



**JOINT CITY COUNCIL WORK SESSION  
(Crystal, Golden Valley, and New Hope City Councils)**

**AGENDA SUMMARY  
JANUARY 9, 2014  
6:30 P.M.  
City of Golden Valley (Council Chambers)  
7800 Golden Valley Road**

***Open for public observation  
Light refreshments will be provided***

1. Call to Order and Introductions (Mayor Shep Harris)
2. Attendance (*list of attendees on back of agenda*)
3. Emergency Water Supply Plan
  - a. Review of Past Studies and Actions (Tom Burt)
  - b. Final Design Presentation (Steve Nelson)
  - c. Financing Plan Presentation (David MacGillivray, Springsted, Inc.)
  - d. Resolution Ordering Construction of Emergency Water Supply
4. Crystal Pump Station Emergency Generator Update (Tom Mathisen)
5. Revised 2014-2018 Capital Improvement Plan (Tom Burt)
6. Other Business
7. Adjournment

Participants may include the following:

<b>CRYSTAL COUNCIL:</b>	<p>Jim Adams, Mayor          Laura Libby, Council Member          Julie Deshler, Council Member          Joe Selton, Council Member          Mark Hoffmann, Council Member          John Budziszewski, Council Member          Casey Peak, Council Member</p>
<b>CRYSTAL STAFF:</b>	<p>Anne Norris, City Manager          Tom Mathisen, Director of Public Works          Charlie Hanson, Finance Director          Randy Kloepper, Water Superintendent</p>
<b>NEW HOPE COUNCIL:</b>	<p>Kathi Hemken, Mayor          John Elder, Council Member          Eric Lammle, Council Member          Dan Stauner, Council Member          Andy Hoffe, Council Member</p>
<b>NEW HOPE STAFF:</b>	<p>Kirk McDonald, City Manager          Bob Paschke, Director of Public Works</p>
<b>GOLDEN VALLEY COUNCIL:</b>	<p>Shep Harris, Mayor          Steve Schmidgall, Council Member          Joanie Clausen, Council Member          Larry Fonnest, Council Member          Andy Snope, Council Member</p>
<b>GOLDEN VALLEY STAFF:</b>	<p>Tom Burt, City Manager          Jeannine Clancy, Director of Public Works          Sue Virnig, Finance Director          Bert Tracy, Public Works Maintenance Manager          Kelley Janes, Utilities Supervisor          Pat Schutrop, Recording Secretary</p>
<b>OTHERS:</b>	<p>Steve Nelson, Bolton &amp; Menk, Inc.          Bonnie Morey, SEH, Inc.          Glen Gerads, Director, Water Treatment and Distribution Services,          City of Minneapolis          Steve Kotke, Director of Public Works, City of Minneapolis          David MacGillivray, Springsted, Inc.</p>

Council Member \_\_\_\_\_ introduced the following resolution and moved its adoption:

**RESOLUTION ORDERING CONSTRUCTION OF EMERGENCY WATER SUPPLY**

WHEREAS, the Joint Water Commission (JWC) is a joint powers entity authorized by Minnesota Statute 471.59 consisting of the cities of Crystal, Golden Valley, and New Hope, initiated in 1963; and,

WHEREAS, based on this agreement, the three cities built their water distribution systems to be interconnected without reference to city boundaries; and,

WHEREAS, the JWC has an ongoing long-term water purchase agreement with the City of Minneapolis water utility and intends to continue that relationship; and,

WHEREAS, the JWC continues to have concerns regarding the reliability of the Mississippi River as the sole water supply source for the City of Minneapolis and its customers; and,

WHEREAS, in 2009 the JWC and separately each of the three member cities, adopted a Water Supply, Emergency and Conservation Plan to comply with Minnesota Statute 473.859, and said statute requires the JWC and the three member cities to identify and develop an emergency source of water supply; and,

WHEREAS, the JWC has identified groundwater from the Prairie du Chien/Jordan aquifer to be a viable alternative water supply on an emergency basis; and,

