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Memorandum

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DATE: February 6, 2012

TO: Keith Rogal, Napa Redevelopment Partners LLC

FROM: Wes Strickland

RE: City of Napa Water Supplies for Alternative Napa Pipe Project

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1. EXECUTIVE SUMMARY

This memorandum analyzes water supplies and demands for a County-proposed alternative development to the Napa Pipe Project ("Alternative"), based on use of water from the City of Napa ("CON"). The Alternative would redevelop the site for mixed use consisting of 700 to 945 attached residential dwelling units in multi-story buildings, 150 senior housing units, 40,000 square feet of retail space, 100,000 square feet of office space, various community facilities and a 150-room hotel. The project would encompass 63 acres located between the Napa River and the existing railroad tracks on the site. The 91 acres east of the railroad tracks would retain its existing "industrial" zoning designation. For purposes of estimating the demand for potable water, it is assumed that the 91 acres east of the railroad tracks would accommodate 550,000 square feet of light industrial or research and development space. Such an Alternative would have potable water demands equal to approximately 340 acre-feet per year ("AFY").

This memorandum analyzes CON water supplies and demands based on detailed analysis contained in the *Water Supply Assessment for the Napa Pipe Project, Napa County, California*, dated September 12, 2011 ("WSA"). Under that analysis, CON would have sufficient water supplies to serve the Alternative in all normal and multiple dry years, and in single dry years after 2025. In single dry years between 2015 and 2025, CON would face a supply deficit based on the conservative planning assumptions used in its *Urban Water Management Plan 2010 Update* ("UWMP"), but in reality would likely have sufficient supplies based on the availability of additional dry year supplies from the State Water Project and implementation of its Water Shortage Contingency Plan. Importantly, the provision of water service to the Alternative would not change the years in which CON is projected to have surplus (or deficit) water supplies; only the magnitude of the surplus or deficit would be affected. This is consistent with the fact that the Alternative would represent only 2.3 percent of total CON water demands in 2015. In addition, the Alternative and CON could rely on local groundwater supplies underlying the Napa Pipe site to meet their collective demands in such single dry years.

The analysis in this memorandum leads to the conclusion that CON could reasonably provide water service to the Alternative, if the city agreed to sell water to the water purveyor, which would be either an investor-owned utility or mutual water company.

2. WATER DEMANDS

Projected potable water demands for the Alternative are shown in Table 1. The average daily demands for potable water are 303,500 gallons per day ("gpd"), which equals 340 AFY. This number includes water for indoor residential, commercial and community facility uses, a relatively small amount for irrigation of rear yards, and 10 percent for unaccounted-for water. Those demands will need to be met with potable water and cannot be satisfied by the use of recycled water. Because these figures are based on the Alternative, which does not contain detailed information on some development elements, they represent a best estimate of water demands.

Table 1. Projected Potable Water Demands for the Alternative Napa Pipe Project

Land Use	Quantity	Water Use Factor	Water Use (gpd)	Water Use (AFY)
Residential				
Multi-Story Residential	945 units	165 gpu	155,900	175
Senior Housing Units*	150 units	113 gpu	16,900	19
Commercial				
Retail	40,000 ft^2	0.1 gpd/ft^2	4,000	4
Offices	100,000 ft^2	0.1 gpd/ft^2	10,000	11
R&D/Light Industrial	550,000 ft^2	0.1 gpd/ft^2	55,000	62
Hotel	150 rooms	150 gpd/room	22,500	25
Community Facilities	15,600 ft^2	0.1 gpd/ft^2	1,600	2
Community Pool	1 unit	1,200 gpu	1,200	1
Irrigated Areas				
Rear Yards	2.3 acres	3,125 gpd/acre	7,200	8
Community Gardens	0.5 acres	3,125 gpd/acre	1,600	2
Total Potable Water Demands			275,900	310
Total Potable Water Demands with Unaccounted-For Water			303,500	340

Because the Alternative does not contain detailed information about landscaping, this memorandum does not include an estimate of non-potable water demands. Because the supply of recycled water from Napa Sanitation District is projected to be significantly higher than the demands of the Napa Pipe Project or any of its alternatives, it is expected that sufficient recycled water supplies would be available to meet all non-potable water demands of the Alternative.

3. WATER SUPPLIES

As discussed in Sections 7.4 and 7.5 of the WSA, CON is projected to have a surplus of water in both normal and multiple dry years in all periods, either with or without the Alternative. Thus, the CON would have sufficient water supplies for the Alternative in those year types.

In single dry years, which are based on 1977 as the single driest year in the past century, the UWMP projected that CON will face deficit conditions through 2025 for the city's existing service area. Beginning in 2030, it is expected that CON water supplies will be sufficient to meet all city demands in single dry years. If the demands of the Alternative were added to the CON water service area, it would increase the amount of deficit between 2015 and 2025 by 340 AFY, and reduce the magnitude but maintain a slight surplus in 2030 and following years. The greatest deficit would be projected for 2015, when the addition of demands from the Alternative would increase the supply deficit from 6 to 8 percent of total CON demands, or from 862 to 1,202 AFY. In 2020, the Alternative would increase the deficit from 270 to 510 AFY, and in 2025, the Alternative would increase the deficit from 226 to 566 AFY.

Based on this analysis, it is expected that CON would have sufficient water supplies to serve the Alternative. As noted by CON in its UWMP, many of the water supply assumptions made by CON were very conservative for planning purposes, including very low 7 to 11 percent allocations from the 2009 State Water Project Delivery Reliability Report, and the exclusion of State Water Project carryover and Article 21 water possibilities. More favorable assumptions in any of those categories could potentially alleviate projected shortfalls. If no imported dry year supplies were obtained, additional demand reduction could be generated through implementation of Stage 1 or 2 voluntary actions in the CON Water Shortage Contingency Plan. When that plan was activated in 1991, CON achieved a 31 percent reduction in consumption, which would more than adequately cover the maximum 9 percent deficit of CON supplies in 2015, including the Alternative.

CON water could be made available as part of a conjunctive use program, in which groundwater at the project site would be used in lieu of CON water when water shortfalls might otherwise be experienced. The WSA describes in detail the conjunctive use of groundwater, in the context of a proposed importation of surface water through the North Bay Aqueduct. The same approach would be feasible here. As set forth in the WSA, groundwater supplies at the site are sufficient to supply water to the project in an amount of at least 620 AFY. That amount would cover the full deficit projected for CON from 2020 through 2025, and would cover a significant portion of the projected deficit in 2015. Those supplies could easily provide water to the site, during those years when CON might otherwise experience a shortfall. The conjunctive use of groundwater would also have the benefit of diversifying CON's portfolio.

As stated by CON, "[o]verall, the City projects generally strong, reliable water service for the next 25 years. No shortfalls are expected for normal years or multiple-dry year periods through 2035. Potential shortfalls up to 6% could occur in critical single-dry years should conservatively low [State Water Project] delivery assumptions materialize." Based on this analysis, CON could reasonably provide water service to the Alternative, if the city agreed to sell water to the project's water purveyor.