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REPORT TO CEDARS OF TUAM WATER SERVICE COMMITTEE
MEETING OF MONDAY 16 NOVEMBER 2009

SUBJECT **CAPITAL PROJECT PLAN**

PURPOSE

To seek approval by the Cedars of Tuam Water Service Committee (CTWSC) of scope and budget for capital works to be completed in 2010.

BACKGROUND

The Capital Regional District (CRD) has been working for several years to locate and develop a cost-effective alternative water source for the Cedars of Tuam water utility. The existing well and pumphouse were renovated in 2008, including the installation of a control loop for chlorine dosing. Although significant operating problems were resolved by this work, the capacity and reliability of the water source remain inadequate to serve the long-term needs of the community. The available funding is inadequate to develop and connect a new water supply source to the Cedars of Tuam water system, and the potential to improve the existing well is limited due to its location in a restricted right of way on private property outside the service area.

The original upgrade project budget established in 2003 upon conversion of the service to the Capital Regional District was $100,000, of which $66,667 was a grant under the BC Community Water Improvement Program, $24,000 was provided through a borrowing under the Municipal Finance Authority and the balance of $9,333 was provided from cash reserves transferred from the former Cedars of Tuam Water District. Of this, a total of $33,480 has been expended to date as follows:

• Rehabilitation of existing well (contractor)	$1,410
• Consulting services (groundwater hydrology)	$6,258
• Chlorine dosing control system (materials)	$1,959
• Wellhouse, piping and site access improvements (materials)	$2,128
• Wellhouse, piping and site access improvements (staff labour)	$13,264
• Engineering and project management (staff)	$8,461
TOTAL	**$33,480**

CRD Salt Spring Island Electoral Area Director Garth Hendren has announced $30,400 in Community Works (Gas Tax) funding to toward the Cedars of Tuam upgrade project, providing that the service area contributes an additional $4,600 in order to increase the project budget by a total of $35,000 (Atachment 1). With this additional proposed funding, the available project budget as of 16 November 2009 would be $101,520.

Unless a requested schedule extension of one year is granted by the Province, the unspent portion of the infrastructure grant (currently $55,507) will not be available after 31 March 2010. The available budget would be reduced by the amount of unspent grant. In order to fully utilize the available grant, $83,261 must be expended on eligible costs before 31 March 2010.

In the past year, staff have developed and presented several scenarios to the Cedars of Tuam Water Service Committee, including estimated costs, to develop a new source of water. Each scenario involved costs substantially greater than the available budget. It is unlikely that any of these scenarios would be acceptable to the residents. Given that developing and connecting a new source of water is likely not feasible at this time, staff have considered a program of improvements to the existing water supply system to improve its reliability. These include the provision of a Supervisory Control and Data Acquisition (SCADA) system for remote monitoring, improved filtration to protect equipment against silt from the well, and improvements to well site access for operation, maintenance and delivery of trucked water as required.

The estimated cost to complete SCADA and install a suitable silt filter is less than $30,000, based on detailed cost estimates prepared by CRD staff (Attachment 2). The scope and cost of site access improvements is to be determined based on the development of a mutually acceptable arrangement with the landowner. Legal vehicle access to the well site and reservoir site is needed for operation of the system; the R/W does not serve this purpose. A provision for the delivery of bulk water in the event of a water shortage is also required, either through vehicle access to the well site, or construction of a dedicated pipeline and appropriate fixtures to protect drinking water quality. Depending on available options, the cost of providing suitable access to the well site could range from less than $20,000 to more than $100,000.

The Cedars of Tuam Water Service Committee has expressed a desire to develop and test a well at the former Isabella Point School site at the intersection of Roland Road and Meadow Drive, which is owned by the Gulf Islands School District. The Gulf Islands School Board has approved in principle the establishment of a right of way on the property for a well and pumphouse serving Cedars of Tuam. Groundwater hydrology consultant Thurber Engineering Ltd. has provided a preliminary cost estimate of $50,000 to complete a well of up to 90m (300') depth at the Isabella Point School site and to conduct a 72-hour drawdown test, including consulting services and a 15% contingency (Attachment 3). The available project budget is sufficient to develop and test a well, but is insufficient to connect a well at the school site to the existing service area. Connecting a well at the Isabella Point School site to the existing system via public road rights of way would likely cost more than $500,000. The cost of construction of an interconnection would be reduced significantly if a right of way over private property can be negotiated; however, land owners in the area have to date indicated no interest in negotiating rights of way.

ALTERNATIVES

1. That the Cedars of Tuam Water Service Committee authorize the expenditure of up to $30,000 from the Cedars of Tuam capital fund to complete SCADA and filtration upgrades to the existing well system, and direct staff to develop options and costs for improved access to the existing well site.

2. That the Cedars of Tuam Water Service Committee authorize the expenditure of up to $80,000 from the Cedars of Tuam capital fund to complete SCADA and filtration upgrades to the existing well system and to develop and test a well at the former Isabella Point School property, and direct staff to develop options and costs for improved access to the existing well site.

