



BLACK MOUNTAIN IRRIGATION DISTRICT



Image – Hadden Reservoir, Chlorine and Screen works Buildings (2022)

2025 – CAPITAL PLAN UPDATE

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EXECUTIVE SUMMARY

INTRODUCTION

This Capital Plan update is the result of a concerted effort by BMID management, works staff and support consultants to document a strategic direction for Black Mountain Irrigation District (BMID) and the water sources that BMID relies upon. The report focuses on projects to be implemented in the next five years plus it provides a long-term strategy for the advancement of the water utility.

BMID's authority is enabled through the Local Government Act, Part 17, that applies to Improvement Districts. BMID's Letters Patent were first issued by the Province on November 3, 1920. BMID has been in existence since 1920 and recently celebrated its 100th anniversary as an organization.



As the largest Improvement District in the Province, BMID is also one of the larger water service providers in the Okanagan, providing domestic water to approximately 30,000 persons and irrigation to over 6,100 acres of Grade A and C land (i.e., land with water rights). The District has been fortunate to have extremely stable leadership with only 3 Chairpersons in the past 70 years.

Of note is that BMID strongly supports agriculture and this is recognized by the producers in the region with applications for peripheral lands to be included in the BMID service area boundary. In 2023, through Order-in-Council 582, the BMID boundary was extended to the east encompassing an additional 1,898 acres of land. There is a current boundary amendment in process for lands above Scotty Creek subdivision for an additional 1,660 acres to be added to BMID.

The last capital plan was developed in 2017 and was the basis for BMID Capital Expenditure Bylaw No. 706. That plan identified 20 projects with only two being of substantial size. Since 2017, BMID has facilitated the development of > \$26,000,000 of water projects as presented in Table 6.1 of this report.

CRITERIA

Section 2 of this report sets out the planning horizon, various acts and regulations that BMID must follow, including water quantity and water quality criteria.

The regulator for water utilities in the BMID southern interior is Interior Health who issues Operating Permits for the water utilities. Interior Health also directs BMID regarding water quality monitoring, compliance and water quality improvements.

For dams, the Provincial government Dam Safety branch oversees all dams of varying classification. Other regulators include WorkSafe BC for operators' safety and the Environmental Operators Certification Program (EOCP) for operator training and classification.

WATER SOURCE ASSESSMENT

A summary of the water sources that BMID relies upon is set out in Section 3. BMID relies on Mission Creek as the primary source for domestic and irrigation water. Secondary domestic sources include Wells 4 and 5 in the Scotty Creek area. Secondary irrigation water sources include Scotty Creek, Well 3 (Cornish Well) on Cornish Road, and Wells 5 & 6 in the Scotty Creek area.

BMID holds 22,768 ML of irrigation water licenses and 5,010 ML/year of domestic water licenses. Associated with these licenses are 20,159 ML of storage licenses of which 16,183 ML is active. BMID holds licenses for future storage of 3,976 ML on Murray Meadows, Graystoke Reservoir, Loch Long and Mission Lake. BMID holds adequate licensing for the foreseeable future however BMID domestic demands are approaching the licensed volume.



Mission Creek and its sub-tributaries licenses are presented in Table 3.2. In total there is approximately 70,000 ML of licensed water in Mission Creek. This represents only 31% of the 220,000 ML average annual runoff. BMID's annual average withdrawals amount to 11,000 ML which is 5% of the total runoff from the watershed. In terms of long-term reliability, the 40 years of recorded hydrometric data shows the total annual average runoff to be relatively stable with no major increases or decreases.

Scotty Creek has a catchment area of approximately 36 km² above the existing intake with an annual runoff estimated at 6,850 ML. BMID currently uses 500 ML/year from this source, however agriculture water demands are expected to increase and be reliant on this source.

Most of the Okanagan starts to rely on water storage from upper reservoirs annually in late May and/or early June. BMID is fortunate in having the high-elevation Graystoke plateau in the watershed which results in Mission Creek running strong from snowmelt most years into the first and second week of July. As a result, BMID storage reservoirs are accessed one-month later than reservoirs for most other local utilities.

The flows in Mission Creek are managed in accordance with the 2010 Mission Creek Water Use Plan. The plan ensures that, as a minimum, that natural flow levels are maintained in Mission Creek through the summer and fall months. BMID presently has 1,000 acres of Grade C lands, whose owners are not using water in the current year but pay 80% of the full tax rate for system maintenance on the storage dams. This stored water is directed downstream to support conservation flows for fish. BMID is working to inform downstream stewards of Mission Creek that more storage is required to support conservation flows. To reinforce that more storage is needed, in 2023 the Okanagan Nation Alliance released 1,000,000 sockeye salmon fry into lower Mission Creek. These fish will return in 3-5 years. BMID has not been advised of the volume of water needed to support these returning fish. BMID has compiled numerous locations for the expansion of existing storage sites or the construction of new facilities in Section 3.8 of this report.

