ALBERNI-CLAYOQUOT REGIONAL DISTRICT

Alberni Valley Landfill

2020 ANNUAL REPORT

Submitted to: BC Ministry of Environment & Climate Change Strategy

Prepared by: ACRD Environmental Services Department

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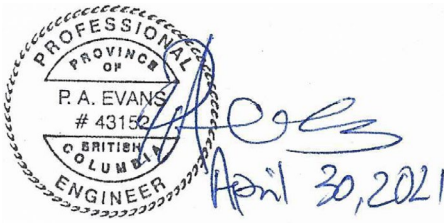

April 2021

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Report Summary

	Reporting Year 2020	Unit
Waste Tonnage Disposed at AVL	15,406	t
Landfill Airspace Consumed	27,125	m^3
Landfill Airspace Remaining	2,461,060	m^3
Anticipated Closure Date at Current Fill Rate/Density	2091	
Waste in Place at Landfill	828,938	t
Leachate Generated & Treated	497,588	m^3
Landfill Gas Management	Monitoring program in place	
Closure Works Undertaken	Graded slopes	
Inspection Works	Review undertaken preparing for DOCP	
Changes from MOECCS Approved Plans	None	
Non-Compliances	None	
Progress on Non-Compliances	N/A	

Projects Undertaken in 2020	Future Projects Proposed
Bamfield Free Tipping Fee Pilot Program	McCoy Pump Station Upgrade
AVL Stewardship Program Expansion	3rd Ave Recycling Depot Contract – Social Focused RFP
Yard Waste Program Changes	Design Operation and Closure Plan Update
Asset Management Plan	VIU Landfill Gas Monitoring Partnership
Recollect Recycling App	Landfill Gas Flare Installation
3rd Avenue Recycling Depot Upgrades	CPA 3-Stream Waste Collection
Bear Aware Program	AVL Upgrades
Landfill Operations Contract Update and Renewal	Organics Diversion
Leachate Treatment Monitoring	Alberni Valley Collections Contract
Environmental Monitoring Program Improvements	Additional Leachate Interception Wells
Groundwater Diversion Wells Refurbishment	Replacement of the Leachate Monitoring Well
SCADA for North Boundary and Stevens Creek Sites	Construction and Demo Diversion Program
Prepare Design Operations Closure Plan (DOCP)	Waste Licensing Bylaw
Selected Contractor for composting of organic wastes	Update of Solid Waste Management Plan

Solid Waste Management Goals	Target	Actual
1 - Waste Generation Rate	< 400 kg/capita	564 kg/capita
2- Diversion of Waste	>50%	23%
3 - Airspace Consumption Ratio	>660 kg/m3	568 kg/m3
4 – Capital Contributions	>$115,000/year	$120,000/year
5 – Water Quality	Meet FWAL at boundary	Some metals exceedances
6 – Landfill Gas Generation	<1,000 tonnes CH4/year	Est. 900 tonnes CH4/year

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Background

The Alberni-Clayoquot Regional District (ACRD) operates the Alberni Valley Landfill (AVL) under the British Columbia Waste Management Act Operational Certificate Number MR-00524, issued June 29, 2004. The AVL is located approximately 5 km west of Port Alberni and has been in operation since the early 1970s. The "waste shed" for municipal solid waste destined for the AVL includes the City of Port Alberni, ACRD Electoral Areas within the Alberni Valley and Bamfield and First Nations communities Tseshaht, Hupacasath, Huu-ay-aht and Uchucklesaht.

This report has been prepared to satisfy the annual reporting requirements for the AVL, as required by the Operational Certificate and the 2016 *Landfill Criteria for Municipal Solid Waste* published by BC Ministry of Environment.

Mission Statement

"To protect human health and the environment and maximize value of service by effectively managing the region's solid waste in an environmentally, socially and economically responsible manner."

Waste Quantification

Landfilled

In 2020, the AVL accepted 15,406 tonnes of municipal solid waste (MSW) and other wastes including, construction and demolition (C&D), and asbestos containing materials (ACM). The breakdown of waste types disposed in 2020 is as shown in Table 1. The cumulative quantity of waste disposed of at the AVL as of the end of 2020 is now 828,938 tonnes.

