



INTEROFFICE MEMORANDUM

TO: HONORABLE PRESIDENT AND BOARD OF TRUSTEES
FROM: T. J. MOORE, DIRECTOR OF PUBLIC WORKS
SUBJECT: CONCLUSIONS OF WATER COMMITTEE ON STATUS OF EXISTING WATER PRODUCTION SYSTEM
DATE: 08/12/06
CC: PAUL NICHOLSON, VILLAGE ADMINISTRATOR

MEMBERSHIP

The membership of the Water Committee is Trustee Gorman, Trustee O'Leary, Trustee Scarpelli, and President Bartels (*ex officio*). Staff & professional consultant assistance: Paul Nicholson, Village Administrator; T. J. Moore, Director of Public Works; Tim Wilson, Water Superintendent; Joe Heinz, Village Engineer.

PURPOSE

Over the past several weeks (months), there have been 'mixed signals' in the past regarding the condition of the Village's water supply. In response, the Village Board's Water Committee has undertaken a review of this important Village infrastructure matter. The intent of this memo is to clarify the existing situation.

Below are the findings and conclusions of the Water Committee regarding the current status of the Village's water production system. The committee developed these findings and conclusions using assumptions generated jointly in water committee meetings.

FINDINGS

Currently, the Village's water supply is capable of meeting existing demand and emergency alternatives are available. We are currently in regulatory compliance: with the largest producing well (#3) offline we can meet the average daily demand, and can meet max daily demand with all wells online. In addition, production may be increased up to a maximum of 50% above today's production levels, if necessary. The Village should continue to pursue the design and installation of an additional well(s).

1. The greatest threat to the Village's public water supply is the declining aquifer level. The rate of decline of the aquifer appears to be minimal at this time.

However, historic data confirms a decline in static aquifer levels over time. Well No. 3 is our most vulnerable well because there is currently only 3 feet of separation between the pumping water level and the bowls.

2. Given current aquifer levels and all wells in service, production may be increased up to 50% from today's average daily demand and maximum daily demand. With a 50% increase in maximum daily demand, pumps would be operating at their recommended limit.
 - a. For maximum daily demand, pumps would be operating approximately 18 hours per day. With sustained pumping at this level, the affect on the aquifer is unknown.
 - b. For average daily demand, the pumps would operate less than 9 hours per day.
3. The wells are in good condition, and Wells No. 3 and No. 4 are within their projected useful life. Well No. 2 is approaching the end of its projected useful life. Risk from mechanical failure is no greater than that of any other properly maintained well.
4. While the pumping level of Well No. 3 remains a concern, emergency alternative solutions are available to mitigate the risk. In addition, it is important to note the static water level is greater than 20 feet above the bowls and the recovery rate from pumping levels is nearly immediate. In the event that pumping water levels drop below a sustainable yield, two options have been identified to provide emergency water availability.
 - a. Short-term, the production of the pumps can be reduced to decrease drawdown.
 - b. If the solution listed above is inadequate, a suction line can be added to the existing well shaft into the screen thereby providing an additional 10 feet (approx) of available pumping drawdown. This is not a long-term recommended solution. This emergency procedure could be completed in a week to 10 days depending on mobilization, availability, and regulatory approval.
5. The Village's active aerial water storage is one million gallons. This is an important asset to minimizing risk in event of a well shut-down. During the summer months of June-September from 2004 to present, the highest max daily demand was 938,000 gallons per day (GPD). During the same months, average daily demand did not exceed 631,000 gallons (June 2005). This summer to date, demand is running at less than 500,000 GPD.

CONCLUSION

The Village is not presently experiencing a water 'crisis'. There is ample pumping and storage capacity for current and near term development. Due to concerns with respect to

the aquifer and need for redundancy, it is recommended that the Village continue to pursue installation of an additional well(s).

