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Date	Ver.	Action By	Action	Result

COWLITZ RIVER COLLECTOR WELL PHASE I INVESTIGATION RESULTS

COUNCIL INITIATIVE ADDRESSED:
Provide sustainable water quality & environmental infrastructure

CITY ATTORNEY REVIEW: N/A

SUMMARY STATEMENT:
In January of this year, exploratory drilling was conducted at three sites along the Cowlitz River to investigate the potential for developing horizontal collector wells as a source of water to replace Mint Farm groundwater. The results of the initial investigation were reported in March and prompted consideration of a fourth site, Rocky Point, nearer to the City's water treatment facilities. In late April, staff was directed to conduct additional Phase I drilling and testing at Rocky Point.

Investigative work at Rocky Point was conducted in a manner identical to the other three sites. An 8-inch diameter test well was drilled and the subsurface geology logged to confirm the water bearing strata was sufficiently thick to support municipal demand. Following well development, the test well was pumped at low flowrates stepped up over a four hour period while continuously monitoring water level decline, i.e. drawdown.

Water quality samples were collected and analyzed for the same constituents analyzed at the other test sites. Test results show high levels of iron, manganese, hardness and silica, all characteristic of groundwater, and at levels comparable to or higher than Mint Farm groundwater. Water quality may change with longer and higher volume pumping, but the degree and rate of change is unknown. If iron levels at Rocky Point do not improve during extended pump testing, the highest level of iron treatment will be required.

Based on estimated yield potential, Rocky Point outperformed the other sites with a capacity of 9 to 11 MGD per collector well, and the ability to support two collector wells. Riverside Park also remains viable with the next highest estimated yield at 5 to 9 MGD, with the potential for multiple collector wells. Both sites demonstrate adequate capacity, but water quality remains uncertain with speculation that long term pumping will eventually displace the groundwater and induce greater river influence.

With the Phase I investigation completed, the City Council and Beacon Hill Water and Sewer District Commissioners must decide whether or not to conduct the Phase II investigation or discontinue further investigation. If the Phase II investigation is conducted, the scope of work must be defined to identify the test site or sites, and resolve concerns that the current pump testing scope of work is not adequate. The current Phase II scope of work meets industry standards with a 72-hour pump test conducted at 500 gpm. In order to assess the potential for water quality improvement due to long term pumping, the Phase II scope of work could be enhanced to conduct a 90-day pump test at 1,500 gpm.

Phase II aquifer testing would consist of a 12-inch or larger diameter test well, multiple observation wells, and pump testing to further characterize subsurface flows. The more rigorous Phase II pump testing will allow refinement of calculated aquifer properties, and an enhanced 90-day pump test may indicate whether or not water quality is likely to improve with long term use of a collector well. Observation wells will be installed at roughly the same location as possible future collector well laterals and will be monitored to capture potential river influence.

If the decision is made to discontinue further investigation for an horizontal collector well water supply at the Cowlitz River, the City Council and BHWSD Board should determine whether or not to pursue treatment upgrades at the Mint Farm Regional Water Treatment Plant.

FINANCIAL SUMMARY:
The approved Water Supply Review contract amount with CH2M for the collector well investigation is $327,550, which covered Phase I work at three sites and Phase II work at one site. To date, $224,000 has been spent on the Phase I investigation, analysis and reporting to explore the first three sites plus the added Rocky Point site.

The cost to proceed with Phase II testing at one site and conduct a standard 72-hour, 500 gpm pump test is estimated at $180,000. In order to accomplish this work, $76,450 in additional funds would need to be authorized.

The cost to proceed with enhanced Phase II testing at one site and conduct a 90-day, 1500 gpm pump test is estimated in excess of $270,000, not including the cost to drill a test well larger than 12-inch diameter. In order to accomplish this work, at least $166,950 in additional funds would need to be authorized, plus the cost of drilling the well. Quotations have been solicited from three well drillers capable of drilling and constructing larger diameter wells.

RECOMMENDED ACTION:
Provide direction to staff regarding the following options:

1. Proceed with standard Phase II testing at Riverside Park and/or Rocky Point.

2. Proceed with enhanced Phase II testing at Riverside Park and/or Rocky Point.

3. Discontinue further investigation for horizontal collector wells.

4. Reconsider and pursue options to upgrade the Mint Farm water supply.

5. Discontinue all further studies and optimize the existing Mint Farm supply.

6. Other direction as determined by the City Council and BHWSD Board.