WHEREAS, legislation was passed during the 2004 legislative session authorizing the JWC to drill wells to meet the needs of the three member cities on a case-by-case basis; and

WHEREAS, at the direction of the three City Councils at the May 7, 2012 tri-Council meeting and adopted by resolution in session separately, the Emergency Water Supply Preliminary Design and Feasibility Study was prepared; and,

WHEREAS, at the direction of the three City Councils at the May 23, 2013 tri-Council meeting and adopted by resolution in session separately, staff was directed to develop a capital improvement program to implement the emergency water supply plan; and to retain professional and contractor services to implement the emergency water supply; and,

WHEREAS, at a tri-Council meeting on January 9, 2014, a detailed report, cost estimate and financing plan were presented to elected officials and staff.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of (Golden Valley, Crystal or New Hope), Minnesota:

1. That the construction of an emergency backup water supply to include three wells, meter vaults, valves, meters, and all associated pipe work is hereby ordered.

Adopted by the City Council of the City of (Golden Valley, New Hope or Crystal), Hennepin County, Minnesota, this \_\_\_\_\_ day of January, 2014.

\_\_\_\_\_  
Mayor

Attest: \_\_\_\_\_  
City Clerk

The motion for the adoption of the foregoing resolution was seconded by Member and upon a vote being taken thereon, the following voted in favor thereof: and the following voted against the same: whereupon said resolution was declared duly passed and adopted, signed by the Mayor and his/her signature attested by the City Clerk.

# Joint Water Commission (JWC) Crystal-Golden Valley-New Hope City Councils

Emergency Water Supply Work Session  
January 9, 2014



# Purpose of this Work Session

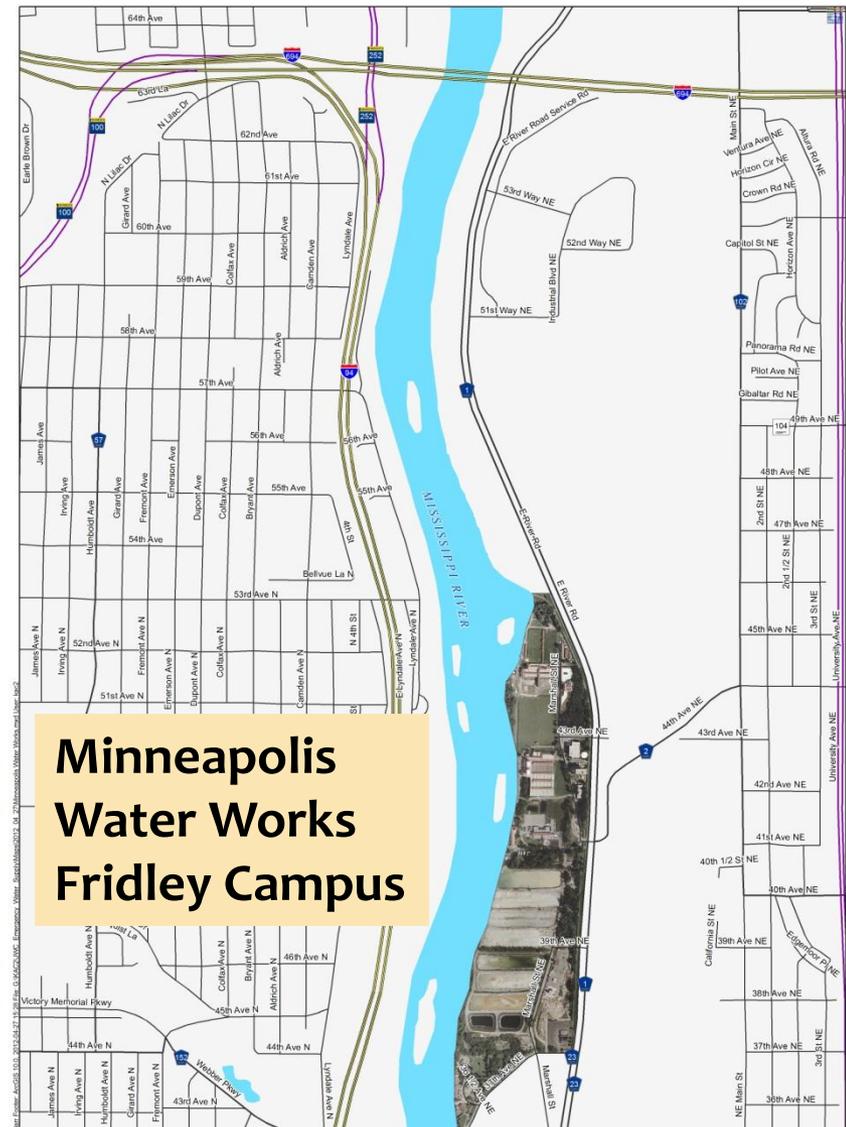
- \* To provide information on the history of the JWC and its water supply
- \* To discuss technical information regarding an emergency water supply
- \* To discuss the financing plan to provide a new emergency water supply
- \* Provide direction to staff on whether to move forward with construction of an emergency water supply