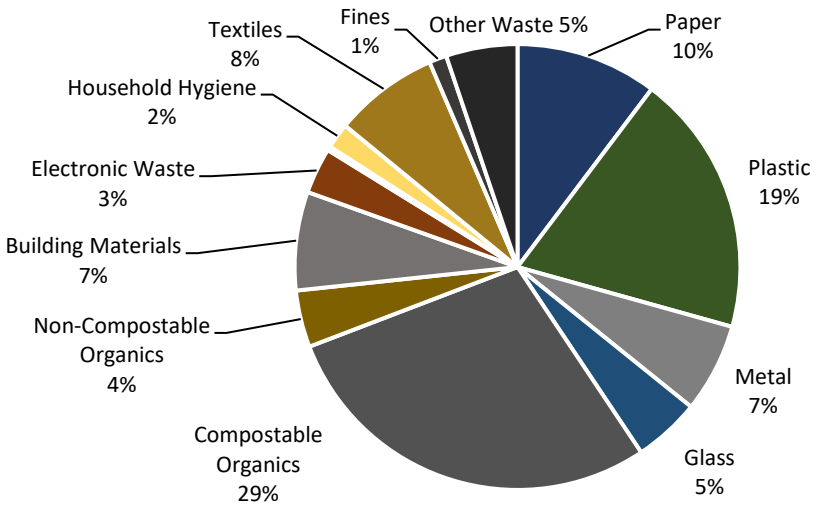
Table 1 – Landfilled Waste 2020

Residential Garbage	7,543.5
Commercial Garbage	4,520.9
Other Garbage	73.0
Construction and Demolition	3,161.1
Asbestos (ACM)	180.9
TOTAL	**15,406.3**

In 2019 the ACRD retained Dillon Consulting Limited (Dillon) to complete a Waste Composition Study. The focus of that study was to gain an understanding of the quantity of organics, recyclables and Extended Producer Responsibility (EPR) materials in the garbage streams for curbside residential, self-haul and commercial waste. The residential waste was also categorized by its origins allowing the production of composition profiles for each stream of waste by geographic location.

The graph below (Chart 1) illustrates the weighted average material composition for residential curbside municipal solid waste. The largest material category was compostable organics (28.6%) followed by plastic (19%) and paper (10%). Most of the compostable organics stream was food waste (22.5%). The largest subcategory of the plastics category was durable plastic products (non-recyclable plastics) at 7.6%, followed by film packaging (5.7%) and rigid recyclable plastic (4.7%). The Paper category was largely comprised of cardboard (6.1%) and recyclable paper (2.8%).

Chart 1 - AVL Average MSW Composition 2019

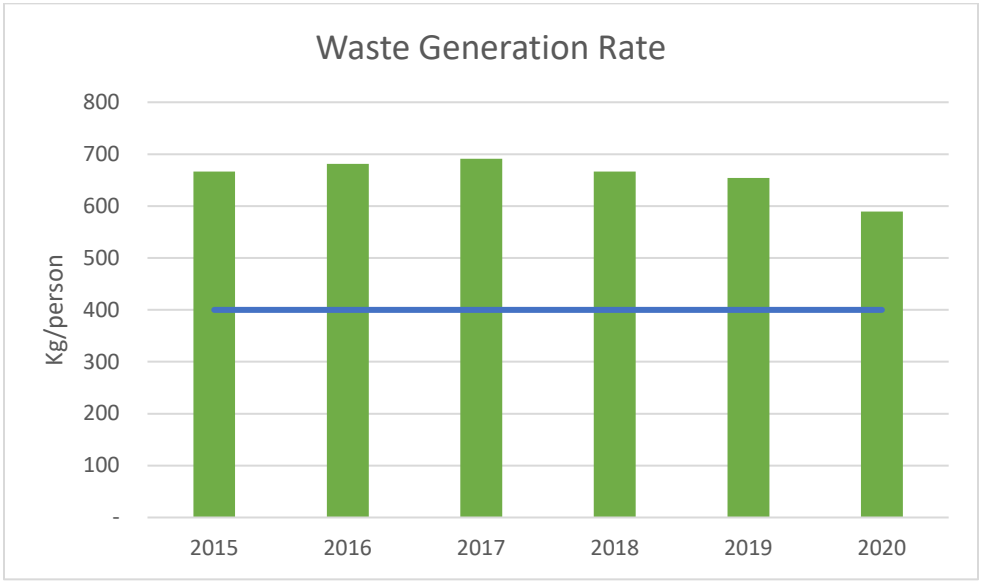


The population served by the landfill was estimated to be 27,328 in 2020 resulting in a waste production rate of 564 kg/capita per annum. This value represents a further 4% reduction year over year and continues the trend of previous years, with 2018 at 653 kg/capital and 2019 at 589 kg/capita. These reductions coincide with the implementation of enhanced education campaigns and stricter enforcement of mixed load rules at the landfill.