Background System Data				
Well #2	110	GPM	6,600	GPH
Well #3	1,000	GPM	60,000	GPH
Well #4	450	GPM	27,000	GPH
	1,560		93,600	
"Crisis mode"				
Well #2	250	GPM	15,000	GPH
Well #2 was throttled down to 110 GPM due to a hammering issue. In a crisis, this could be put up to 250 GPM if necessary.				
Section 654.202 Ground Water Quantity				
a) Ground water source adequacy shall be determined by the amount of water produced by each well pumping within its calculated safe yield.				
b) Where multiple wells are used the combined delivery shall:				
1) exceed the record maximum daily demand; and				
2) equal or exceed the calculated average daily demand with the largest producing well out of service.				
Demands				
	Avg Day	Max Day		
	536,000	1,225,000		

Can we meet Average Daily Demand with and without well #3?				
	Gallons	Hours		
Well #2 (110 gpm)	536,000	81.21		
Well #3	536,000	12.30	* Limited Supply to high side through booster	
Well #4	536,000	19.85		
Well #2 + Well #4	536,000	15.95		
Conclusion: We are within regulatory compliance of average day demand.				

Village of East Dundee
August 12, 2006

Daily Ave, Max & Min

2004 Months	Well #2		Well #3		Well #4		Booster Pumps		Electric Fill Line		Total Well output total							
	Ave	Max	Min	Ave	Max	Min	Ave	Max	Min	Ave	Max	Min						
January	0.153	0.258	0.108	0.342	0.493	0.158	0.207	0.275	0.182	0.257	0.329	0.182	0.217	0.323	0.1	0.72	0.907	0.471
February	0.136	0.222	0.044	0.325	0.606	0.271	0.193	0.399	0.167	0.238	0.466	0.2	0.197	0.459	0.134	0.653	1.225	0.506
March	0.112	0.177	0.041	0.3	0.415	0.177	0.154	0.244	0.055	0.189	0.307	0.069	0.159	0.253	0.061	0.566	0.836	0.334
April	0.111	0.23	0.077	0.28	0.543	0.22	0.152	0.275	0.104	0.179	0.355	0.123	0.152	0.235	0.104	0.543	0.903	0.4
May	0.073	0.113	0	0.248	0.34	0.115	0.123	0.217	0.081	0.149	0.265	0.084	0.098	0.116	0.074	0.444	0.662	0.274
June	0.109	0.176	0.06	0.299	0.403	0.18	0.198	0.326	0.09	0.233	0.388	0.108	0.137	0.223	0.072	0.606	0.884	0.346
July	0.105	0.161	0.056	0.29	0.396	0.211	0.197	0.318	0.128	0.243	0.4	0.152	0.144	0.235	0.094	0.592	0.81	0.438
August	0.122	0.162	0.017	0.291	0.42	0.141	0.18	0.499	0.104	0.223	0.334	0.08	0.158	0.267	0.05	0.572	0.825	0.38
September	0.105	0.182	0.067	0.277	0.408	0.21	0.148	0.26	0.108	0.204	0.327	0.143	0.138	0.238	0.101	0.53	0.825	0.421
October	0.111	0.187	0.04	0.281	0.417	0.186	0.1	0.301	0.002	0.221	0.428	0.046	0.148	0.227	0.055	0.492	0.864	0.267
November	0.103	0.234	0	0.19	0.276	0.05	0.141	0.675	0	0.157	0.438	0	0.089	0.321	0	0.434	0.866	0.114
December	0.135	0.235	0.058	0.188	0.326	0.05	0.204	0.45	0.056	0.29	0.637	0.08	0.216	0.462	0.073	0.528	0.793	0.275
Daily Ave for	0.115	0.258		0.276	0.606		0.166	0.675	0.000	0.215	0.637	0.08	0.154	0.462	0.073	0.557	1.225	0.275
Maximum one Day pumpage																		
Minimum one Day pumpage 2006			0.000			0.000			0.000			0.000						

