Technical Memorandum No. 3

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South East Kelowna Irrigation District

Water Supply and Treatment Cost/Benefit Review

Evaluation and Comparison of System Options

November 2007

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TECHNICAL MEMORANDUM NO. 3

Water Supply and Treatment
Cost/Benefit Review
Evaluation and Comparison of System Options

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1 Objective

The objective of this Technical Memorandum is to evaluate and compare shortlist supply and treatment options from Technical Memorandum No. 2 leading to a recommended option.

2 Evaluation Criteria

The following is a summary of criteria used for evaluating the various options:

2.1 Cost and Cost Risks

- ***Capital Cost*:** The options were ranked based on their total capital costs. The capital costs will impact the SEKID's ability to finance the proposed capital works and is therefore considered separate of life-cycle costs.

- ***Life-Cycle Cost Impact on Taxes*:** The options were ranked in terms of their total life-cycle costs per connection. Life-Cycle costs have been estimated on the basis of financing based on a 20 year amortization at 5% interest rate plus the operation and maintenance costs projected for the 20 year period 2008 to 2027. Options with lower life-cycle costs are ranked higher than those with higher life-cycle costs.

- ***Constructability*:** Options were ranked in terms of their potential for constructability problems and cost overruns. Options with site constraints or potentially difficult geotechnical conditions were ranked lowest.

- ***Ability to Treat All Ratepayers Equally*:** Options were ranked in terms of their ability to treat all ratepayer groups equally. Options that were considered to treat some customer classes differently than others (i.e.: different levels of treatment or service) and thus potential implementation risks were ranked the lowest.

- ***Flexibility for Treatment Phasing*:** The options were ranked in terms of their feasibility for phasing treatment. For example, options that include multiple unit treatment processes or where treatment for aesthetic parameters could be deferred, thereby allowing the potential for phased treatment implementation and thus reducing the initial capital cost, were ranked higher than options involving fewer process steps and limited phasing potential.

- ***Direct Ability to Control Future Costs*:** Options were ranked based on their vulnerability to or lack of control of future costs. Options that involved significant future costs (such as future O&M costs) beyond the direct control of the SEKID were ranked lowest.

- ***Facilities Site Availability*:** The options were ranked based on their vulnerability to problems and associated costs in acquiring land for facilities. Options where the availability of lands at the proposed plant site is unknown were therefore ranked lower than options not requiring land acquisition.

2.2 Source Capacity and Water Quality

- ***Available Source Capacity to Meet Projected Demands*:** The options were ranked in terms of the supply source ability to meet the projected demands. Those sources considered to have more spare or excess capacity were ranked higher than those with limited capacity.

- ***Raw Water Quality*:** The options were ranked in terms of the general source water quality (ultimately used for drinking water purposes) relative to parameters of importance to public health. Included in this ranking was consideration of the variability of water quality including frequency and amplitude of spikes of parameters such as turbidity and colour.

- ***Source Resilience to Water Quality Deterioration*:** Each option was ranked in terms of resilience to future water quality deterioration. Sources having minimal existing and future potential development within their watersheds were ranked higher than those with significant existing or potential future development.

2.3 Treated Water Quality

- ***Treatment Conformance with IHA Requirements*:** Each option was ranked in terms of its ability to meet IHA's water quality requirements, thereby addressing public health protection. Options having higher quality source water and/or multi-barrier treatment were ranked the highest.

- ***Treatment Process Robustness:*** Options were ranked in terms of the robustness of the treatment process to minimize the possibility of producing treated water not conforming with operating permit requirements and thus creating a potential health risk. Options having better quality source water and/or multiple treatment steps were ranked higher than those having poor quality source water and /or limited treatment steps.

- ***Risk of Human Consumption of Non-potable Water from System*:** Options were ranked in terms of the potential risk of human consumption of non-potable water from the SEKID system. Options having components carrying non-potable quality water such as separated systems or options involving only partial treatment for a portion of the year were ranked lower than systems containing only potable water conforming to IHA's water quality requirements.

- ***Aesthetic Water Quality*:** Options were ranked in terms of their potential aesthetic water quality. For example, options that have potential aesthetic issues such as hardness, colour, taste and odour, etc. were ranked lower than options that are deemed to address all of these issues.

2.4 Operation and Security

- ***Operational Robustness*:** Options were ranked in terms of their operational complexity and robustness. Supply options having reduced mechanical and electrical components were ranked higher than those having high complexity. Treatment options having proven robust treatment components and more robust treatment processes were ranked higher than those with more complex or finicky treatment components.