3. That the Cedars of Tuam Water Service Committee receive this report for information.

IMPLICATIONS

1. SCADA and filtration upgrades would significantly improve the reliability of the existing well system at a cost well within the available budget, and can be implemented before the 31 March 2010 grant deadline. SCADA would enable operators to monitor critical system parameters such as reservoir level, residual chlorine concentration and pump operation from any location, and would enable response by an operator before water service is interrupted or water

quality is compromised. Improved filtration would protect flow meters and chlorine monitoring instruments from silt drawn from the well at low groundwater levels in summer and fall. If site access improvements are also achieved and water demand remains at current levels, the improved system would likely provide reliable water service at a reasonable cost for several years. The available budget for site access or other improvements would be $71,520 providing it can be expended by 31 March 2010.

2. Development and testing of a well at the former Isabella Point School site could be completed in addition to the SCADA and filtration upgrades to the existing well, within the available project budget and timeline. The available budget for site access or other improvements would be reduced to $21,520 providing it can be expended by 31 March 2010. This budget may not be adequate for improving access to the existing well site.

   There is a significant risk that a well would not produce water of acceptable quantity or quality to meet the needs of the Cedars of Tuam water service. However, if a well is found to meet the community's long-term needs with capacity to spare, it may offer potential value to land owners outside the service area that could be leveraged to negotiate a right of way for interconnection to the existing system.

   A well at the former Isabella Point School site will only be of significant value to the community if sufficient funding is secured to interconnect the well to the existing system. Connecting a new well to the existing system would require a large increase in the annual cost of water service to Cedars of Tuam customers, likely in the range of $1,000 - $3,000 per connection per year for 15 years (based on borrowing roughly $150,000 to $500,000 through the Municipal Finance Authority at 6% annual interest).

3. If no capital plan is approved at this meeting, the available time to utilize provincial funding will be significantly reduced. This would limit the number of feasible alternatives for use of the funding, and would significantly increase the risk that grant funding would not be available for improvements to the Cedars of Tuam water system.

SUMMARY

The Cedars of Tuam Water Service Committee has considered several alternatives to secure a new source of water to replace or augment its existing well, which is of marginal capacity for existing needs and is located in a restricted right of way on private property outside the service area. No new source can be developed within the available budget. This report presents alternatives for capital works; including improving the reliability of the existing well system and developing a new well near the service area for connection to the existing system at a later date, subject to additional funding.

RECOMMENDATION

That the Cedars of Tuam Water Service Committee authorize the expenditure of up to $30,000 from the Cedars of Tuam capital fund to complete SCADA and filtration upgrades to the existing well system, and direct staff to develop options and costs for improved access to the existing well site.

Colwyn Sunderland, ASCT
Local Services Engineering Coordinator

CS:ls
Attachments: 3

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Report #EOP 09-112

REPORT TO ELECTORAL AREA SERVICES COMMITTEE
MEETING OF WEDNESDAY 04 NOVEMBER 2009

SUBJECT **COMMUNITY WORKS FUND – SALT SPRING ISLAND WATER PROJECTS**

PURPOSE

To present recommendations for the allocation of funds reserved for the Salt Spring Island Electoral Area from the 2009 and 2010 Community Works Fund (CWF) Federal Gas Tax Rebate program.

BACKGROUND

A CWF was established to support the achievement of local priorities that are consistent with the desired outcomes of greenhouse gas emission reduction, cleaner air and cleaner water. The Capital Regional District (CRD) has been allocated funds for the electoral areas, including SSI through the Union of BC Municipalities (UBCM).

At the request of Salt Spring Island Electoral Area Director, Garth Hendren, the allocation of CWF funding has been proposed for three local service drinking water infrastructure projects and a strategic plan. Each of the infrastructure projects has experienced a large shortfall in funding required to complete immediately necessary infrastructure improvements. The strategic plan for water and sewer services relates to the entire electoral area, for which no related service exists to recover costs.

The projects are summarized as follows:

1. Beddis Water Service Area – Completion and Commissioning of Water Treatment Plant

   Construction of a new water treatment plant for the Beddis water service area was initiated as part of a larger infrastructure upgrade project in 2005. The project was funded by a provincial infrastructure grant and public approval to borrow through the Municipal Finance Authority. The full grant and approved borrowing amounts have been expended, as well as all funds held in reserve for the service area. Construction of the treatment plant and distribution works remain incomplete. The bare cost and minimum funding shortfall to complete and commission the treatment plant is estimated at approximately $182,000 (exclusive of contingency), or $1,320 per taxable folio. It is proposed that CWF funding of $80,000 and $62,000 be provided for this project from 2009 and 2010 allocations, respectively, for a total of $142,000. The estimated minimum net shortfall of $40,000, or $290 per taxable folio, would be raised from the service area through taxes or fees. The additional cost to complete distribution works included in the original project scope is roughly estimated at $260,000. Lower cost alternatives to the original project plan for this work will be considered.