Target 1 - Reduce landfill disposal to less than 400 kg/capita

Although, the waste generation rate is improved over 2019 rate of 589 kg/capita it is still well above the target rate of 400 kg/capita as shown in Chart 2.

Chart 2 - Annual Waste Generation Rates



Diverted

The quantity of materials recorded as diverted from landfilling in 2020 was estimated at 4,568 tonnes. This measure is an underestimate of the actual diversion taking place. It does not include much of the diversion taking place from private sector sources. The ACRD does not have a waste licensing bylaw and so does not receive reports from many resource recovery and recycling companies and including that data would further improve the apparent diversion rate.

Chart 3 - Reported Annual Waste Diversion Rates

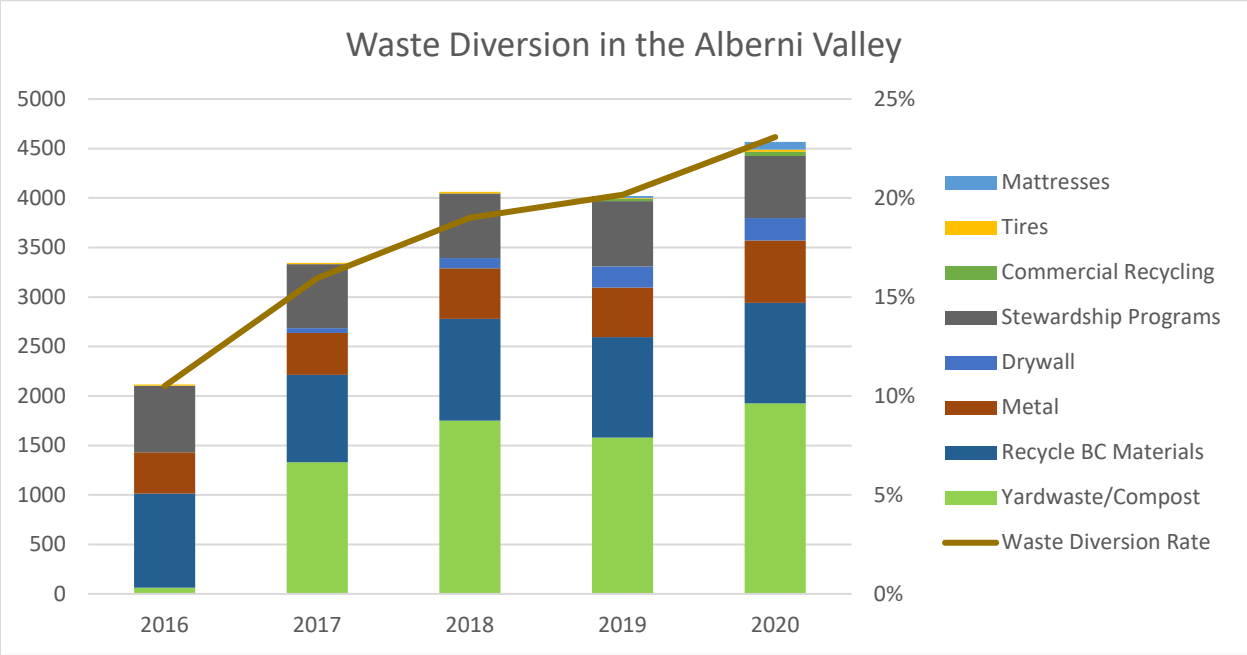


Chart 3 displays diversion rates over the last five years, collected through the following key programs:

- Curbside Recycling Collection in the City of Port Alberni and Beaver Creek
- The 4th Avenue Return-It Depot – privately operated; and
- Three ACRD operated Recycling Depots (2020 diversion tonnage):
    - 3rd Avenue Depot (122 tonnes)
    - McCoy Lake (AVLF) Depot (2,582 tonnes)
    - Bamfield Depot (43 tonnes)

The 3rd Avenue recycling depot was closed from April to September in 2020. This transferred traffic and volumes to the AVL and caused a reduction of volume received at the depot and an increase in quantities at the landfill drop-off. The AVL also expanded the range of stewardship products accepted to include batteries, paint, household hazardous waste, electronics, small and large appliances, lights, and outdoor equipment in addition to paper and packaging materials. The AVL also diverts non-stewardship products including tires, metal, clean wood waste, mattresses, gypsum, yard and garden waste.