- ***Operations and Maintenance Accessibility*:** Options were ranked in terms of their operations and maintenance accessibility. Those that have mechanical/electrical components at multiple locations or at long distance from the base of operations were ranked low.

- ***Operational & Maintenance Complexity and Effort*:** Options were ranked in terms of their operational complexity and thus the training level and effort involved in operating and maintaining them. Those options having complex treatment processes requiring increased operator attendance/involvement and ongoing maintenance requirements were ranked lower than options having less complex operational requirements. Options that are more simple or readily lend themselves to automation were ranked higher.

- ***Supply Risk*:** Options were ranked in terms of their flexibility relative to potential failure of their primary source of supply. Options having more than one source of supply therefore were ranked higher than those with single sources and single pipelines.

- ***Security*:** Options were ranked in terms of their exposure to potential vandalism or security breaches. Options having treatment plants at remote locations away from the view of general public were ranked low. Options having treatment plants in developed areas with high public visibility were ranked highest.

2.5 Environmental/Urban Impact

- ***Construction - Environmental Impacts*:** Options were ranked in terms of the impact of their construction on the surrounding physical and natural environment. For example, options involving extensive construction of water mains and earth moving on existing streets thus impacting local accessibility, etc. were ranked lower than options not involving extensive road disruption. Also options involving significant construction requirements in undisturbed natural areas were ranked lower than those involving construction in previously developed areas.

- ***Operation – Environmental Impacts*:** Options were ranked in terms of the impact of their operation on the natural and urban environment. For instance, options involving significant water treatment residuals management requirements, high noise generation, etc., were ranked the lowest.

3 Importance of Evaluation Criteria

In order to assist in the evaluation process, a numerical weighting was identified for each of the evaluation criteria. Numerical scoring of options is a highly subjective exercise and therefore was not used in evaluating options. It should not be used as the sole basis for selecting one option over the others. However, it was felt that understanding the importance of each criterion was important in the evaluation process.

The Criteria Importance was established in consultation with the SEKID Steering Committee relative to each of the evaluation criteria. Criteria which were considered to have higher importance to the Steering Committee were therefore given higher weighting applied for each of the criteria. The sum of all the criteria weightings is 237 of which cost factors are 100:

Criteria	Importance
Cost and Cost Risks	
Capital Cost	50.00
Life-Cycle Cost Impact on Taxes	50.00
Constructability	6.71
Ability to Treat All Ratepayers Equally	9.00
Flexibility for Treatment Phasing	7.14
Direct Ability to Control Future Costs	7.57
Facilities Site Availability	6.00
Source Capacity/Quality	
Available Source Capacity	8.43
Raw Water Quality	6.43
Source Resilience to Water Quality Deterioration	7.00

Treated Water Quality

Treatment Conformance with IHA Requirements	9.71
Robustness of Treatment Process	7.71
Risk of Human Consumption of Lower Quality Water	4.57
Aesthetic Water Quality	6.57

Operation and Security

Operational Robustness	7.57
Operations and Maintenance Accessibility	7.71
Operational & Maintenance Complexity and Effort	8.29
Supply Risk	8.14
Security	6.57

Environmental/Urban Impacts

Construction - Environmental Impacts	5.57
Operation – Environmental Impacts	5.86

4 Assessment

The following summarizes our findings relative to the qualitative assessment of each option under each of the major assessment criteria.

4.1 Cost and Cost Risk

4.1.1 Capital Cost

The option having the lowest capital cost was Option 7 which involved expanding the existing wellfield and installing a separate shallow bury domestic distribution system. It should be noted that this option has higher operation and maintenance costs than some other options due to potential operation and maintenance issues related to the shallow bury distribution piping. Options 3 and 6 were the second highest ranked options based on capital cost.

4.1.2 Life Cycle Cost Impact on Taxes

The option having the lowest Life Cycle Cost per Connection is Option 7, Groundwater Domestic Supply and Shallow Depth Separated System. As noted above, there are some significant operation and maintenance issues associated with this option due to the shallow bury distribution piping. Options 3 and 6 were the second highest ranked options under this criteria.