2005 Months	Well #2		Well #3		Well #4		Booster Pumps		Electric Fill Line		Total Well output total							
	Ave	Max	Min	Ave	Max	Min	Ave	Max	Min	Ave	Max	Min						
January	0.174	0.269	0.103	0.22	0.362	0	0.28	0.524	0.141	0.403	0.759	0.201	0.297	0.539	0.149	0.674	0.892	0.448
February	0.147	0.229	0.106	0.267	0.371	0.215	0.202	0.314	0.14	0.288	0.432	0.198	0.217	0.337	0.15	0.616	0.903	0.466
March	0.087	0.271	0	0.273	0.43	0.042	0.248	0.778	0.116	0.16	0.279	0.41	0.232	0.568	0	0.608	0.996	0.362
April	0	0	0	0.354	0.601	0.248	0.229	0.487	0.146	0.336	0.625	0.217	0.341	0.635	0.315	0.583	1.002	0.394
May	0	0	0	0.353	0.506	0.244	0.207	0.325	0.15	0.329	0.498	0.195	0.329	0.498	0.197	0.56	0.765	0.381
June	0	0	0	0.384	0.571	0.23	0.248	0.352	0.15	0.348	0.524	0.113	0.354	0.48	0.219	0.631	0.859	0.425
July	0	0	0	0.387	0.483	0.191	0.265	0.557	0.167	0.355	0.52	0.182	0.365	0.511	0.088	0.355	0.52	0.182
August	0	0	0	0.227	0.468	0.125	0.204	0.355	0.139	0.271	0.482	0.124	0.218	0.339	0.181	0.511	0.8	0.372
September	0.162	0.246	0	0.117	0.316	0	0.211	0.357	0.133	0.234	0.521	0.141	0.115	0.305	0	0.49	0.859	0.344
October	0.117	0.382	0.077	0.154	0.315	0.066	0.135	0.248	0.004	0.211	0.384	0.151	0.129	0.24	0.059	0.407	0.655	0.263
November	0.087	0.103	0.076	0.197	0.214	0.176	0.119	0.144	0.106	0.17	0.193	0.151	0.107	0.12	0.096	0.403	0.441	0.369
December	0.071	0.437	0.274			0.215	0.778	0.296	0.106	0.254	0.635	0.000	0.254	0.635	0.000	0.536	1.002	0.182
Daily Ave for	0.071	0.437	0.000	0.274	0.606	0.000	0.215	0.778	0.000	0.296	0.759	0.000	0.254	0.635	0.000	0.536	1.002	0.182
Maximum one Day pumpage																		
Minimum one Day pumpage 2005			0.000			0.000			0.000			0.000						

2006 Months	Well #2		Well #3		Well #4		Booster Pumps		Electric Fill Line		Total Well output total							
	Ave	Max	Min	Ave	Max	Min	Ave	Max	Min	Ave	Max	Min						
January	0.141	0.395	0.082	0.112	0.222	0	0.196	0.44	0.119	0.301	0.699	0.172	0.19	0.461	0.111	0.449	0.706	0.306
February	0.187	0.254	0.113	0	0	0	0.286	0.39	0.177	0.423	0.572	0.262	0.272	0.375	0.166	0.474	0.644	0.297
March	0.101	0.223	0.023	0.175	0.285	0	0.164	0.369	0.09	0.23	0.542	0.111	0.152	0.328	0.048	0.441	0.603	0.29
April	0.115	0.377	0.054	0.208	0.392	0	0.189	0.686	0.092	0.216	0.481	0.14	0.126	0.345	0	0.511	1.118	0.336
May	0.096	0.123	0.01	0.217	0.254	0.98	0.121	0.176	0.006	0.175	0.242	0.028	0.121	0.164	0.01	0.434	0.553	0.105
June	0.084	0.226	0	0.242	0.391	0.136	0.131	0.289	0.058	0.188	0.417	0.086	0.14	0.285	0.059	0.458	0.906	0.233
July	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
August	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
September	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
October	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
November	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Daily Ave for	0.060	0.395		0.080	0.392		0.091	0.686	0.000	0.128	0.699	0.000	0.083	0.461	0.000	0.461	1.118	0.000
Maximum one Day pumpage																		
Minimum one Day pumpage 2006			0.000			0.000			0.000			0.000						