2. Fulford Water Service Area – Water Service Interconnections and Customer Metering

   Like Beddis, the Fulford water service area undertook a project in 2005 to construct a new water treatment plant, as well as improvements to the distribution system. The Fulford water treatment plant is complete and operating; however, incomplete work on the distribution system prevent the delivery of treated water to a portion of the service area and, although water metering components have been purchased, they have not been installed, leaving most of the service connections unmetered. As with Beddis, the original Fulford grant authorized borrowing and reserve funds are fully spent, leaving an estimated $105,000 minimum funding shortfall ($1,039 per taxable folio) to complete 16 water service connections to the new watermain on Sunnyside

Drive, complete water and sewer interconnections to the Fulford Elementary School and install water meters on all unmetered service connections. It is proposed that CWF funding of $30,000 and $45,000 be provided for this project from 2009 and 2010 allocations, respectively, for a total of $75,000. The estimated minimum net shortfall of $30,000, or $297 per taxable folio, would be raised from the service area through taxes or fees.

3. Cedars of Tuam Water Service Area – Access and Reliability Improvements to Existing Well System

The Cedars of Tuam water service area is served by a marginal well in an easement on private property adjacent to the service area, which has poor access for operation and maintenance. To date, efforts to secure a cost-effective alternative water source have proven unsuccessful.

Staff and the local service committee have considered two alternatives for use of the available project funds of approximately $65,000. One alternative is to develop and test a well in a proposed easement on nearby property owned by the Gulf Islands School District, at an estimated cost in the range of $50,000. Should the well prove viable, the unfunded cost to connect the well to the service area would likely be in the range of $100,000 to $300,000 ($6,250 to $18,750 per taxable folio), suggesting this approach is not currently feasible. A second alternative is to install remote monitoring at the existing well site, install a filter to protect the chlorinator and supply meter from silt, and improve access to the well site for the purposes of operation, maintenance and delivery of bulk water as required. The estimated cost of this alternative is roughly $100,000, leaving a funding shortfall of $35,000 ($2,190 per taxable folio). It is proposed that CWF funding of $30,400 be provided from the 2009 allocation for remote monitoring, improved filtration and improved access to the existing Cedars of Tuam well system. The estimated minimum net shortfall of $4,600, or $288 per taxable folio, would be raised from the service area through taxes or fees.

4. Salt Spring Island Electoral Area – Strategic Plan for Water and Sewer Services

To date, planning for the provision of water and sewer service on Salt Spring Island has been conducted at the scale of individual service areas. No CRD service exists for the purpose of funding planning or management outside local service areas. As a result, the process of conversion of improvement districts to CRD services has occurred on an ad-hoc basis. Staff levels for planning and administration of water and sewer services on Salt Spring Island are insufficient to properly accommodate the growing number of requests by improvement districts to investigate conversion to services of the CRD. Existing service areas are not sufficiently large to individually fund long-term capital planning and infrastructure renewal.

For these reasons, staff have recognized the need to develop a strategic plan for water and sewer services. Based on similar projects recently undertaken by other regional districts, the development of a strategic plan for the Salt Spring Island Electoral Area could be completed at a cost of roughly $90,000 ($16 per taxable folio). This project has been included as an objective of the 2010 business plan for the Operations and Local Services Division. However, no funding source exists for this project. It is proposed that CWF funding of $90,000 be provided from the 2009 allocation to fully fund the development of a strategic plan for water and sewer services in the Salt Spring Island Electoral Area.

The aggregate proposed CWF funding for these projects is $230,400 from the 2009 allocation and $107,000 from the 2010 allocation, or $337,400 in total. These projects are consistent with the criteria for CWF funding under the *Water and Wastewater* and *Capacity Building* categories.

ALTERNATIVES

1. That the Electoral Area Services Committee recommend to the CRD Board that funding from the Salt Spring Island Electoral Area Community Works Fund be allocated as follows:

- Beddis water service area: $142,000 for completion and commissioning of a new water treatment plant.
- Fulford water service area: $75,000 for water service interconnections and customer metering.
- Cedars of Tuam water service area: $3,400 for improvements to access and reliability of the existing well system.
- Salt Spring Island Electoral Area: $90,000 for the development of a strategic plan for water and sewer services.

2. That the Electoral Area Services Committee not recommend that the CRD Board approve funding for the proposed projects from the Salt Spring Island Electoral Area Community Works Fund.

FINANCIAL IMPLICATIONS

1. For 2009, a total grant of $342,124 is available for use in the Salt Spring Island Electoral Area under the CWF (Gas Tax Agreement). A further grant of $338,134 is available in each of the next four years, for a total of $1,696,201. It is proposed to allocate a portion of the available 2009 and 2010 funding to the above projects. The proposed total allocation of $337,400 represents roughly half of the total available allocation in 2009 and 2010 combined, leaving a similar amount available for other initiatives. A summary of the status of CWF allocations for the CRD electoral areas is provided in Attachment 1.