4.1.3 Constructability

The constructability of any option is highly impacted by geotechnical conditions, site constraints and any other factor which may impact the ability to construct the required facilities. Option 1 was ranked higher that the other options because the plant would constructed at the Field Reservoir site where there is significant available space and geotechnical conditions are well understood. Options 5, 7, and 8 were ranked second in this category due to their apparent reduced site constraint issues.

4.1.4 Ability to Treat All Ratepayers Equally

Options 1, 3, 4, 5, 6, 7, and 8 were all considered to provide an equivalent level of service to all customers and therefore ranked highest. Option 2 would not provide the same quality of water to rural customers during summer months. Option 3 involved providing point of entry devices at each of the rural customers and this was deemed to be less reliable than a centralized plant.

4.1.5 Flexibility for Treatment Phasing

Options 2, 3, 6, 7, and 8 would allow phasing of either the filtration or softening (for groundwater options) and were therefore ranked the best in this category. Options 1, 4, and 5 require installation of all treatment components immediately and were therefore ranked lowest.

4.1.6 Direct Ability to Control Future Costs

Options 1, 4, and 5 have no potential future capital investment requirements and were therefore ranked highest in this category. Options 2 and 3 were the second ranked under this criteria. Options 6, 7, and 8 were ranked the lowest due to the fact that there is a potential future softening requirement to address aesthetic water quality concerns.

4.1.7 Facilities Site Availability

Options 1 and 2 were ranked highest because all required facilities are located on lands already owned by SEKID. Options 4, 5, 6, 7, and 8 were ranked as average due to the fact that they involve the requirement to acquire lands either for new wells, pump stations, or pipeline rights of way. The ability of SEKID to be able to purchase these lands is unclear at this time. Option 3 was ranked the lowest due to the requirement to locate POE devices at each rural connection.

4.2 Source Capacity and Water Quality

4.2.1 Available Source Capacity

All options involve drawing the raw water supply from SEKID's existing supply sources which have been proven to have capacity to meet the demands identified herein. All options were therefore considered equal under this criteria.

4.2.2 Raw Water Quality

Options 6, 7, and 8 involve utilizing the well-field to supply the domestic demands and were therefore ranked as good due to the superior quality of the source water. Options 1, 2, 3, 4, and 5 involve utilizing water from the Hydraulic Creek Intake to supply both agricultural and domestic demands and were therefore ranked as fair.

4.2.3 Source Resilience to Water Quality Deterioration

Options 6, 7, and 8 utilize the deep groundwater source which is deemed to be better protected from potential future deterioration so these options were ranked as good under this category. All other options were ranked as average.

4.3 Treated Water Quality

4.3.1 Treatment Conformance with IHA Requirements

Options 1, 4, 6, and 8 were developed on the basis of conformance with IHA's requirements therefore, they have been considered to be equal under this criteria. Options 5 and 7 were downrated slightly due to the fact that they involve switching water from the domestic to the agricultural distribution system during winter months creating the potential for backflow prevention issues. Option 2 doesn't include filtration and was thus ranked the lowest.

4.3.2 Treatment Process Robustness

Options 6, 7, and 8 require the least treatment infrastructure due to the high quality of the source water. They were therefore deemed to be the most robust options and thus ranked as excellent. Options 1, 4, and 5 were based on a multi-barrier treatment approach and were therefore ranked as good. Options 2 and 3 were ranked as fair.

4.3.3 Risk of Human Consumption of Non-Potable Water

Options involving separation of the domestic and irrigation systems will involve the potential risk of ingestion of non-potable water. In this analysis we have assumed that the irrigation systems will be delivering untreated water. This does create the risk that humans could unknowingly ingest non-potable water. Option 1, which involves filtration of all water

entering the system, was therefore considered to have a highest ranking. Options 3, 4, 6, and 8 were ranked as good under this criteria due to the fact that they al involve portions of the system conveying unfiltered water. Options 5 and 7 were downrated further due to the potential cross connection issues and greater risk of non-potable water consumption.

4.3.4 Aesthetic Water Quality

All options that include filtration of the domestic component have been ranked the highest under this criteria as they would be deemed to provide the most palatable water. Options 6 and 7 which involve utilizing groundwater for the full domestic supply were ranked as average due to the hardness of the groundwater.

4.4 Operation and Security

4.4.1 Operational Robustness

Options 6 and 8 involve utilizing groundwater and full depth separated distribution systems and were therefore deemed to be the most robust of all options considered. Options 1 and 4 were the second ranked under this category due to having multi-barrier treatment systems.

