



# ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217) 782-3397

PAT QUINN, GOVERNOR

JOHN J. KIM, DIRECTOR

## Project Summary and Preliminary Environmental Impacts Determination

Date: MAR 13 2013

Loan Applicant: Village of Sauk Village, IEPA Loan Project Number: L174623

To all interested persons:

Section 662.520 of the Illinois Procedures for Issuing Loans From the Public Water Supply Loan Program requires that the Illinois Environmental Protection Agency (IEPA) publish an assessment of the environmental impacts of proposed public water supply projects to be funded with loans. This review is carried out in conjunction with the Agency's review of the applicant's project plan. Prior to granting its approval of the plan, the Agency requires that the public be granted an opportunity to comment as to whether or not the anticipated impacts of the project have been accurately assessed.

The IEPA has reviewed the above cited project plan and concurs with the applicant's findings that the proposed project is technically appropriate and cost-effective. Unless new information provided through the public comment process causes a reconsideration, the Agency will approve this planning at the close of the public comment period.

The applicant will make the attached Project Summary and Preliminary Environmental Impacts Determination (PEID) available for public inspection and must conduct a public hearing within 60 days of receipt on both the PEID and project planning, providing advertisement of the hearing at least 10 days in advance. A comment period of at least 10 days shall be provided after the hearing date in which written comments may be provided to the loan applicant or directly to the IEPA contact person identified in the attached document. Upon final approval of the plan, the project priority score may be modified to reflect new information provided in the planning in accordance with the provisions of Section 663.160 of the Procedures and Requirements for Determining Loan Priorities of Projects in the Public Water Supply Loan Program.

For information purposes only, a copy of this document is being provided to your local newspaper of record.

Your interest and participation in this process are appreciated.

Sincerely,

A handwritten signature in black ink that reads "J. Geoffrey Andres".

J. Geoffrey Andres, Manager  
Infrastructure Financial Assistance Section  
Bureau of Water

JGA:RDV:TS13021301

Attachment

## PROJECT SUMMARY AND ENVIRONMENTAL ASSESSMENT

### Project Identification

Village of Sauk Village  
21801 Torrence Avenue  
Sauk Village, Illinois 60411

Cook and Will Counties

### Existing Conditions and Project Justifications

The Village of Sauk Village is located in Bloom Township in Cook County and Crete Township in Will County in northeastern Illinois. Sauk Village owns and operates a public water supply that provides service to an approximate 4.0 square mile area. Water is provided to 2,943 customers that consist of 2,874 residential, 61 commercial and 8 school customers. The population of Sauk Village was 10,506 per the 2010 census. The Village is projected to grow to 12,819 by the year 2030 based upon assumptions from historic census data.

The average daily demand for the Sauk Village Public Water Supply system is approximately 0.93 million gallons per day (mgd) and the maximum daily demand is approximately 1.75 mgd. Based upon the growth projection, the year 2030 average daily demand will be 1.14 mgd and the maximum daily demand will be 2.14 mgd.

The existing Sauk Village Public Water Supply consists of three Wells (Nos. 1, 2 and 3) for the source water. Well No. 1 has a capacity of 680 gallons per minute (gpm), Well No. 2 has a capacity of 1,000 gpm and Well No. 3 has a capacity of 1,000 gpm. The Village has two water treatment plants (WTP Nos. 1 and 2) both rated at 1,000 gpm capacity. WTP No. 1 provides treatment for Well Nos. 1 and 2 and WTP No. 2 provides treatment for Well No. 3. For both water treatment plants the raw groundwater is aerated, passes through an iron filter and is injected with fluoride, phosphate and chlorine.