# History of the Joint Water Commission (JWC)

- \* The JWC is a joint power entity consisting of the cities of Crystal, Golden Valley, & New Hope
- \* Initiated in 1963 to provide drinking water for the three communities
- \* JWC is currently served water from the Mississippi River which is treated by the City of Minneapolis Water Department

# Minneapolis Supply & Treatment

- \* Supply: Mississippi River via single intake
- \* Treated at Fridley & Columbia Heights facilities
- \* Softened, filtered, & Fluoride
- \* No current emergency supply
- \* Emergency supply being planned now



**Minneapolis  
Water Works  
Fridley Campus**





# Who Uses Our Water?

- \* Residential: 76.8% (5.4 MGD)
- \* Commercial: 18.1% (1.3 MGD)
- \* Industrial: 5% (0.3 MGD)

# So... What are our risks with the Minneapolis Supply?

## Higher Probability Risks

- \* Drought (30's, 88, 07)
- \* Flooding (65, 69, 11)
- \* Tornado (65, 11)
- \* Loss of Power
- \* Bottleneck
  
- \* Color means this has occurred but without long term interruption

## Other Risks

- \* Fire/explosion
- \* Spill
- \* Work Stoppage
- \* Chemical Reaction/Spill
- \* Terrorism and Cyber attacks
- \* Operator Error
- \* Supply Main Failure (breaks)

# Solution: Develop an Emergency Water Supply

- \* Emergency system will only be used in an emergency supply situation.
- \* Water will not be softened, filtered, or have fluoride added but will be disinfected
- \* System will provide enough capacity to ensure that the three communities have supply for “*essential uses*”

# Essential Uses

- \* **MN Statutes: 103G.261 Water allocation priority uses**
  1. Domestic water supply, excluding industrial and commercial uses of municipal water supply, and use for power production that meets the contingency planning provisions
  2. A use of water that involves consumption of less than 10,000 gallons of water per day
  3. Agricultural irrigation, and processing of agricultural products involving consumption in excess of 10,000 gallons per day (**JWC has no 3<sup>rd</sup> priority water users**)

# Priority Uses

4. Power production in excess of the use provided for in the contingency plan (JWC has no 4<sup>th</sup> priority water users)
5. Uses, other than agricultural irrigation, processing of agricultural products, and power production, involving consumption in excess of 10,000 gallons per day (List of 5<sup>th</sup> priority water users on next slide)
6. Nonessential uses, lawn sprinkling, car washing etc.