Target 2 - Increase Diversion of Waste to 50%

These additional diversion efforts and the reduction in waste generated has resulted in an increased diversion rate of 23%, up from the 2019 rate of 20% and that of previous years. Although this is a significant improvement in recorded diversion rate, it is still well below the target set in the ACRD solid waste management plan of a 50% diversion rate.

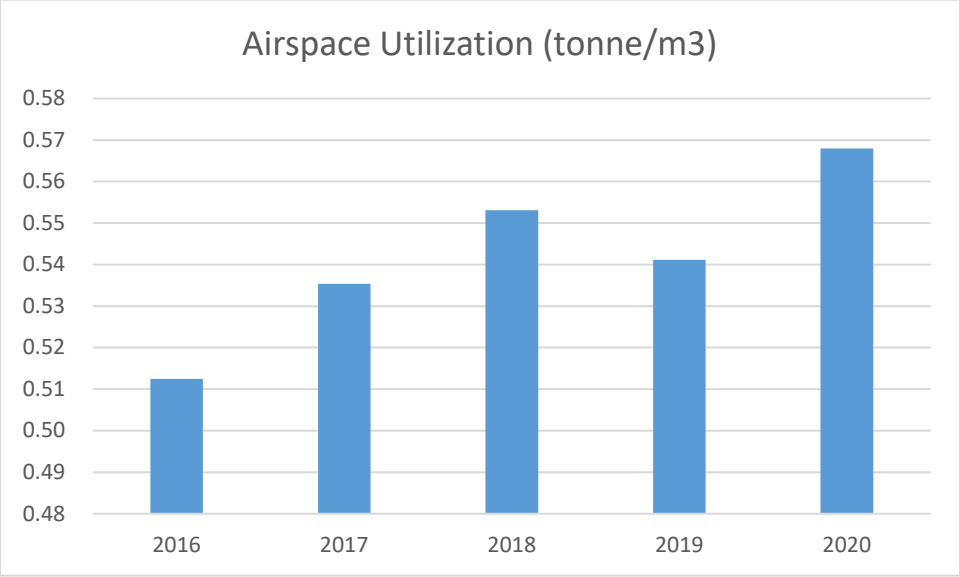
The greatest remaining single opportunity to increase waste diversion is through the diversion of organics and that will begin in 2021. Diversion will also continue to increase with continued education and promotion of the existing recycling programs and systems in place. Furthermore, the implementation of a waste licensing bylaw would provide a more accurate measurement of diversion rates in the ACRD.

Landfill Capacity

Airspace Utilization

In 2020, 18,999 m^3 of airspace was consumed by waste when taking account of the cover materials used and based on the annual topographical surveys completed at year end. The total disposed tonnage was 15,406 t, resulting in an airspace consumption ratio of 568 kg/m^3 (waste tonnage divided by airspace consumed by that waste). This is an improvement over the past five years and was a result of beneficial changes in operational methods for landfilling at the site.

Chart 4 - Airspace Consumption Ratios



563 Kg/m^3 is an improvement from previous years but still below our target of 660 Kg/m^3.

Target 3 – Minimum Airspace Consumption Ratio of 660 kg/m3

The volume of cover material used in 2020 was 8,126 m3, which is a 20% reduction from 2019. The operations contractor is investigating innovative approaches to further reduce this amount. Further

restricting cover use will not only reduce the costs of providing cover material but also preserve airspace and ultimately extend the life of the landfill.

Remaining Life

Based on the airspace consumed in 2020, there is an estimated 2,461,060 m3 remaining airspace at the AVL at the beginning of 2021. Based on the current population growth rate of 0.9%, waste generation of 564 kg/capita, and airspace consumption ratio of 568 kg/m3, the landfill will reach capacity in 2091. This estimate is five years longer than estimates from 2019. The projected life has increased because of improved waste diversion, plus generation has reduced resulting in reduced airspace consumption. However, if the targets for reducing waste generation to 400 kg/person and minimum airspace consumption ratios are met, the landfill lifespan will extend to approximately 2121.