   The proposed distribution of funding among the three water service areas results in a roughly equal estimated minimum net shortfall in the range of $300 per taxable folio after CWF funding. The shortfall will be recovered through taxes or fees in each service area.

2. If the CRD Board does not support the proposed allocation of CWF funds, the project funding shortfalls will be recovered through taxes and fees in each service area subject to committee approval. The tax and fee increases would likely pose financial hardship on many service area residents.

SUMMARY

At the request of the Salt Spring Island Electoral Area Director, CWF (Gas Tax) funding for four projects relating to water infrastructure has been considered by staff. The proposed funding meets eligibility requirements and provides needed financial assistance.

RECOMMENDATION

That the Electoral Area Services Committee recommend to the Capital Regional District Board that funding from the Salt Spring Island Electoral Area Community Works Fund be allocated as follows:

- Beddis water service area: $142,000 for completion and commissioning of a new water treatment plant.
- Fulford water service area: $75,000 for water service interconnections and customer metering.
- Cedars of Tuam water service area: $3,400 for improvements to access and reliability of the existing well system.
- Salt Spring Island Electoral Area: $90,000 for the development of a strategic plan for water and sewer services.

Ted Robbins, BSc, CTech
Acting Senior Manager, Operations and Local Services

Larisa Hutcheson, P.Eng
Acting General Manager, Environmental Services
Concurrence

Diana E. Lokken, Dip Bus Admin, CMA
General Manager, Corporate Services
Concurrence

Kelly Daniels
CAO Concurrence

COMMENTS

CS/TR:ls
Attachment: 1

Attachment 1

Capital Regional District
Community Works Funds

	JdF	SSI	SGI	Total
Grant received 05/06	49,572	108,609	51,938	210,119
Grant received 06/07	49,537	108,534	51,902	209,973
2006 Interest earned	2,757	5,780	2,712	11,249
Total for year 2006	101,866	222,923	106,552	431,341
Grant received 06/07	33,269	71,864	34,805	139,938
Grant received in 2007	34,624	68,785	36,344	139,753
Use of funds:				
St. Mary's Lake Compressor		-25,000		-25,000
Ganges Transportation Study		-24,988		-24,988
2007 Interest earned	5,156	11,321	5,394	21,871
Total for year 2007	73,050	101,982	76,543	251,574
Balance as at Dec. 31, 2007	174,916	324,905	183,095	682,915
Grant received 2008	43,362	86,143	45,515	175,020
Grant received 2008	43,362	86,143	45,515	175,020
2008 Interest earned	5,108	9,350	5,349	19,807
				0
Use of funds:				
Composting Pilot		-30,000		-30,000
Pathways Project		-50,000		-50,000
Committed Projects*		-425,000	-265,700	-690,700
Total for year 2008	91,832	-323,364	-169,321	-400,853
Balance as at Dec. 31, 2008	266,748	1,541	13,774	282,062
Grant received in 2009 to Sep. 29	83,358	176,154	92,845	352,357
Grant expected in Nov. 2009	91,195	165,970	88,690	345,855
2009 Interest earned to Sep 29	1,429	2,302	112	3,842
Uncommitted balance at Sep 29, 2009**	442,730	345,967	195,421	984,116
Committed Use of funds 2009				
Beddis Water		-80,000		-80,000
Fulford		-30,000		-30,000
Cedars of Tuam		-30,400		-30,400
Strategic plan for water and sewer		-90,000		-90,000
Total committed funds 2009	0	-230,400	0	-230,400
Uncommitted balance at Oct. 2009	442,730	115,567	195,421	753,716
Grant expected in 2010	172,517	338,134	179,418	690,069
Committed Use of funds 2010				
Beddis Water		-62,000		
Fulford		-45,000		
Total committed funds 2010	172,517	231,134	179,418	690,069
Uncommitted balance at Dec. 2010	615,247	346,701	374,839	1,443,786
Grant expected in 2011	172,517	338,134	179,418	690,069
Grant expected in 2012	172,517	338,134	179,418	690,069
Grant expected in 2013	172,517	338,134	179,418	690,069
Total uncommitted & expected	1,132,799	1,361,103	913,093	3,513,994

* Salt Spring Island is committed to the Pathways Project and
Southern Gulf Islands is committed to metering equipment as approved by the Board.

Note: Interest will be earned on all amounts on hand at the going rate.