The Village currently has two elevated water storage tanks and a ground storage reservoir. The North Elevated Tank has a capacity of 400,000 gallons and is located near WTP No. 2. The West Elevated Tank has a capacity of 500,000 gallons and is located west of I-394 and south of Sauk Trail. The ground storage reservoir has a capacity of 300,000 gallons and is located at WTP No. 1. The Village's total water storage capacity is 1,200,000 gallons. The Village has approximately 43 miles of water main ranging in size from 3-inch to 16-inch in diameter providing service to residential, commercial and school customers. Water is distributed throughout the system by pump stations at each water treatment plant while the distribution system pressure is stabilized by the elevated tanks.

Planning documents indicate that there have been ongoing problems for many years with the existing water quality including taste, odor, and hardness as well as corrosion and scaling of the distribution piping. The groundwater in Sauk Village is contaminated by volatile organic compounds (VOC's). Concentrations of vinyl chloride and other VOC's were first detected in Well No. 3 in 2009. Since these detections, the sampling frequency was increased to require quarterly monitoring for VOC's. When sampling results indicated that concentrations were rising and approaching the Maximum Contaminant Level (MCL) of 2.0 parts per billion (ppb) for vinyl chloride, Sauk Village ceased operation of Well No. 3. The IEPA issued a Violation Notice and the project is under enforcement action with the Illinois Attorney General. With Well No. 3 offline, the firm capacity of the Sauk Village Public Water Supply drops to 980,000 gallons per day (with Well No. 1 running 24 hours per day), and this capacity is barely able to meet the Village's current average daily flow demand of 0.93 mgd and is not sufficient to meet the current maximum daily flow demand of 1.75 mgd.

Frequent sampling of Well Nos. 1 and 2 continued and in 2012 the vinyl chloride concentrations reached one-half of the MCL, requiring immediate action be taken to treat the public water supply. Currently, temporary water treatment equipment (rental air stripping units) are being utilized at WTP No. 1 to treat the water supply from Well Nos. 1 and 2.

The existing three wells and two water treatment plants are in poor condition and need major upgrades and improvements. The pressure aeration/pressure filtration iron removal equipment was installed at each plant in 1988 and is nearing 25 years old. Equipment is badly corroded and portions of the iron removal system and chemical feed systems at the WTP No. 2 have been taken for use at WTP No. 1 for maintenance purposes.

The existing water distribution system has numerous problems including deterioration, scaling, water main breaks and system water loss with leaking valves and mains. The distribution system has huge unaccounted-for water losses ranging from 30% to 72% on a monthly basis from January 2011 to June 2012 (average water loss during this timeframe is 50%). This water loss is the difference between the gallons of water pumped into the system and gallons of water billed to customers.

### **Proposed Project**

As detailed above, there are numerous issues and problems with the Sauk Village Public Water Supply. The current Project Plan recommends major improvements and upgrades to both WTP No. 1 and No. 2. The temporary air stripping units currently treating water from Well Nos. 1 and 2 at WTP No. 1 provide evidence of the capability of this technology to reduce vinyl chloride contamination to non-detectable levels. The proposed scope of work is as follows:

### WTP No. 1 - Well No. 1 and Well No. 2

- Installation of a containerized, prefabricated, low profile air stripping system. The system will include three 530-gpm capacity air strippers, each with two stripping trays (expandable to four). Forced air will be supplied by one 30 HP blower for each unit. Treatment modeling predicts that these units will remove vinyl chloride from a maximum source water concentration of 20 ppb down to a non-detect level.
- The air stripping system effluent will collect in a sump located below the unit, and will be discharged utilizing a variable frequency drive (VFD) pump. The pump's VFD will maintain level control by speeding up or slowing down the pump to match the stripper effluent flow rate. The pump will re-pressurize the flow, pumping the treated water either to the existing ground storage reservoir, or to the existing high service pump station according to the water distribution system demand.
- Replacement of the existing 1,000 gpm iron removal filter with a new 1,600 gpm horizontal pressure filter. The filter will be designed to achieve iron removal to meet drinking water standards of less than 1.0 mg/l at maximum daily demand conditions with the other filter at WTP No. 2 out of service (firm capacity).
- Upsizing of the existing iron removal filter backwash tank to adequately contain a full backwash cycle.
- Installation of a new standby generator with an automatic transfer switch to provide emergency power to WTP No. 1.
- Existing chemical addition of phosphate to sequester hardness; chlorine for iron removal pre-chlorination and post-treatment disinfection; and fluoride for dental health will remain operational.
- Installation of structures, piping, valves, controls, and appurtenances as required.
- Installation of lockable gates and perimeter fencing along the north side of the treatment buildings to completely enclose the facility with security fencing.