Operations

Variations from DOCP Plan

The latest Design, Operations and Closure Plan (DOCP) was completed in 2012 by McGill and Associates Engineering. An update of this plan began in 2020 and will be completed in 2021. Variations in the last year from the 2012 plan include:

In 2019, the groundwater interceptor well system was found to no longer be operating as effectively due to fouling within the wells. The 2012 plan required the installation of wells and pumps to intercept leachate flows and direct them into the leachate collection system. This system was rehabilitated in 2020 and is now working correctly with a real time communication system (SCADA).

The 2012 DOCP included an estimate that 1,000 tonnes of methane would be produced by the landfill in 2012. That would have required the design and installation of a landfill gas collection system. In 2020 Sperling Hansen and Associates (SHA) undertook landfill gas modelling. They used two approaches and recorded good agreement between the different methodologies. The model required by the Province indicated 900 t of methane would be produced in 2020 and that quantities of methane would slightly reduce or hold level in subsequent years. This 2020 landfill gas assessment took account of the waste composition data that was acquired for the waste catchment. The projections also did not take account of the initiation of the organics diversion program that will begin in 2021. The diversion of these materials from the landfill will further reduce future methane emissions.

The emissions of methane projected by SHA using the provincial model fall below the 1,000 t threshold; this has deferred the requirement for installing a landfill gas collection system. The modelling will continue to be updated to reflect future waste compositions and tonnages.

The 2012 plan included the acquisition of ownership or long-term tenure of the AVL property. The ACRD has been working with the Province over the intervening eight years to acquire security of the property. This is ongoing but it is not yet clear if this process will be successful and what form of land use agreement may be established. The ACRD and Province have made progress in 2020 towards a decision.

Conformance to SWMP

The most recently adopted Solid Waste Management Plan (SWMP) from 2008 listed several initiatives to meet the first two targets in the report; reduce per capita waste generation to 400 kg/person; and increase diversion to 50%. Most of these initiatives have been implemented with one major outstanding

action item being the implementation of an organics diversion program. In 2020, the ACRD hired an organics coordinator who has been instrumental in making progress in many key areas. The City of Port Alberni is scheduled to have an organics curbside collection program running by late summer 2021. Supporting organics diversion for the commercial sector and surrounding electoral areas will follow in 2022.

Compliance Resolutions

The AVL has not had a compliance issue from the Ministry of Environment since 2018 when the Annual Report was submitted late and was cited as a compliance issue. The AVL has not received a site inspection from the Ministry since 2009.

Complaints

The ACRD received one complaint in 2020 related to the $5 tipping fee for yard waste. While the AVL is located away from residential communities, the ACRD and its operator still work hard at minimizing nuisances, such as odor, noise and litter. The feedback of landfill visitors is also important. A formal complaint tracking system was created in 2020 to ensure that all complaints are documented and followed up on appropriately. An enhanced customer feedback program will be launched and promoted in 2021 to encourage more feedback.

Inspections

Regular site inspections and reporting requirements have been incorporated in the updated operations contract for 2020. ACRD staff will also be performing oversight inspections to ensure compliance with the contract, operations certificate and ministry requirements.

Overview of work for upcoming year

There are several projects planned for 2021. These include the updating of the DOCP, an expansion of the landfill gas monitoring programs and other items as detailed in the Projects Upcoming section. The most visible change will be the upgrading of the drop off area to accommodate the organics diversion program.

Finances

Operating Expenses

In 2020, the operating expenses for the AVLF were:

Table 2 - Operating Expenses

	2020
LANDFILL OPERATING COSTS	$ 1,383,932
ADMIN & EDUCATION COSTS	$ 330,613
RECYCLING	$ 525,232
TOTAL COSTS	$ 2,239,777
RECOVERIES	$ 518,016
NET COST	$ 1,721,761
RESERVE FUNDS ALLOCATION	$ 614,782