WATER QUALITY

BMID is reliant on two community watersheds for their source water, Mission Creek and Scotty Creek. As a utility provider, BMID is obligated to meet the requirements of the *Drinking Water Protection Act* to supply clean and uncontaminated water but has no authority to control activities in the watershed. The watershed is mostly Crown land with authority that lies with the Province of BC.

Anthropogenic risks to the watershed include urbanization, industrial activities, deforestation, agriculture and illegal dumping. The activities with the highest risk are the deforestation and illegal dumping of garbage that seems to be increasing. Concern with the loss of tree canopy is real as the historic data for shows disturbance area percentage of the watershed in comparison to the peak flows experienced in the lower creek. Peak flows in the creeks increase with less forest cover.

Natural risks include pestilence (pine beetle), flooding, slope instability, forest fires and severe drought that can have resulting damages. The cycle of events for fires, floods and high runoff are compounded by the loss of tree canopy.

A primary objective for BMID is to provide water to the customers that is microbiologically safe and pleasing to drink and in as natural a state as possible. Because of the limited development and low population density in the upper watershed, BMID is fortunate that Mission Creek is relatively uncontaminated by human activities. There are no signs of forever chemicals (PFAS) in the watershed, nor pharmaceuticals, personal care products or other man-made substances. Because of this, Mission Creek represents the best long-term drinking water source for Kelowna for the future. BMID has constructed the spine components of the water system to be expandable and convey more water than only what BMID requires.

BMID's plans regarding specific water quality upgrades are proposed in two stages. The first stage is to carry out several smaller projects to maximize particle settling and to fine-tune the existing water treatment process. The second stage is to add filtration either at the UV site or at the west end of Hadden Reservoir. Filtration will improve the water quality provided however the cost for the WTP will be significant.



A filtration plant will require funding support from the senior government. It is recommended that the priority for filtration be evaluated on a regional basis with other major water and wastewater facilities in the region. Under consideration should be the amount of funding available and the long-term benefit to the region. The three large City of Kelowna water pump stations on Okanagan Lake, the City of Kelowna Wastewater treatment plant and the BMID Mission Creek source are the long-term inlet and outlet locations for water to and from the water sources. A strategic plan for investment should be carried out with a filtration plant for Mission Creek being part of the process.

WATER DISTRIBUTION SYSTEM

A review of the water distribution system was conducted as part of this Capital Plan Update. BMID has 221 km of water distribution main with very few pipes preceding the ARDA program in the late 1960's. Historic water demands are being tracked monthly and Table 5.1 of this report summarizes monthly water use back to 1992. BMID uses an average of 12,000 ML of water annually. Of this amount approximately 1,070 ML is lost to leakage, either BMID's leakage in the public right of ways or private user leakage within private property. On-going work is required to reduce the amount of leakage.

Of note is that since 2007, although BMID's population has grown by >7,000 persons and the agricultural land serviced has grown by > 1,000 acres, the overall annual water usage has dropped dramatically from an average of 13,600 ML/year to less than 12,000 ML/year.

The most important project identified for BMID is the extension of McDougall Water Tunnel. BMID has a 1.0 km long tunnel, drilled in the 1940s, that runs under the shoulder of Black Knight Mountain. In 2018, BMID experienced slope movement on the slopes where their primary supply conduit is located. The slope moved 250mm in 2018 and BMID spent considerable time, effort and money to stabilize the slope. Loss of this conveyance pipe in mid summer could lead to hundreds of millions of economic losses for the region. Since then, the most important project by BMID is to relocate this conduit to a safer location. A 1,650-metre-long tunnel has been designed to remove the water conveyance from the Mission Creek valley. Extensive planning and detailed design work has been completed on this project.



BMID has an excellent record of water mains and infrastructure and dates of installation. A Tangible Capital Asset exercise was conducted in 2009 and it was updated in 2019. With the significant construction cost increases in the past 5 years, the renewal timing and costs were recalculated. It is forecasted that the first larger expenditure for watermain renewal will occur in the 2035–2045-time frame. Extension of the lifespan of BMID assets is a critical objective for BMID to extend the lifespan of existing infrastructure and keep operating costs affordable. The current inventory of AC pipe is holding up very well and shows no indication of not making its 75-year design service life. A minimum investment of \$1,500,000 per year in renewal projects is recommended for BMID.