### WTP No. 2 - Well No. 3

- Installation of a containerized, prefabricated, low profile air stripping system. The system will include two 500-gpm capacity air strippers, each with two stripping trays (expandable to four). Forced air will be supplied by one 30 HP blower for each unit. Treatment modeling predicts that these units will remove vinyl chloride from a maximum source water concentration of 20 ppb down to a non-detect level.

- The air stripping system effluent will collect in a sump located below the units, and will be discharged utilizing a VFD pump. The pump's VFD will maintain level control by speeding up or slowing down the pump to match the stripper effluent flow rate. The pump will re-pressurize the flow, pumping the treated water to a new high service pump station.
- Installation of a high service pump station to boost water pressure and transfer flow to the distribution system.
- Replacement of the existing 1,000 gpm iron removal filter with a new 1,000 gpm horizontal pressure filter. The filter will be designed to achieve iron removal to meet drinking water standards of less than 1.0 mg/l at maximum daily demand conditions with the other filter at WTP No. 1 out of service (firm capacity).
- Installation of a new, larger electrical feed, as required.
- Installation of a new standby power generator with an automatic transfer switch to provide emergency power to WTP No. 2 and the removal of the abandoned well motor drive.
- Existing chemical addition of phosphate to sequester hardness; chlorine for iron removal pre-chlorination and post-treatment disinfection; and fluoride for dental health will remain operational.
- Rehabilitation of the well building.
- Installation of structures, piping, valves, controls, and appurtenances as required.

The Project Plan provided a discussion regarding the deficiencies related to the water distribution system. The Plan proposed a leak detection survey to be completed to address the significant water loss on the system and prioritize repairs as funding becomes available. Additionally, the distribution system only has one water main that connects the east side of the Village to the west side across I-394. Should a water main break occur on this connection and a shut down of the main is required for repair, then the west side of the Village will only have the water remaining in the West Elevated Tank to serve water demands. This is because all the Village's wells are on the east side of I-394. This water main break scenario (which has happened recently) isolates the west part of the Village from a water supply, which is a bad situation especially if a fire occurs in this region. The Plan recommends a 16-inch diameter water main loop connection either along the Canadian National railroad on the north side of the Village or from the Sauk Pointe Industrial Park to the Lincoln Meadows subdivision on the south side of the Village as funding becomes available. The Project Plan provided an implementation plan including costs and schedules to address the water distribution system deficiencies. These needed distribution system improvements are not part of this planning evaluation and approval process. They will be addressed as a separate document in the future if the Village decides to pursue loan assistance for this work.

The Project Plan proposes to construct all improvements to WTP No. 1 and No. 2 simultaneously, possibly under the same contract. The WTP No. 1 construction can occur with minimal disruption to the existing plant operation, with the exception of the iron filter replacement. Therefore, the construction will be scheduled such that the replacement of the WTP No. 1 iron filter will be conducted only when the WTP No. 2 is operational.