# 5<sup>th</sup> Priority Water Users

## **Golden Valley (9):**

- \* Courage Center
- \* Mermaid Car Wash
- \* General Mills (Main Campus)
- \* Liberty Carton
- \* Honeywell
- \* General Mills (JFB)
- \* Tennant

## **New Hope**

- \* Minneapolis Die Casting
- \* Dakota Growers

## **Crystal**

- \* Regal Car Wash

# Proposed System Improvements:

- \* Finish upgrading the New Hope Well for emergency use
- \* Drill three new wells
  - \* One near the Crystal Reservoir
  - \* One near the Golden Valley Reservoir
  - \* One ~1/4 mile from one of the reservoirs
- \* Total supply capacity ~5.5 to 6.8 MGD

# Why are we doing this?

- \* To ensure a water supply under emergency conditions where Minneapolis supply to the JWC is interrupted
- \* During an Emergency Situation:
  - \* Provide fire protection, health, safety & welfare
  - \* Secure residential water supply
  - \* Sustain business operations
- \* Identified action item in JWC Comp Plan



# JWC EMERGENCY WELL SUPPLY UPDATE

## Joint City Council Work Session

January 9, 2014



# 3 Critical Success Factors for the JWC Emergency Water Supply

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## 1. Reliable

Ensure ability for quick MDH approval and start-up

## 2. Maintainable

Minimal vulnerability and need for maintenance

## 3. Operator Friendly

Simple to operate to achieve maximum flow



# Option A – Figure 1

## Crystal Well Locations



# Option A – Figure 2

## Golden Valley Well Location



# Option B – Figure 3 Crystal Well Location



# Option B – Figure 4

## Golden Valley Well Location



# Option A & B

## New Hope Well Location



# Potential Water Quality Issues

- Switching from Softened/Filtered Water To Unsoftened/Unfiltered Water:

## Aesthetics Related Impacts:

- ↑ Colored Water / ↑ Difficulty getting laundry white
- ↑ Spotted Dishes / ↑ Difficulty getting soap to lather
- ↑ Oily sheen on coffee

- Longer Residence Time (↑RT):

## Aesthetics Related Impacts:

- ↑ T&O
- ↑ Orthophosphate/Polyphosphate
- ↓ Sequestering Effectiveness

## Health Related Impacts:

- ↓ Cl<sub>2</sub>
- ↑ Microbial Activity (and ↓ DO)
- ↓ pH, ↑ Pb & Cu



# Chlorine Feed

- Block construction and 4 cylinders per well may be warranted (6-9 day supply) as opposed to 2 cylinders (3-4 day supply).
- Cylinder delivery occurs when  $\frac{1}{2}$  supply is used.



# PRELIMINARY OPINIONS OF COST

## JWC EMERGENCY WELL SUPPLY

ITEM NO.	DESCRIPTION	Costs
1	CIVIL ENGINEERING	\$187,000
2	NEW WELLS AND APPURTENANCES	\$1,472,000
3	ELECTRICAL AND CONTROLS COSTS	\$626,000
4	CHLORINE CLOSETS (BRICK CONSTRUCTION)	\$98,000
5	CHEMICAL FEED EQUIPMENT	\$437,000
6	NEW HOPE WELLHOUSE PUMP/PIPING	\$117,000
7	OTHER IMPROVEMENTS	\$525,000
	CONTINGENCIES (15%)	\$517,000
	<b>TOTAL ESTIMATED CONSTRUCTION COSTS</b>	<b>\$3,979,000</b>



# Milestone Schedule

- 80% Cost Estimate January 2014
- Tri-City Council Meeting January 2014
- Council Resolutions Approved March 2014
- Begin Advertise for Bids April 2014
- Complete Construction December 31, 2015



# Project Financing

\* Springsted, Inc.

# Requested Action by Tri-City Council

- \* Authorize Construction of Three Emergency Wells within the JWC Communities
- \* If yes then:
  - \* Adopt Resolution to order construction of the Emergency Water Supply
  - \* Adopt resolution agreeing to financing of the project



Questions?



# BOLTON & MENK, INC.<sup>®</sup>

## Consulting Engineers & Surveyors

7533 Sunwood Drive NW • Ramsey, MN 55303  
Phone (763) 433-2851 • Fax (763) 427-0833  
www.bolton-menk.com

### TECHNICAL MEMORANDUM

**Date:** January 9, 2014  
**To:** Joint Water Commission (JWC)  
**From:** Steve Nelson P.E  
**Subject:** JWC Emergency Water System  
BMI Project No: N22.107452

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#### **Introduction:**

This memorandum presents 80% design costs and assumed components for the Joint Water Commission Emergency Water Supply Project.