System separation is planned for some of the areas of the District; however, these are where there is an available untreated source of water for the irrigation system. Separation of the water systems does not make sense for all situations however it becomes more cost effective if the larger irrigated parcels are being separated.

CAPITAL WORKS PLAN

Section 6 of this report presents the project works planned for BMID for the foreseeable future.

BMID recognizes that project work and approval processes have changed in recent years with more engagement necessary with First Nations. In August of 2024, the BMID Board toured the Mission Creek watershed with Westbank First Nations Chief and Council. Co-operative projects were discussed as were the McDougall Tunnel Extension, the expansion of Loch Long Reservoir and partnering on smaller storage pilot projects.

BMID has many activities that are planned and are required for the BMID customers. Fortunately, many of the BMID objectives align well with the First Nation objectives. Section 6.2 of the report provides an explanation of where there is alignment and where BMID can be supportive of First Nation activities. Water supply to support EFNs in lower Mission Creek, the supply of water to Indian Reserve 12 in Gallaghers Canyon, the development of small size dams (beaver dams) in the upper watershed to support late summer and fall downstream flows, and the development of larger storage volumes to support conservation / fisheries flows are possible co-operative projects the are described in more detail in Section 6.2.

Forecasted domestic and irrigation water demands are discussed in Sections 6. Densification is occurring and the BMID distribution grid is well set up to accommodate the densification and the anticipated increased fire flow requirements. Agriculture is also expanding and BMID is facilitating the water supply to two dryland areas, one near Pyman Road, and the second above Sunset Ranch subdivision where there is source water available and there are no cost impacts to existing ratepayers.

Since 2017, BMID has facilitated the construction of over \$26,000,000 in water projects. The largest projects were the UV Facility and the 1050mm transmission main to the Frind properties.

BMID has an extensive list of projects that are all either part of a larger group of projects or will be needed over time. The eight areas of work:

- 1 McDougall Tunnel Extension and associated projects.
- 2 Renewal Projects.
- 3 Dam Safety & Reservoir Expansion.
- 4 Water for NE Agriculture Expansion.
- 5 Resiliency / Integrity projects.
- 6 Water Quality Upgrades.
- 7 Belgo-Cdn Irrigation System.
- 8 Miscellaneous / Other projects.



The projects are categorized into common groups as presented in Table 1. Within the groups the priority and order of development is set out. In total there are 63 projects identified in 8 project groupings. Details on each project are provided in Appendix A.

Table 1 - Project Group List

Rank	1 McDougall Tunnel Extension	2 System Renewal Works	3 Dams and Reservoir Expansion	4 N.E. Irrigation Expansion
1	Tunnel Preparation	Annual_Ops Renewal works	Remote release Belgo Dam	Scotty Ck High Intake - Reinstale
2	Screenwork Sluicgate Renewal	Annual_PRV Stns above Grade	Loch Loch Res. Raise w / Diversion	Cornish Well Stn Recommission
3	1500mm Transmission Main	Emergency Generators	Meadow Storage - Low Dams	300mm Cornish Watermain
4	1650m Rock Tunnel Extension	Bst Stn 1 Relocate-Rebuild	Belgo Dam - DSR works	Kelowna Springs WM
5	Screen Works Pump Station	1050 Stevens-Hadden Trans-mair	Graystoke Dam - DSR works	Cornish-Old Vernon Rd Separation
6	Mission Creek Facilities Riprap	1200 CSP Surge Tower Sliplining	James DSR works and raise	Moyer - Wallace Rd Separation
7			Dams DSR corrections	Upper Scotty Intake to Bennett
8			Mission Reservoir Recommission	
9			Little Trapper Res. Recommission	
10			Lower Graystoke Reservoir	
11			Raise Fish Hawk w / Diversion	
12			Loch Ochie Dam	
13			Belgo Dam - Raise 3 dams	
	5 Improve Resiliency	6 Water Quality Upgrades	7 Belgo-Canadian Irrigation System	8 Miscellaneous Category
1	Well 6 Domestic Use	Flow Calming - Clarifiers Outlet	Pre-Design- Design Transmiss main	Upper Tower Booster Station
2	PRV 24 Pump Stn - PRV	Winterize WTP locations	16 km 900mm transmission main	BMID Office Relocation
3	RWD Interconnection	Flow Calming - Stevens Outlet	Transmission main to Brentwood	400mm Service WFN
4	PRV 16 Station Bst Pump	Flow Calming - Hadden Outlet	Brentwood Separation	Goudie Road Domestic
5	PRV 2 - Reconfigure Stn	Filtration Water Treatment Plant	Joe Rich Road Separation	Universal Metering
6	Puretech Hyprecon PRV2-PRV1	Install third WTP Process train	BMID Lease Lands at UV site-150 ac.	
7	750mm Swainson Road		South Belgo Separation	
8	Puretec Hyprescon PRV2- PRV3		North Belgo Separation	
9	750mm Leathead-City Rail-trail conn.		Frind McKenzie Benchlands	
10	PRV 1 - Upgrade Pump Cap.		McKenzie Benchlands	
11	City Diworth - 750mm along Railtrail			
12				