Attachment 2

Cedars of Tuam SCADA Budgetary Costs
RTU and Instrumentation Costs

RTU Parts Description	QTY	Unit Cost	2009 Cost
12v 9.4 Ah Gel cell battery (two)	2	$50	$100
UK 5 N phoenix Contact terminal strip connectors	1	$65	$65
Phoenix Ground contadct USLKG5	2	$5	$10
Phoenix Circuit DC circuit Breaker	3	$25	$75
Phoenix Circuit DC circuit Breaker base with indlcator	3	$20	$60
Idec Relay RH1B-UL	3	$18	$53
Idec Relay base SH1B-05	3	$12	$36
ScadaPak P334-EA55-AB00	1	$1,670	$1,670
ScadaPak Vision 10 Display Part #297250	1	$421	$421
ScadaPak Vision 10 Display cable Part #297237	1	$41	$41
Eight point 120vac input card for above Part #5403	0	$267	$0
Phoenix Quint Power supply PS-100-240AC/24DC/10	1	$600	$600
Phoenix Quint Power supply PS-100-240AC/24DC/10	1	$600	$600
Backplane	1	$100	$100
battery holder	1	$0	$0
Phoenix Contact GFCI outlet	1	$70	$70
Enclosure	1	$750	$750
MDS Radio	1	$1,415	$1,415
Antenna	1	$176	$176
Antenna mast	1	$200	$200
Coaxial cable, connectors, Polyphaser & grounding kit.	1	$400	$400
Pole Mounting clamps	2	$76	$152
Misc Parts	1	$200	$200
Total RTU Parts Cost			**$7,192**
assembly 12 hours labor - CRD Electronics tech	12	$79	$944
Individual RTU Cost			**$8,137**

Instrumentation

3/4" well flow meter with electronic pickup head	1	$2,500	$2,500
Reservoir water level transducer E&H FMX 167 c/w PT100 temp sensor and 4-20ma temp transm	1	$1,750	$1,750
Prominet Cl2 analyser probe and flow block Model # D1CAW1C10004G210E	1	$5,000	$5,000
Sterilight (R-can) STE/SC200 UV disinfection system	1	$750	$750
Total instrumentation costs			**$10,000**

Labor Estimates

CRD Charge out Rate 2009	$78.68

CRD Commissioning & SCADA programming charges

	Hours	
Site RTU Programming & Commissioning	32	$2,518
Data Radio antenna installation & commissioning	8	$629
SCADA system programming	8	$629
RTU Installation and wiring by electrician - see note 2	40	$3,147
Total CRD labor	88	**$6,924**

Total SCADA site costs Instrumentation, RTU & Labor **$25,060**

Notes:
1. RTU construction and supply by CRD,
2. Installation of RTU by electrician - may require some upgrade of existing wiring, contact Marty Venoit or Greg McKay 40 hours on site, depending on sit
3. Estimate assumes 20 ft antenna mast can be mounted to pump house or reservoir.
4. Cl2 Analyser will be used to pace Cl2 injection, alarm on low CL2 levels, and to reduce Disinfection by products by optimizing Cl2 levels.
5. UV system will be used immeadiatly after pump and before chlorination to provide double disinfection barrier and to reduce DBP's, THM's
6. Reservoir level transmitter to provide water temperature allows for CL2 setpoint changes due to seasonal water temp variation
7. Data from this site will be polled via master radio at Fulford WTP this site is direcly in line with the PRV station already polled by Fulford WTP RTU
8. Backhaul to SCADA is via dial-up modem to Core area ClearSCADA system, until Ganges ClearSCADA is available.

Colwyn Sunderland

From: Denis Perreault
Sent: Thursday, July 02, 2009 3:29 PM
To: Colwyn Sunderland
Cc: Mark Harper
Attachments: 0777_001.pdf; 0777_005.pdf

Colwyn,
As per our telephone conversation earlier this week, please see the attached price quotation and specification for a sand vortex separator.
This unit is for the Cedars of Tuam well water delivery system. To date this is the most reasonably priced unit we have been able to find.
Cost of installation approximately $1,200.00 (labour and material)plus $725.00 for the separator.

Denis.

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461 Dupplin Road
Victoria, BC V8Z 1B8
Phone: (250) 383-7145
Fax: (250) 385-1216
garth@vanislewater.com

FAX TRANSMITTAL SHEET

From the desk of: Garth Nye

To: Ray	**Date:** June 30/09
Company: CRD	**Fax Number:** 250 655 4166
Total of pages including cover sheet: 5	

Re:

See Attached

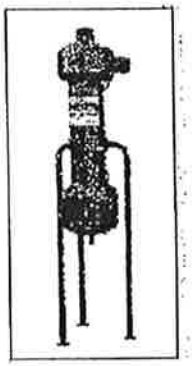
3/8" 3-6 9pm

Cost Approx #725.=

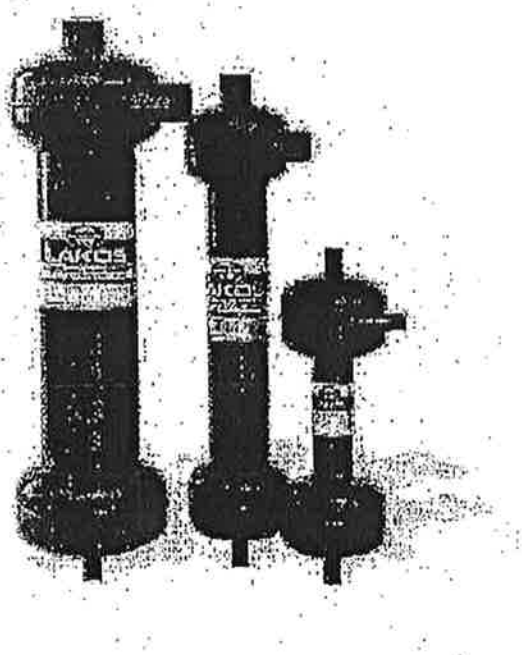
Garth

Centrifugal-Action Separators for Low-Flow Applications

ILB



Clamp-on support legs available as an option.