4.4.2 Operation & Maintenance Accessibility

Options 1, 4, 5, 6, 7, and 8 involve locating the plant infrastructure at easily accessible locations close to SEKID's offices. They were therefore ranked highest under this criteria. Option 3 involving the use of point of entry systems located within individual rural properties at hundreds of locations was therefore ranked the lowest.

4.4.3 Operation & Maintenance Complexity and Effort

Option 6 which utilizes groundwater with minimal treatment and a deep bury distribution system was ranked the highest under this criteria as it was deemed to have the least O&M complexity and effort. Options 5 and 7 were ranked second in this category. Option 3 was ranked the lowest due to the fact that it would involve operating and maintaining approximately 600 point of entry treatment systems.

4.4.4 Supply Risk

Options 6, 7, and 8 were ranked the highest as they all maximize the utilization of the groundwater supply thereby improving the overall supply reliability including fire protection.

4.4.5 Security

Options 6, 7, and 8 were ranked highest in this category due to the fact that they would be the most highly visible and least complex therefore most difficult to breach and purposely vandalize.

4.5 Operation and Security

4.5.1 Construction - Environmental Impacts

The construction of water supply systems involves considerable disturbance to the environment during the construction process. Options 2, 3, 4, 5, 6, 7, and 8 would involve more construction having more general impact on the public than Option 1 and 2 and were therefore ranked slightly lower. Options 1 and 2 would involve construction of all infrastructure at a single site were therefore ranked higher.

4.5.2 Operation – Environmental Impacts

The most significant environmental impact created by the operation of water supply and treatment facilities involves the handling of liquid and solid residuals from the treatment process. Options 6, 7, and 8 involve minimal treatment and thus minimal residuals than all other options and were therefore ranked the highest.

5 Conclusions

This analysis was performed to assess the various risks associated with the construction of any of these options. Criteria for assessing the weighting of importance were based on discussions with RDOS Steering Committee and Board.

The results clearly show that Options 2 and 3 score poorly. Options 6 and 8 score highest with virtually identical scores. Options 4 and 7 also score well. As previously discussed, the use of weighted qualitative criteria is a decision making tool and the absolute scores themselves should not be used to make the decision.

Prepared by:

W.J (Bill) Harvey, P.Eng.
Project Manager

Reviewed by:

Ian P.D. Wright, P.Eng.
Vice President, Water Treatment

WJH/cb

Enclosure - 3A

ENCLOSURE 3A - QUALITATIVE ASSESSMENT OF OPTIONS

South East Kelowna Irrigation District

Water Supply and Treatment Cost/Benefit Review

Enclosure 3A
Table 3A-1
System Options Cost Summary

OPTION	NAME	TREATMENT	Supply and Distribution System Capital Cost	Water Treatment Capital Cost	Capital Cost	Annual Debt Serving Cost (Note 1)	Initial Annual Operating Cost	Total 20 Year Debt Servicing & O&M Cost	No. of Connections	Total Cost Per Connection	Total Annual Cost per Connection
1	Hydraulic Creek	Clarification/Filtration	$4,057,000	$50,725,000	$54,782,000	$4,395,849	$1,203,000	$117,146,724	2,053	$57,061	$2,853
2	Hydraulic Creek Blended Concept	Clarification/Filtration	$156,000	$39,623,000	$39,779,000	$3,191,970	$922,000	$86,241,572	2,053	$42,008	$2,100
3	Hydraulic Creek With Point of Entry Rural Treatment	Clarification/Filtration	$652,000	$15,438,000	$16,090,000	$1,291,103	$362,000	$34,617,712	2,053	$16,862	$843
4	Hydraulic Creek Full Depth Separated System	Clarification/Filtration	$11,367,000	$11,980,000	$23,347,000	$1,873,424	$335,000	$45,608,093	2,053	$22,215	$1,111
5	Hydraulic Creek Shallow Depth Separated System	Clarification/Filtration	$9,117,000	$11,980,000	$21,097,000	$1,692,878	$393,000	$43,406,424	2,053	$21,143	$1,057
6	Groundwater Domestic Supply & Full Depth Separated System	Chlorination	$16,681,000	$883,000	$17,564,000	$1,409,381	$362,000	$36,983,264	2,053	$18,014	$901
7	Groundwater Domestic Supply & Shallow Depth Separated System	Chlorination	$12,095,000	$883,000	$12,978,000	$1,041,388	$410,000	$30,789,688	2,053	$14,997	$750
8	Dual Source System	Clarification/Filtration	$14,680,000	$6,470,000	$21,150,000	$1,697,131	$364,000	$42,786,857	2,053	$20,841	$1,042