The McDougall Tunnel Extension in Group 1, is BMID’s highest priority project, followed by the Dams and Reservoir expansion works. The NE End Irrigation project group and the Belgo-Canadian Irrigation system are being led by third parties with timeline dependent on external funding. BMID is facilitating those projects but not providing funding for them.



Costing and priority of the higher priority projects are presented in Table 2.

Table 2 - Capital Project List

	BMID - PROJECTS LIST		Code	PROJECT COST	Renewal and Existing Users	CEC Funded	Development funded	Comment
1.0	McDougall Tunnel Extension and Associated Works		RENEWAL					
1.1	2021-24	McDougall Tunnel Extension - Preparation Work	REN-CAP-RESIL	\$ 3,250,000	\$ 1,950,000	\$ 1,300,000	\$ -	completed
1.2	2025	Screen Works Sluice Gate Renewal	RENEWAL	\$ 324,800	\$ 324,800	\$ -	\$ -	early 2025 completion
1.3	2025	1500mm Conduit Upgrade	REN-CAP-RESIL	\$ 4,135,521	\$ 2,481,312	\$ 1,654,208	\$ -	April 1 2025 completion
1.4	2026	McDougall Tunnel Extension	REN-CAP-CONV	\$ 20,300,000	\$ 12,180,000	\$ 8,120,000	\$ -	Approval in works
1.5	2026	Conduit Road - Pump Station	NEW-STA	\$ 630,000	\$ 378,000	\$ 252,000	\$ -	Design in 2025, construct with tunnel
1.6	2026	Mission Creek - BMID Facilities fortifications	NEW-RESIL	\$ 1,300,000	\$ 780,000	\$ 520,000	\$ -	post tunnel rock placement
2.0	System Renewal Works		RENEWAL					
2.1	Annual	General Renewal & Maintenance - Small Projects	REN-OPS	\$ 500,000	\$ 500,000	\$ -	\$ -	cost per year
2.2	Annual	PRV STATION - Move Above Ground (Annual)	REN-STA	\$ 200,000	\$ 200,000	\$ -	\$ -	cost per year
2.3	1/3 annual	Every 3rd Yr. Genset addition at stations	NEW-STA	\$ 298,229	\$ 298,229	\$ -	\$ -	cost per three year cycle
3.0	Dam Safety and Expansion							
3.1	2024	Belgo Remote Release Capacity Link	NEW-STO-RESIL	\$ 126,800	\$ 126,800	\$ -	\$ -	completed in 2024, optimize 2025
3.2	2027	Loch Long Reservoir Dam Raise c/w Diversion	NEW-STO-RESIL	\$ 8,653,000	\$ -	\$ 8,653,000	\$ -	Design in 2025
3.3	2026	Meadow Storage - Low Height Dams	MAINT-STO	\$ 100,000	\$ -	\$ 50,000	\$ 50,000	opportunity with WFN/ONA
3.4	2026	Belgo Dam Upgrades - DSR repairs	MAINT-STO	\$ 877,800	\$ 877,800	\$ -	\$ -	Requirement Quarry in 2025
3.5	2028	Graystokes Dam - DSR repairs	MAINT-STO	\$ 3,096,088	\$ 3,096,088	\$ -	\$ -	Design in 2025
3.6	2030	James Lake Reservoir - DSR & Raise to 3,300	MAINT-STO	\$ 3,900,000	\$ -	\$ 3,900,000	\$ -	Design in 2027
3.7	2030	DSR corrections other dams	MAINT-STO	\$ 550,000	\$ 550,000	\$ -	\$ -	As and when
4.0	Scotty Creek Irrigation Expansion							
4.1	2025	Scotty Creek High Intake	NEW-STA-IRRIG	\$ 880,900	\$ -	\$ 440,450	\$ 440,450	planned fall of 2025
4.2	2025	Cornish Well Building - Modifications	REN-STA-IRRIG	\$ 657,000	\$ 98,550	\$ -	\$ 558,450	planned winter 2025-26
4.3	2024	Cornish Well to Old Vernon Road	NEW-IRRIG-CONV	\$ 3,910,000	\$ 3,910,000	\$ -	\$ -	fall of 2025
5.0	Resiliency							
5.1	2026	Well 6 - Convert to provide Domestic	MAINT-STA	\$ 39,000	\$ 39,000	\$ -	\$ -	Domestic supply addition
5.2	2027	PRV 24 - Booster Pump - 50 hp	REN-NEW-STA	\$ 631,235	\$ 631,235	\$ -	\$ -	Domestic feed - Scotty back to main system
5.3	2026	RWD - Interconnections - 3 places	INTER-RESIL	\$ 126,500	\$ 126,500	\$ -	\$ -	Interconnection to RWD
5.4	2027	PRV 16 - Booster Pump	NEW-RESIL	\$ 284,625	\$ 284,625	\$ -	\$ -	Domestic Feed - Scotty Creek to main system
5.5	2030	PRV 2 - Upgrade w hydro generator	REN-STA-RESIL	\$ 1,500,000	\$ 1,500,000	\$ -	\$ -	Renewal plus power gen opportunity
5.6	2028	Puretech 2 - PRV 2 to PRV 1	REN-RESIL	\$ 210,000	\$ 210,000	\$ -	\$ -	Conc Cylinder pipe assessment
6.0	Water Quality Improvements							
6.1	2026	Flow calming weirs - Clarifier Outlet	NEW-WT	\$ 253,000	\$ 253,000	\$ -	\$ -	Low cost WQ upgrade
6.2	2027	WTP - Winterization	NEW-MAIN-WT	\$ 230,000	\$ 230,000	\$ -	\$ -	System resilience to run year round better
6.3	2028	Flow calming weirs - Stevens Outlet	NEW-WT	\$ 316,250	\$ 316,250	\$ -	\$ -	Low cost WQ upgrade
6.4	2030	Flow calming at Hadden Outlet	NEW-WT	\$ 250,000	\$ 250,000	\$ -	\$ -	Low cost WQ upgrade
6.5	> 2035	Water Filtration Plant incl 20,000m3 clearwell	NEW-WT-CAP	\$ 60,000,000	\$ 40,000,020	\$ 19,999,980	\$ -	Major project needs regional review
7.0	Belgo-Canadian Transmission Main							
7.1	2026	16km 900mm Belgo-Canadian Transmission Main	NEW-CONV-IRRIG	\$ 39,890,000	\$ -	\$ -	\$ 39,890,000	Irrigation to mid-site GP Sandher
7.2	2028	600mm main Extension - Pymant to Brentwood	NEW-STA-IRRIG	\$ 7,600,000	\$ -	\$ 3,800,000	\$ 3,800,000	Irrigation extension to BMID
7.3	2030	Gallaghers/Brentwood System Separation	SEP-RESIL	\$ 2,439,995	\$ -	\$ 2,439,995	\$ -	Long term after Belgo-Cdn completed
8.0	Other							
8.1	2025	Tower Ranch - Upper Booster Station	NEW-STA	\$ 2,495,500	\$ -	\$ -	\$ 2,495,500	By developer in 2025
8.2	2026	Office Relocation to Yards Site	ADMIN	\$ 253,000	\$ 253,000	\$ -	\$ -	BMID office relocate to consolidate operation
8.3	2030	WFN 400mm Main Gallaghers to Canyon	NEW-CONV	\$ 3,300,000	\$ -	\$ -	\$ 3,300,000	Cooperative with WFN
		TOTALS		\$ 268,746,001	\$ 96,250,556	\$ 108,528,316	\$ 63,967,130	