Flow range:
3-290 U.S. gpm
(.7 - 66 m³/hr) per unit

Maximum standard pressure rating:
150 psi (10.3 bar)

How-it-Works Illustration

Installation & Operating Instructions

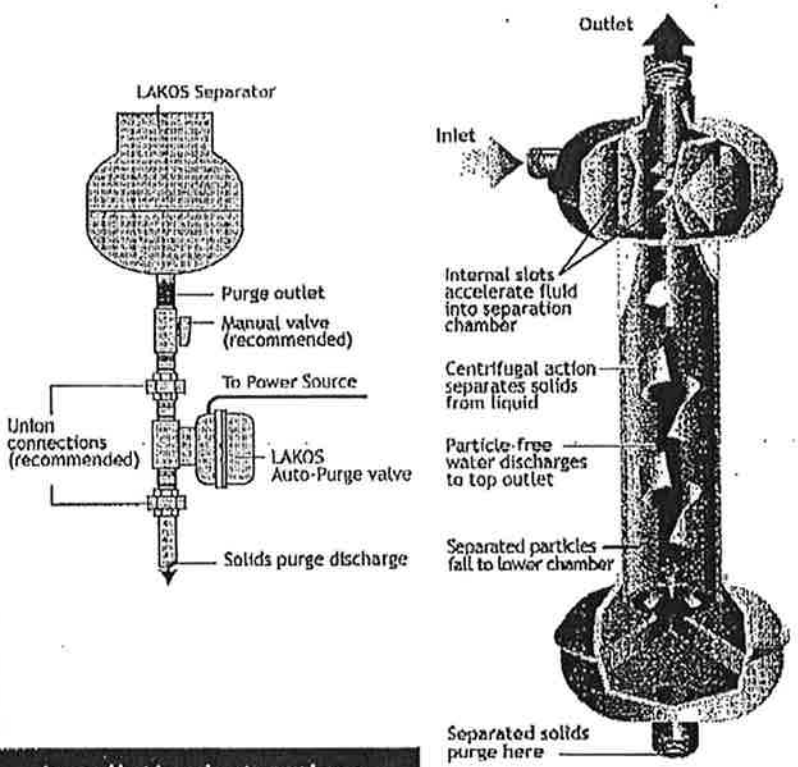
Maintenance & Purging

Model Specifications

Engineering Specifications

LAKOS®
Liquid•Solids Separation Systems

How It Works

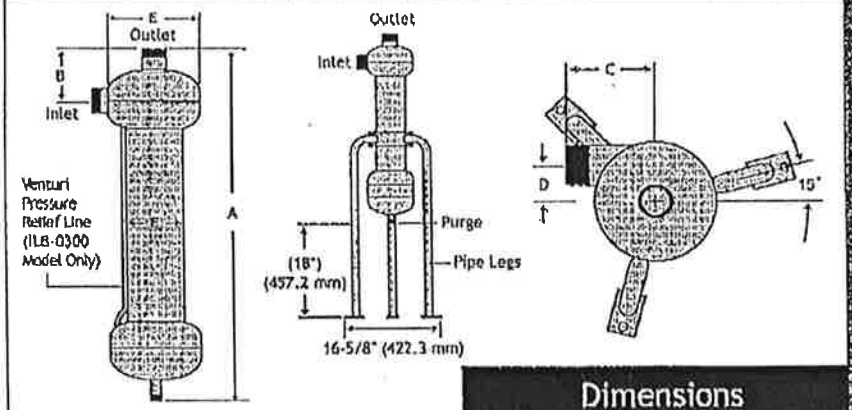


Maintenance/Purging

Installation Instructions

1. LAKOS ILB Separators are shipped in heavy-duty cartons with plastic caps over the inlet and outlet to protect their male pipe threads. Option: Flush unit before operation.
2. Prior to installation, the inlet, outlet and purge of each unit should be inspected for the presence of any foreign objects which may have entered the unit during shipping or storage.
3. Install piping to inlet and outlet as shown by diagram on page 3. Note data, page 3, for pipe sizes per model.
4. For effective solids removal, LAKOS Separators must be operated within the recommended flow range for each model as specified on page 3. *Pipe size is not a factor in model selection.* Minimum inlet pressure should be at least 15 psi (1.0 bar) or equal to the pressure loss anticipated through the separator (see graph, page 3) plus the system's downstream pressure requirement.
5. LAKOS ILB Separators should be installed in the near upright vertical position on the discharge side of the pumping system. (Refer to factory for suction side installation.) Suitable means for supporting the separator's weight independently from the inlet/outlet piping is necessary. A LAKOS Mounting Kit is recommended, but may be substituted with similar hardware, such as U-bolts fastened snugly around the separator's inner barrel.
6. If subject to idle periods, LAKOS ILB Separators installed in sub-freezing locations must be drained of liquid or protected from freezing to avoid damage from ice expansion. NOTE: All LAKOS automatic purging hardware provide a manual override to allow for easy draining via the purge opening.