#### **Project Goals and Design Consideration:**

When putting together the design and the associated cost estimate the following items were kept in mind as factors that would be critical for developing an Emergency Water Supply that would operate as needed for the JWC:

1. Reliable - Ensure ability for quick MDH approval and project start-up
2. Maintainable - Minimal vulnerability and need for maintenance
3. Operator Friendly - Simple to operate to achieve maximum flow and limit negative impacts

#### **Well Location Options:**

There will be a total of three new wells located in Crystal and Golden Valley. The determination of well locations has not yet been finalized. The fourth well for the system will be the existing New Hope Well No 1.

Two options for the location of the three new wells have been evaluated, as noted below and depicted in the referenced Figures.

##### Option A (Two wells in Crystal):

See the indicated Figures

- Figure 1 Crystal Well Locations
- Figure 2 Golden Valley Well Location

##### Option B (Two wells in Golden Valley):

See the indicated Figures

- Figure 3 Crystal Well Location
- Figure 4 Golden Valley Well Locations



**New Hope Wellhouse Renovation:**

The existing wellhouse in New Hope will require renovation and upgrading as part of this project. The renovation will include work to the pump base and the addition of a vertical turbine pump, motor, and line shaft as well as valving, piping and controls to make the well operational.

**New Wells:**

The contract documents will include two alternative methods for well construction as shown below.

**Dual Rotary Construction:**

This type of rig will require only two casings, a 24" and an 18".

**Cable Tool Construction:**

This type of rig will require three casings, a 30", a 24" and an 18".

If desired, the bid documents for the wells can be prepared separately, ahead of the rest of the project.

**Potential Water Quality Issues:**

Potential water quality issues that may occur during use of the emergency water system are outlined below.

**Aesthetic Issues - Potential Impact Associated with Switching to Unsoftened/Unfiltered Water:**

- Increased Colored Water (Difficulty getting laundry white)
- Increased Spotting on Dishes (Difficulty getting soap to lather)
- Increased Oily Sheen on Coffee
- Increased Taste and Odor

**Recommended Addition to Design Services Scope:**

In order to address potential water quality issues associated with utilizing ground water as potable water, Bolton and Menk recommends that the design of a chlorine feed system be added to the scope of services for this project. Reasons for this addition are described below.

- MDH Permitting
  - Allows for quick project approval and efficient execution during the start-up of the Emergency System
- Reliable / Secure / Safe
  - The equipment can be protected between emergencies and will not be in risk of damage during transport
  - The cities will have control of the reservoir and wellhouse sites which can be fenced
- Simple
  - JWC can contract with a local chemical supply company to supply chlorine during an emergency.



**Cost Estimate:**

The table below presents the opinion of probable costs for the JWC Emergency Water Supply.

ITEM NO.	DESCRIPTION	Costs
1	CIVIL ENGINEERING	\$187,000
2	NEW WELLS AND APPURTENANCES	\$1,472,000
3	ELECTRICAL AND CONTROLS COSTS	\$626,000
4	CHLORINE CLOSETS (BRICK CONSTRUCTION)	\$98,000
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7	OTHER IMPROVEMENTS	\$525,000
	CONTINGENCIES (15%)	\$517,000
	<b>TOTAL ESTIMATED CONSTRUCTION COSTS</b>	<b>\$3,979,000</b>

**Updated Schedule:**

The updated schedule is noted below.

