- (2) Advantages of site selected
- (3) Elevations with respect to surroundings
- (4) Probable character of formations through which the source is to be developed
- (5) Geologic conditions affecting the site, such as anticipated interference between proposed and existing wells
- (6) Summary of source exploration, test well depth, and method of construction, placement of liners or screens, test pumping rates and their duration, water levels and specific yield, water quality

7. Proposed Treatment Processes

Summarize and establish the adequacy of proposed processes and unit parameters for the treatment of the specific water under consideration. Alternative methods of water treatment and chemical use should be considered as a means of reducing waste handling and disposal problems.

8. Storage

Describe the existing and proposed storage structures for the water supply system, including condition and maintenance of existing storage tanks. For proposed storage, indicate whether it will be elevated or ground storage, provide justification for size and

elevation, and ensure that average day supply is available. (Maximum day storage is recommended.)

9. Distribution

Describe existing distribution system and proposed modifications. Provide existing pressures and flows.

10. Waste disposal

Discuss the various wastes from the water treatment plant, their volume, proposed treatment and points of discharge. If discharging to a sanitary sewerage system, verify that the system, including any lift stations, is capable of handling the flow to the sewer treatment works and that the treatment works is capable and will accept the additional loading. If discharging to a water of the state, verify that an NPDES permit will be obtained.

11. Project Sites

Discuss the various sites considered and advantages of those recommended.

12. Standby Power

Dedicated standby power is required so that water may be treated and pumped to the distribution system during power outages to meet the average day demand. Provide a description of standby power capability and address any deficiencies and how they will be remedied.

13. Financing

- a. Estimated cost of integral parts of the system
- b. Detailed estimated annual cost of operation
- c. Proposed methods to finance both capital charges and operating expenses