7. In a pressurized system (vs. open discharge), pressure gauges are recommended at both inlet and outlet to monitor pressure loss and proper system flow (see graph, page 3). If the separator is operated at open discharge, a valve is recommended at the outlet, set to create a back pressure of 5 psi (0.3 bar).

ILB



Dimensions

Model	A in	A mm	B in	B mm	C in	C mm	D in	D mm	E in	E mm	F in	F mm
ILB-0037	16-1/2	419	3	76	3-1/8	80	1-5/8	41	4	102	1-21/32	42
ILB-0050	20	508	4	102	4	102	2-1/4	57	6	152	1-7/8	48
ILB-0075	20	508	4	102	4	102	2-1/8	54	6	152	2-3/8	60
ILB-0100	30	762	4-3/8	111	4	102	2	51	6	152	3-1/2	89
ILB-0125	30	762	4-3/8	111	4	102	1-7/8	48	6	152	3-1/2	89
ILB-0150	30	762	4-3/8	111	4-3/4	121	1-3/4	44	6	152	3-1/2	89
ILB-0200	33-5/8	854	5	127	5-1/2	140	2-5/8	67	8-5/8	219	5-9/16	141
ILB-0250	37	940	5-1/2	140	6-1/4	159	2-5/8	67	8-5/8	219	5-9/16	141
ILB-0300	42	1067	7	178	8-1/4	209	3-1/4	83	10-3/4	273	6-5/8	168

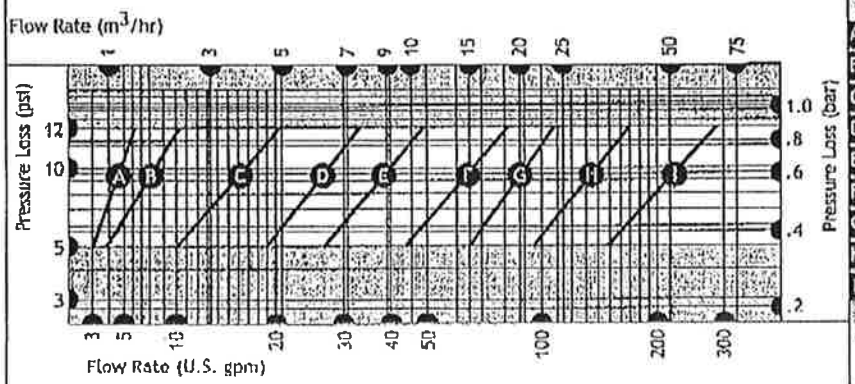
Dimensions for reference only. Consult factory when pre-plumbing.

Specifications

Model	Flow Range U.S. gpm	Flow Range m^3/hr	Inlet/Outlet Size male N.P.T.*	Weight lbs.	Weight kg	Weight with Water lbs.	Weight with Water kg
ILB-0037	7-6	7x1.5	3/8"	9	4.1	19	8.6
ILB-0050	4-10	1.0-2.5	1/2"	14	6.3	20	9.1
ILB-0075	10-20	2.5-4.5	3/4"	15	6.8	25	11.3
ILB-0100	19-32	4.5-7.5	1"	27	12.2	38	17.2
ILB-0125	28-48	6.5-11.0	1-1/4"	27	12.2	38	17.2
ILB-0150	45-70	10.0-16.0	1-1/2"	27	12.2	40	18.1
ILB-0200	65-108	14.5-24.5	2"	52	23.6	98	44.4
ILB-0250	95-155	21.5-35.0	2-1/2"	60	27.2	109	49.4
ILB-0300	148-290	33.5-66.0	3"	101	45.8	177	80.0

*Also available in BSP or JIS threads. Consult factory for details.

Flow vs. Pressure Loss



A ILB-0037
B ILB-0050
C ILB-0075
D ILB-0100
E ILB-0125
F ILB-0150
G ILB-0200
H ILB-0250
I ILB-0300

Limited Warranty

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Sample Specifications

Separator Type & Performance
The removal of specific unwanted solids from a pumped/pressurized liquid system shall be accomplished with a centrifugal-action vortex separator. Solids removal efficiency is principally predicated on the difference in specific gravity between the solids and the liquid. Performance is expected to be 98% removal of 74 microns and larger, with significant particle removal of finer particles also likely.