The complete project list is presented in Appendix A.

FINANCIAL PLAN

BMID has three sources of revenue to carry out projects, water tolls (user rates), water taxes (irrigation land area tax), and contributions from developers. The District has significant borrowing capacity with the only debt being payments on the UV Disinfection facility.

The District continues to lobby the Provincial government however, as an Improvement District, the role of being only service provider, BMID is categorized in the same group as small water systems, even though BMID supplies more water annually than the City of Penticton.

The costing analysis on District expenditures shows that 85% of BMID operating expenditures are fixed, regardless of how much water is used. The remaining 15% variable costs are for WTP chemical and for electrical power costs for those service areas where pumping is required.

BMID operates based on directing monies to those activities that provide tangible benefits. With most operating costs being fixed regardless of usage, BMID apportions water use based on frontage and the principle that “Each user pays a proportional share of the community water costs”. The water demands, number of customers and volume used per acre are comparable to other fully metered communities in the Okanagan. This approach diffuses the rate questions and conflict between the agriculture and residential customer groups. BMID has fixed rates for many water toll categories and only has meters on Industrial/Commercial/Institutional connections, the larger MF structures, and on all large irrigation connections. The meters are used primarily as tools to educate the larger users and for them to manage their usage. BMID has overage charges to cover costs on irrigation with punitive charges if the irrigator is > 20% over their allotment. In 2024, out of 400 large irrigators, there were only two customers that were 20% over their allotment.