Notes:
1) Assumed Interest Rate 5.00%
2) Assumed Inflation Rate 2.00%

South East Kelowna Irrigation District

Water Supply and Treatment Cost/Benefit Review

Enclosure 3A
Table 3A-2
System Options Qualitative Evaluation

			COST AND PROJECT RISK								TREATED WATER QUALITY				OPERATION & SECURITY					ENVIRONMENTAL IMPACT	
OPTION	NAME	TREATMENT	Capital Cost	Total Annual Cost per Connection	Constructability	Ability to Treat All Ratepayers Equally	Flexibility for Treatment Phasing	Facilities Site Availability	Raw Water Quality	Source Resilience to Water Quality Deterioration	Treatment Conformance With IHA Requirements	Treatment Process Robustness	Risk of Human Consumption of Non-Potable Water From System	Aesthetic Water Quality	Operational Robustness	Operations & Maintenance Accessibility	Operational & Maintenance Complexity and Effort	Supply Risk	Security	Construction - Environmental Impact	Operation - Environmental Impact
1	Hydraulic Creek	Clarification/Filtration	$54,782,000	$2,853	Excellent	Excellent	Average	Excellent	Fair	Average	Excellent	Good	Excellent	Excellent	Good	Excellent	Average	Average	Good	Good	Average
2	Hydraulic Creek Blended Con	Clarification/Filtration	$39,779,000	$2,100	Fair	Poor	Excellent	Excellent	Fair	Average	Poor	Fair	Average	Fair	Poor	Good	Fair	Average	Fair	Good	Good
3	Hydraulic Creek With Point of Entry Rural Treatment	Clarification/Filtration	$16,090,000	$843	Average	Fair	Excellent	Fair	Fair	Average	Fair	Fair	Good	Good	Fair	Poor	Poor	Average	Average	Fair	Average
4	Hydraulic Creek Full Depth Separated System	Chlorination	$23,347,000	$1,111	Average	Excellent	Average	Average	Fair	Average	Excellent	Good	Excellent	Excellent	Good	Excellent	Good	Average	Good	Fair	Good
5	Hydraulic Creek Shallow Depth Separated System	Chlorination	$21,097,000	$1,057	Good	Excellent	Average	Average	Fair	Average	Excellent	Good	Fair	Excellent	Fair	Good	Fair	Average	Good	Average	Good
6	Groundwater Domestic Supply & Full Depth Separated System	Chlorination	$17,564,000	$901	Average	Excellent	Excellent	Average	Good	Good	Excellent	Excellent	Excellent	Average	Excellent	Excellent	Excellent	Excellent	Excellent	Fair	Excellent
7	Groundwater Domestic Supply & Shallow Depth Separated System	Chlorination	$12,978,000	$750	Good	Excellent	Excellent	Average	Good	Good	Excellent	Excellent	Fair	Average	Average	Good	Fair	Good	Excellent	Average	Excellent
8	Dual Source System	Clarification/Filtration	$21,150,000	$1,042	Good	Excellent	Excellent	Average	Good	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Average	Excellent	Excellent	Fair	Excellent