Performance Requirement
Separator performance must be supported by published independent test results from a recognized and identified test agency. Standard test protocol of upstream injection, downstream capture and separator purge recovery is allowed with 50-200 mesh particles to enable effective, repeatable results. Single-pass test performance must not be less than 95% removal. Model tested must be of the same flow-design series as specified unit.

Separator Design & Function
A tangential inlet and mutually tangential internal accelerating slots shall be employed to promote the proper velocity necessary for the removal of the separable solids. The separator's internal vortex shall allow this process to occur without wear to the accelerating slots.

Separated particle matter shall spiral downward along the perimeter of the inner separation barrel, in a manner that does not promote wear of the separation barrel, and into the solids collection chamber, located below the vortex deflector stool.

System liquid shall exit the separator by following the center vortex in the separation barrel and spiral upward to the separator outlet.

Purging *(specified option only)*
Evacuation of separated solids shall be accomplished automatically, employing a timer-activated motorized ball valve. Straight-through valve design, with bronze valve body (also available optionally as a stainless steel valve body) and stainless steel ball in a teflon seat. NEMA 4 housing for indoor or outdoor installation. Valve size: _____

Separator Details
A. Inlet & outlet shall be male, NPT (other options available), size: _____
B. Purge outlet shall be male, NPT (other options available), size: _____
C. The separator shall operate within a flow range of: _____
D. Pressure loss shall be between 5-12 psi (0.3 - 0.8 bar), consistent with the above flow range.

Separator Construction
The separator shall be fabricated of carbon steel (stainless steel is optional) with shell material and head material of 0.135 inch wall or better. Maximum operating pressure shall be 150 psi (10.3 bar), unless specified otherwise.

Paint coating shall be acrylic urethane, spray-on, royal blue.

Separator Source & Identification
The separator shall be manufactured by LAKOS Filtration Systems, a division of Claude Laval Corporation in Fresno, California USA. Specific model designation is: _____.

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LAKOS
Liquid•Solids Separation Systems

Attachment 3

Colwyn Sunderland

From: Bruce Ingimundson [bingimundson@thurber.ca]
Sent: Tuesday, November 10, 2009 3:59 PM
To: Colwyn Sunderland
Cc: Richard Edwards
Subject: Cedars of Tuam and Cedarlane Subdivision Well Progarm Estimated Costs

Hi Colwyn,
As requested please find our "ballpark" costs for your budget purposes below:

A. Cedars of Tuam
Program consists of:

- Historic data review and site reconnaissance to locate drill site(s) (TEL reports of 2003, 2007 & 2008);
- Well drilling (to 300') and construction;
- Test pumping (72 hrs + 12 hrs recovery) & water sample collection;
- Field data assessment and report preparation

Estimated costs;
Drilling contractor $10,000
Testing contractor $18,300
Consulting services $15,000
Est. rough total $43,300 - suggest 15% contingency = $50,000.

B. Cedarlane Subdivision

Program consists of:

- Technical review of previously collected background data (TEL report of November 1980);
- Site reconnaissance. for contractor and consultant to examine existing well conditions;
- *Individual well performance investigation utilizing a separate 24 hour test on each of 3 existing wells;
- Simultaneous test pumping of all three wells for 72 hours and 24 hours recovery;
- Processing and assessment of hydrogeologic data collected;
- Report preparation with conclusions and recommendations;
- Attendance at a post-report meeting of stakeholders in Victoria.

* Ideally this item is desirable. Without it our results would be less certain, however in a real cash crunch we could eliminate this item reducing the cost of about $10,800 from Scenario #1 & #2 below.

Estimated costs;
The following costs present two scenarios. One(#1) testing scenario is the utilization of the existing three operational well pumps. If they are not available the alternate scenario (#2) is for the contractor to remove the existing pumps, install his rental pumps and following the test pumping replace the existing pumps.

As these wells need to continue to supply the utility, there may be considerable time spent both by the contractor and the utility operator to manage the distribution of the water. *Some fine tuning of this program may be required following the initial site visit and discussions with the utility operations.*

Scenario #1 - using existing well pumps
Test pumping estimated cost - $68,000

Hydrogeological consulting services - $15,000
Estimated rough total $83,000

OR

Scenario #2 - remove/replace existing pumps and use rental pumps
Test pumping estimated cost - $79,000
Hydrogeological consulting services - $15,000
Estimated rough total $94,000

The above costs estimates are for budget purposes only. As the contractor costs will be competitive, we would expect the actual costs to be lower than shown. However, due to uncertainties we strongly recommend a contingency be included in the budget

Richard and I discussed providing quotation documents for drilling/testing* at the Cedars of Tuam site and test pumping costs at the Cedarlane site, to three (3) selected island drilling/test pumping contractors. To expedite the work shall we proceed to prepare these documents and submit them for competitive quotes at this time?

* My selection will include two contractors who are equipped to the test pumping and one contractor who would sub-contract the test pumping work.

Should you have any question, please contact me at your convenience.
Regards,
Bruce

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