- 80% Cost Estimate January 2014
- Tri-City Council Meeting January 2014
- Council Resolutions Approved March 2014
- Begin Advertising for Bids April 2014
- Complete Construction December 31, 2015

SGN/sgn



**BOLTON & MENK, INC.**  
 Consulting Engineers & Surveyors  
 MANKATO, MN FAIRMONT, MN SLEEPY EYE, MN BURNSVILLE, MN  
 WILLMAR, MN CHASKA, MN RAMSEY, MN MAPLEWOOD, MN  
 BAXTER, MN ROCHESTER, MN AMES, IA SPENCER, IA

CITY OF CRYSTAL, MINNESOTA  
 JOINT WATER - EMERGENCY WATER SUPPLY  
 WELL OPTION A

JANUARY, 2014

FIGURE NO. 1



**BOLTON & MENK, INC.**  
 Consulting Engineers & Surveyors  
 MANKATO, MN FAIRMONT, MN SLEEPY EYE, MN BURNSVILLE, MN  
 WILLMAR, MN CHASKA, MN RAMSEY, MN MAPLEWOOD, MN  
 BAXTER, MN ROCHESTER, MN AMES, IA SPENCER, IA

CITY OF GOLDEN VALLEY, MINNESOTA  
 JOINT WATER - EMERGENCY WATER SUPPLY  
 WELL OPTION A

JANUARY, 2014

FIGURE NO. 2

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**BOLTON & MENK, INC.**  
 Consulting Engineers & Surveyors  
 MANKATO, MN FAIRMONT, MN SLEEPY EYE, MN BURNSVILLE, MN  
 WILLMAR, MN CHASKA, MN RAMSEY, MN MAPLEWOOD, MN  
 BAXTER, MN ROCHESTER, MN AMES, IA SPENCER, IA

CITY OF GOLDEN VALLEY, MINNESOTA  
 JOINT WATER - EMERGENCY WATER SUPPLY  
 WELL OPTION B

JANUARY, 2014

FIGURE NO. 3



**BOLTON & MENK, INC.**  
 Consulting Engineers & Surveyors  
 MANKATO, MN FAIRMONT, MN SLEEPY EYE, MN BURNSVILLE, MN  
 WILLMAR, MN CHASKA, MN RAMSEY, MN MAPLEWOOD, MN  
 BAXTER, MN ROCHESTER, MN AMES, IA SPENCER, IA

CITY OF CRYSTAL, MINNESOTA  
 JOINT WATER - EMERGENCY WATER SUPPLY  
 WELL OPTION B

JANUARY, 2014

FIGURE NO. 4

Council Member \_\_\_\_\_ introduced the following resolution and moved its adoption:

## RESOLUTION ORDERING CONSTRUCTION OF EMERGENCY WATER SUPPLY

WHEREAS, the Joint Water Commission (JWC) is a joint powers entity authorized by Minnesota Statute 471.59 consisting of the cities of Crystal, Golden Valley, and New Hope, initiated in 1963; and,

WHEREAS, based on this agreement, the three cities built their water distribution systems to be interconnected without reference to city boundaries; and,

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WHEREAS, the JWC continues to have concerns regarding the reliability of the Mississippi River as the sole water supply source for the City of Minneapolis and its customers; and,

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WHEREAS, legislation was passed during the 2004 legislative session authorizing the JWC to drill wells to meet the needs of the three member cities on a case-by-case basis; and

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WHEREAS, at the direction of the three City Councils at the May 23, 2013 tri-Council meeting and adopted by resolution in session separately, staff was directed to develop a capital improvement program to implement the emergency water supply plan; and to retain professional and contractor services to implement the emergency water supply; and,

WHEREAS, at a tri-Council meeting on January 9, 2014, a detailed report, cost estimate and financing plan were presented to elected officials and staff.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of (Golden Valley, Crystal or New Hope), Minnesota:

1. That the construction of an emergency backup water supply to include three new wells, reestablishment of the existing New Hope well, all motors, pumps, meters, meter vaults, valves, associated pipe work, control and support equipment is hereby ordered.

Adopted by the City Council of the City of (Golden Valley, New Hope or Crystal), Hennepin County, Minnesota, this \_\_\_\_\_ day of January, 2014.

\_\_\_\_\_  
Mayor

Attest: \_\_\_\_\_  
City Clerk

The motion for the adoption of the foregoing resolution was seconded by Member and upon a vote being taken thereon, the following voted in favor thereof: and the following voted against the same: whereupon said resolution was declared duly passed and adopted, signed by the Mayor and his/her signature attested by the City Clerk.