When comparing BMID 2024 water rates with other nearby utilities, BMID is in the upper 2/3 of the rate for domestic tolls and in the lower 1/3 of the rates for agricultural irrigation. The projected BMID irrigation tax rate for 2025 is \$158.00/acre for Grade A lands. The annual toll rate for Single Family home in 2025 is \$764.40.

To set out a plan for water rates in the next five years, an EXCEL economic model was developed to project revenues, operating costs and capital project expenditures for the upcoming years. The spreadsheet has input variables for CEC rates, tolls rates, inflation, return on investment, and the changes in development and agriculture expansion for future years. The model allows for varying inputs to determine the sensitivity of the variables. The model spreadsheets are included in Appendix B of this report.

The outcome of the model is the timing for projects and the setting of Capital Expenditure Charge rates for a revised CEC bylaw. This report provides the background and basis for confirming that the CEC Bylaw rates are fair, warranted and defensible. Table 3 present the recommended CEC rates for an updated CEC bylaw. The proposed bylaw and this report are for review by Senior Ministry staff at the Ministry of Housing and Municipal Affairs.

The highest priority projects for BMID are the McDougall Tunnel Extension, followed by the Dam Safety and Reservoir expansion projects.



Table 3 - Recommended CEC rates – Schedule A - Proposed BMID Bylaw 741

LAND USE DESIGNATION	"A" & "C" Grade		"D" Grade	UNIT	Notes	KELOWNA ZONING	RDCO ZONING
	Rate \$/Unit	Rate \$/Unit	Rate \$/Unit				
AGRICULTURAL ZONES							
Agricultural (Regrade)	not applic.	\$ 6,000	acre		Allowed one house on a single property	A1	A1
Forest Resource	not applic.	\$ 7,500	acre				F1
Greenhouse	\$ 4,500	n/a	rate plus m2		Lump sum for first 150 m2 plus \$8.00 m2 thereafter		
Farm Worker Accomodation	\$ 600	n/a	per bed		Rate per bed	A1	A1
RURAL RESIDENTIAL ZONES							
Rural Residential 1 - 3	\$ 7,200	\$ 9,000	lot		Allows max. outdoor irrigation area of 1,000m2 If > 1,000 m2 exceeded, add'l charge applies of \$1.20/m2	RR1-RR1s	RU1-RU6
URBAN RESIDENTIAL ZONES							
Large Lot housing	\$ 7,500	\$ 9,375	lot		> 0.20 ha. + Oversized homes > 500m2 (all floor area)	RU1	R1
Medium Lot housing	\$ 6,000	\$ 7,500	lot		< or = 2,000 m2	RU2, 2s,2hs, 3, 3hs / R1	
Secondary suites / bed & breakfast suite	\$ 1,800	N/A	unit			SUITES	
Low Density Cluster Homes - Row/strata	\$ 4,500	\$ 6,000	lot			RU4	
Bareland Strata / Manufactured Home Subd.	\$ 4,500	\$ 6,000	lot or MH pad		Mobile Home park , detached dwellings	RU5 RM7	R1M RMP
Multiple Dwelling Housing	\$ 4,500	\$ 6,000	each unit		Duplex, triplex, fourplex, Townhouse, row housing	RU6, RM2-4	R2-3A RC1
Carriage House on ex. SF Lot (large)	\$ 4,500	N/A	bldg.		> 110 m2 total floor area		
Carriage House on ex. SF Lot (medium)	\$ 3,600	N/A	bldg.		55 - 110 m2 total floor area		
Carriage House on ex. SF Lot (small)	\$ 2,400	N/A	bldg.		< 55 m2 total floor area		
Medium and High Density Housing			unit		Rate for MF units, single and multi-storey buildings	RM6	R3C
- Large MF size unit 1-4 bedroom	\$ 3,600	N/A	unit		> 90 m2 total floor area		
- Med MF size unit 1-3 bedroom	\$ 2,400	N/A	unit		40 - 90 m2 total floor area		
- Small / Micro unit 1-3 bedroom	\$ 1,800	N/A	unit		< 40 m2 total floor area		
Congregate Housing - Single/Dual occupancy	\$ 1,800	N/A	room		Rate for single & dual occupancy		R3D, C7, C8
COMMERCIAL ZONES							
Commercial Subdivision	\$ 3,000	\$ 9,000	acre		Regrade fee for Commercial zoned subdivisions		
All commercial zones	\$ 7,500	n/a	150m2		For first 150 m2 of total floor area including mezzaines	C1-10	
Building charge	\$ 12.00	n/a	per m2>150m2		For remainder area greater than 150m2.		
Hotel, motel, campground, tourist commercial	\$ 2,400	n/a	unit				C7, C8
Golf Course	\$ 3,000	\$ 9,000	acre		Rate for total irrigated area including greens, fairways and tees		
INDUSTRIAL ZONES							
Industrial Subdivision	\$ 3,000	\$ 9,000	acre		Regrade fee for Industrial zoned subdivisions		
All industrial lands	\$ 7,500	n/a	150m2		For first 150 m2 of total floor area including mezzaines	I1-5	I1 to I5
Building charge	\$ 12.00	n/a	per m2>150m2		For remainder area greater than 150m2.		
PUBLIC AND INSTITUTIONAL ZONES							
Institutional Subdivision	\$ 3,000	\$ 9,000	acre		Regrade fee for Institutional zoned subdivision		
Major, minor Institutional, Utilities	\$ 7,500	n/a	150m2		For first 150 m2 of total floor area including mezzaines	P1,2,4	P2
Recreational, Intensive Water use	\$ 7,500	n/a	150m2		For first 150 m2 of total floor area including mezzaines	W1, W2	P3
Building charge	\$ 12.00	n/a	per m2>150m2		For remainder area greater than 150m2.	P2	P2
Parks & Open Space, Municipal Dist.Park	\$ 1,500	\$ 7,500	acre		Special cases may be assessed on Max.day use	P3	P1
NOTES: Land must be regraded for commercial, industrial and institutional zones prior to building development. For urban development zones, Grade D unit rate charge includes regrade of D grade land to Grade A							