South East Kelowna Irrigation District

Water Supply and Treatment Cost/Benefit Review

Enclosure 3A
Table 3A-3
System Options Rating

			COST & PROJECT RISK								TREATED WATER QUALITY				OPERATION & SECURITY					ENVIRONMENTAL IMPACT	
OPTION	NAME	TREATMENT	Capital Cost	Total Annual Cost per Connection	Constructability	Ability to Treat All Ratepayers Equally	Flexibility for Treatment Phasing	Facilities Site Availability	Raw Water Quality	Source Resilience to Water Quality Deterioration	Treatment Conformance With IHA Requirements	Treatment Process Robustness	Risk of Human Consumption of Non-Potable Water From System	Aesthetic Water Quality	Operational Robustness	Operations & Maintenance Accessibility	Operational & Maintenance Complexity and Effort	Supply Risk	Security	Construction - Environmental Impact	Operation - Environmental Impact
1	Hydraulic Creek	Clarification/Filtration	1.00	1.00	5	5	3	5	2	3	5	4	5	5	4	5	3	3	4	4	3
2	Hydraulic Creek Blended Concept	Clarification/Filtration	2.44	2.43	2	1	5	5	2	3	1	2	3	2	1	4	2	3	2	4	4
3	Hydraulic Creek With Point of Entry Rural Treatment	Clarification/Filtration	4.70	4.82	3	2	5	2	2	3	2	2	4	4	2	1	1	3	3	2	3
4	Hydraulic Creek Full Depth Separated System	Chlorination	4.01	4.31	3	5	3	3	2	3	5	4	5	5	4	5	4	3	4	2	4
5	Hydraulic Creek Shallow Depth Separated System	Chlorination	4.22	4.42	4	5	3	3	2	3	5	4	2	5	2	4	2	3	4	3	4
6	Groundwater Domestic Supply & Full Depth Separated System	Chlorination	4.56	4.71	3	5	5	3	4	4	5	5	5	3	5	5	5	5	5	2	5
7	Groundwater Domestic Supply & Shallow Depth Separated System	Chlorination	5.00	5.00	4	5	5	3	4	4	5	5	2	3	3	4	2	4	5	3	5
8	Dual Source System	Clarification/Filtration	4.22	4.44	4	5	5	3	4	4	5	5	5	5	5	5	3	5	5	2	5

South East Kelowna Irrigation District

Water Supply and Treatment Cost/Benefit Review

Enclosure 3A
Table 3A-4
System Options Numeric Weighted Rating

			COST & COST RISK								TREATED WATER QUALITY				OPERATION & SECURITY					ENVIRONMENTAL IMPACT		
OPTION	NAME	TREATMENT	Capital Cost	Total Annual Cost per Connection	Constructability	Ability to Treat All Ratepayers Equally	Flexibility for Treatment Phasing	Facilities Site Availability	Raw Water Quality	Source Resilience to Water Quality Deterioration	Treatment Conformance With IHA Requirements	Treatment Process Robustness	Risk of Human Consumption of Non-Potable Water From System	Aesthetic Water Quality	Operational Robustness	Operations & Maintenance Accessibility	Operational & Maintenance Complexity and Effort	Supply Risk	Security	Construction - Environmental Impact	Operation - Environmental Impact	Total Weighted Score
Criteria Weighting			50	50	6.71	9	7.14	6	6.43	7	9.71	7.71	4.57	6.57	7.57	7.71	8.29	8.14	6.57	5.57	5.86	237
1	Hydraulic Creek	Clarification/Filtration	50.00	50.00	33.55	45	21.42	30	12.86	21	48.55	30.84	22.85	32.85	30.28	38.55	24.87	24.42	26.28	22.28	17.58	656
2	Hydraulic Creek Blended Concept	Clarification/Filtration	121.78	121.58	13.42	9	35.7	30	12.86	21	9.71	15.42	13.71	13.14	7.57	30.84	16.58	24.42	13.14	22.28	23.44	620
3	Hydraulic Creek With Point of Entry Rural Treatment	Clarification/Filtration	235.11	241.13	20.13	18	35.7	12	12.86	21	19.42	15.42	18.28	26.28	15.14	7.71	8.29	24.42	19.71	11.14	17.58	844
4	Hydraulic Creek Full Depth Separated System	Chlorination	200.39	215.68	20.13	45	21.42	18	12.86	21	48.55	30.84	22.85	32.85	30.28	38.55	33.16	24.42	26.28	11.14	23.44	949
5	Hydraulic Creek Shallow Depth Separated System	Chlorination	211.16	220.78	26.84	45	21.42	18	12.86	21	48.55	30.84	9.14	32.85	15.14	30.84	16.58	24.42	26.28	16.71	23.44	924
6	Groundwater Domestic Supply & Full Depth Separated System	Chlorination	228.06	235.66	20.13	45	35.7	18	25.72	28	48.55	38.55	22.85	19.71	37.85	38.55	41.45	40.7	32.85	11.14	29.3	1055
7	Groundwater Domestic Supply & Shallow Depth Separated System	Chlorination	250.00	250.00	26.84	45	35.7	18	25.72	28	48.55	38.55	9.14	19.71	22.71	30.84	16.58	32.56	32.85	16.71	29.3	1034
8	Dual Source System	Clarification/Filtration	210.90	222.21	26.84	45	35.7	18	25.72	28	48.55	38.55	22.85	32.85	37.85	38.55	24.87	40.7	32.85	11.14	29.3	1028

Figure 3A-1: Options Scoring