**Environmental Impacts**

All proposed construction will be located at the existing WTP No. 1 and No. 2 sites (reference Attachment). The proposed project has been reviewed and received sign-offs from the Illinois Historic Preservation Agency and the Illinois Department of Natural Resources. From the information provided, there are no known historic, cultural or archaeological areas which would be disturbed by the proposed improvements. The proposed project will not adversely impact, endanger or threaten existing plant and animal species. There will be no construction on a floodplain or wetlands area. The proposed project does not require any stream crossings, there will be no loss of prime agricultural land and there will be no harmful effects to the area's air quality. Minor adverse environmental impacts will occur during construction of the proposed project. These include construction associated noise, blowing dust and soil erosion. Proper construction techniques and careful planning will help to mitigate these minor short-term negative impacts. During construction activities, soil erosion control measures shall be implemented in accordance with Best Management Practices. The positive benefits of the proposed project will far outweigh the minor adverse impacts. The proposed project will bring the Sauk Village Public Water Supply into compliance with the MCL for vinyl chloride and provide adequate firm capacity for average and maximum daily flow demands. The aesthetics of the water will also be greatly improved by the proposed iron removal facilities.

**Implementation**

The Village is under enforcement action with the Illinois Attorney General. The proposed project will be constructed on a schedule determined by this enforcement action. Based upon the Project Plan, the following schedule is proposed.

Design Completion (with a construction permit and approvable loan application)	July 2013
Construction Initiation	September 2013
Construction Completion	September 2014

**Financial Impacts**

Design Engineering	\$ 340,000
Construction Engineering	320,000
Construction With Contingency	<u>4,675,000</u>
Total	\$5,335,000

Sauk Village plans to finance the total estimated project costs of \$5,335,000 with a loan from the Public Water Supply Loan Program (PWSLP). The Village will dedicate a portion of the public water supply user fees for repayment of the loan. Annual repayments on a PWSLP loan of \$5,335,000 at the current 1.93% interest rate for 20 years are approximately \$322,806. In addition, to the loan repayments, additional revenue must be generated to pay for operation, maintenance and replacement costs on the public water supply system, planning and investigative tasks, and other costs not covered by the loan.

Based upon planning information, the user charge rate was \$3.50 per 1,000 gallons. Sauk Village Ordinance No. 12-014 raised the rate to \$5.50 per 1,000 gallons effective August 14, 2012 and to \$7.50 per 1,000 gallons effective February 14, 2013. The first \$2.00 per 1,000 gallons rate increase was needed to cover existing costs of the public water supply system. The second \$2.00 per 1,000 gallons rate increase is necessary to cover the debt service requirements of the proposed PWSLP loan and for additional operation, maintenance and replacement costs on the system. The average residential water usage is 9,345 gallons per month. This translates to an average residential user charge of \$32.71 per month, increasing to \$51.40 per month effective August 14, 2012 and rising to \$70.09 per month effective February 14, 2013. Per the Project Plan, no further increases to the user rate and monthly water bill are required.

In order to determine the financial impact of the proposed project on the water users, a percentage comparison of the 2010 median household income for Sauk Village (\$51,908) to the proposed annual cost for water service (\$70.09 per month x 12 months = \$841.08) was utilized. The estimated percentage of median household income to be used for payment of the annual water user fees is 1.62%. This percentage is substantial, but below the Agency guideline of 2.0% which indicates possible significant financial impacts and affordability issues connected to the proposed project. However, Sauk Village is currently under enforcement action to correct the significant compliance issues connected to the public water supply. The proposed project is the cost-effective alternative to achieve compliance with no other less costly options available. The proposed project is also the only option available to be constructed on a timely schedule to achieve compliance. Currently, the Village is incurring significant costs for rental equipment at WTP No. 1 on a monthly basis that must continue until permanent solutions occur. The recommended project will replace the rental equipment on a permanent basis.

### **Public Participation**

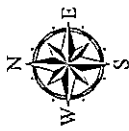
Public comments are invited on the proposed project. For further information contact:

Gary Bingenheimer  
Illinois Environmental Protection Agency  
Bureau of Water  
1021 North Grand Avenue East  
P.O. Box 19276  
Springfield, Illinois 62794-9276

Phone Number: 217/782-2027

Fax Number: 217/785-1225

# Village of Sauk Village Water Quality Improvement Plan Village Limits & Supply Well Locations



**Legend**

Water Structures

Wells

Village Limits