SUMMARY

This capital works plan sets out the strategic direction for the Black Mountain Irrigation District and for those water resources that the District relies upon. This comprehensive document was developed with input from BMID Management, Operations staff and their consultants.

The plan identifies water issues similar to those faced by most water utilities in the BC Southern Interior. These include water quality upgrades, a shifting hydrological cycle, more extreme weather events, heightened awareness of base streams flows, the need for water for fisheries and stream health, more engagement with First Nations to improve water resource management, and the challenges of supplying sufficient water for development and for expanded agriculture.

This plan is the guideline document for BMID's capital expenditures in the next 5 to 10 years. The major conclusions derived in the preparation of this plan include:

- C-1 It was recognized through this process that the District is extremely stable. This applies to staff, management and the elected Board. Since 1955, there have only been 3 Chairpersons for the BMID Board of Trustees.
- C-2 The plan presents 63 capital projects, with many needed now and several included for future reference for future capital plans.
- C-3 This plan is centered around accessing water from Mission Creek. Mission Creek is an extremely important hydrological feature in the region. With its watershed still in a relatively natural state, this plan highlights that the regional reliance on Mission Creek will only increase in the future by BMID and by others.
- C-4 The largest immediate hydrological issue regarding water supply may be the requirement for more reservoir storage water to support fish habitat. The Okanagan Nation Alliance released 1,000,000 sockeye salmon fry into Mission Creek in 2023. These sockeye are expected to return in 3-5 years with the optimum creek flow rates still yet to be determined.
- C-5 The greatest immediate issue facing BMID is the integrity of the transmission conduit from Mission Creek to the existing McDougall Water Tunnel. Much of this 2 km long conduit is situated on the silt bluffs 60m above Mission Creek. The area is recognized to have high potential for slope failures. The highest priority project for BMID is the extension of the existing 1.0 km long McDougall Tunnel by 1.65km.
- C-6 Following the McDougall Tunnel Extension, the next major Capital Infrastructure investment for BMID will be the expansion of upper watershed storage at Loch Long Reservoir site.
- C-7 The largest long-term issue facing BMID is system renewal which is expected to become more significant in 20-30 years when the Asbestos Concrete mains are projected to reach their design lifespan of 75 years. These AC mains currently appear to be in very good shape. Extending their lifespan will provide additional time to develop funding for system renewal.
- C-8 The financial model provides BMID with a tool for planning and projecting water rates for the upcoming years. There are variable inputs for financial parameter such as inflation, rate increase percentages and return on investment for reserve accounts.



- C-9 **Project Groupings:** Because of the significant number of large initiatives that are underway, this plan breaks down the 63 capital projects into 8 groupings of similar themes or works. The groupings were necessary to allow BMID to set out priority and timing for the projects within each grouping.
- C-10 BMID has expended to date in the range of \$7,500,000 on the McDougall Tunnel Extension project in preliminary works, detailed design and the construction up to tunnel portal locations. The \$20,000,000 cost for the tunnel will require financial support from Senior Government and/or borrowing from the BMID ratepayers.
- C-11 Because of its natural and sturdy construction, the McDougall Tunnel Extension is projected to have an indefinite lifespan and will form the spine for conveyance of water from the largest upland source of water to Kelowna. For this reason alone, the project should merit support from Senior Government.

Major Recommendations of the report include:

- R-1 **2025 Capital Plan Implementation:** This document is the recommended guideline for BMID capital works for the next 5 to 10 years. This plan is to inform staff and the Board of a logical and effective approach to complete major Capital Projects.
- R-2 **Protect Mission Creek:** Protection of the Mission Creek is paramount. After Okanagan Lake, Mission Creek is the next most important hydrological feature in the Okanagan. Restoration of the tree canopy and proper resource management in the watershed is critical to a maintaining a high-quality, uncontaminated water source for future generations. BMID must continue to monitor the watershed and act in a stewardship role for Mission Creek. Partnership is required with stewardship groups, government agencies, and First Nations.
- R-3 **Water Use Plan:** An update is planned for the 2010 Mission Creek Water Use Plan. It is recommended that BMID participate in this plan. This is an opportunity for BMID to inform the other partners of the decades of data and knowledge that BMID has collected on Mission Creek. BMID must participate is to protect the interests and assets of the BMID customers.
- R-4 **First Nation Partnership:** Work co-operatively with Westbank First Nation, the ONA and Senior government to protect the water resources. Potential projects for partnership with Westbank First Nation and ONA are provided in Section 6.2. A critical project will be the development of additional storage specifically to support environmental flows for lower Mission Creek annually during September and October. BMID is a leading organization to facilitate, construct, and to operate water storage facilities in the Mission Creek watershed.
- R-5 **Shared Storage Plan:** A concept for a shared storage is set out in Section 3.9. It should be presented by BMID to the First Nations and senior government. Typically, fisheries biologists do not usually operate dams, yet storage is the only way in late summer and fall to provide more water than the natural flow condition. Partnership, a guideline as presented, and a plan that includes financing, construction, and operations of storage is needed to support EFNs.
- R-6 **One Operator:** BMID is the only dam operator with storage facilities above the BMID water intake. It is recommended that BMID work to retain this status and partner with any other agencies or third parties who would like to develop and access water storage in the Mission Creek watershed. Having one operator makes one agency responsible for adjusting flow rates. With a

second or third dam operator within the watershed, the operations and streamflow requirements would be more complicated and higher attentive monitoring would be necessary.

- R-7 **Dam Upgrades:** Based on the recent Dam Safety Reviews, BMID has significant work to do to upgrade the dams to the current standards. The standards have risen and there is the opportunity to combine the dam upgrading works with increased storage at certain sites, i.e. at James Reservoir.
- R-8 **McDougall Tunnel Extension:** The extension of the existing McDougall Water Tunnel is the single most important project for BMID to maintain system integrity and secure supply. The existing route has seen numerous failures over the past 20 years. A failure during the summer months could result in a huge financial cost.
- R-9 **Tunnel Financing:** At the completion of Project No. 1.4, BMID will have invested approximately \$7,500,000 in the tunnel preparation and associated works. The tunnel project itself will require expenditures of another \$20,000,000. Funding and/or borrowing will be necessary to complete the project.
- R-10 **Loch Long Expansion:** After the tunnel project, the next most important project to BMID is the expansion of reservoir storage at Loch Long Reservoir. The reservoir site, located just outside of Graystoke Provincial Park, has reliable and high producing watershed above, with excellent water quality. The site is also very close to BMIDs other reservoirs making for streamlined operations for the long-term.
- R-11 **Capital Expenditure Charge Revisions:** The CEC rates require increases from the current SF dry land rate of \$5,580 / lot to \$7,500 / lot. The costs to various housing and development forms are listed in Table 7.6. The rates are set up on a ratio of each development form to that of a single-family lot. This 2025 Capital Plan Update is to support an update to CEC Bylaw No. 706.
- R-12 **Plan Update Frequency:** The plan should be updated every ten years, with the project list and financial model revised every five years.
- R-13 **Placeholder Projects:** This Capital Plan lists 63 projects with many that will not be implemented within a 20-year time frame. The extensive project list is documented so that future management and Trustees of BMID will retain the concepts and ideas that have been collected and developed over the past 40 years. The inventory of projects is available for the Ministry and for other agencies to consider when reviewing plans and upgrades for lower Mission Creek.