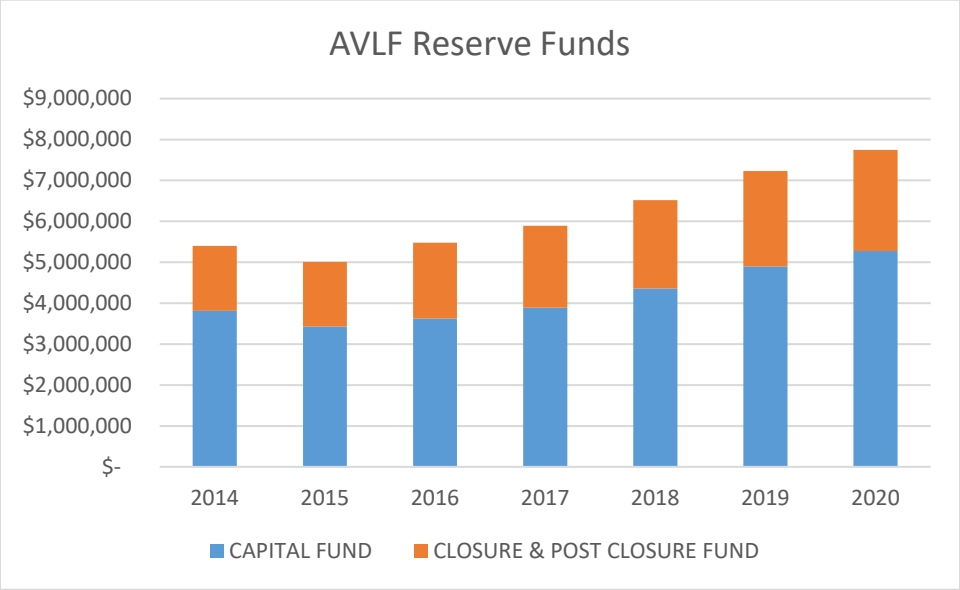
Capital and Closure Funding

The 2012 DOCP identified the need for $11,500,000 for closure and post-closure activities and recommended that the ACRD contribute approximately $115,000 annually to this fund. In the past five years, contributions have been $120,000 annually to the Closure Reserve and over $450,000 to the Capital Reserve. The growth of these funds are shown on Chart 5.

Target 4 – Annual Capital Contributions meet Funding Requirements

With an anticipated closure date of 2091, there are 70 years remaining before the end of the landfill life. At the end of 2020, the Closure and Post-Closure reserve has approximately $2,470,524. The updated DOCP which will be completed in 2021, will review and update closure and post-closure contribution requirements.

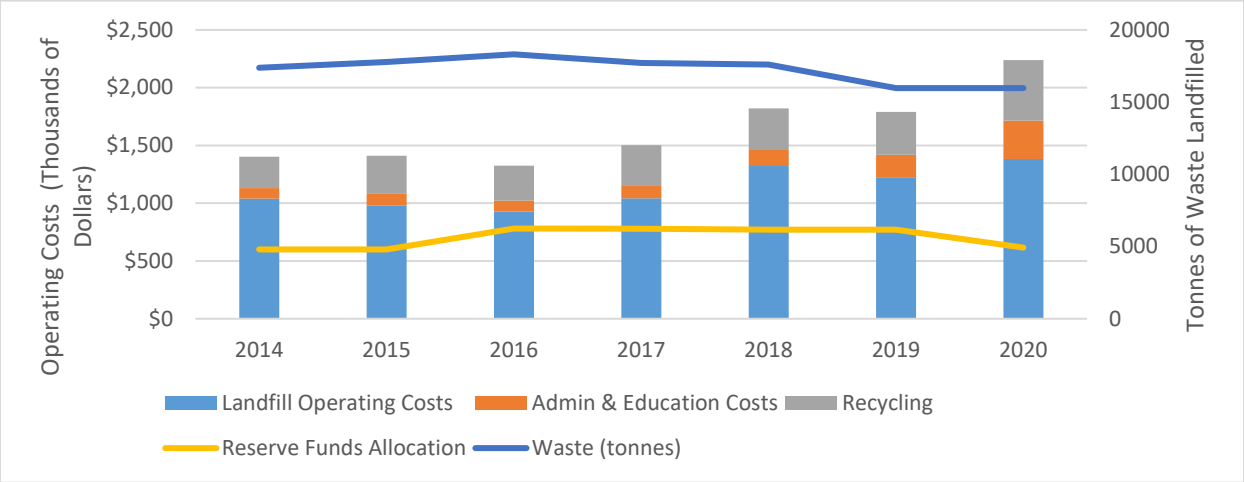
Chart 5 - Capital Reserve Funds



Operational Efficiency

Chart 6 below shows the total operating costs including contracts, administration, and support to manage solid waste in the Alberni Valley. It covers the operation of the AVL, 3rd Avenue Recycling Depot and curbside recycling collection but excludes costs related to the Bamfield Transfer Station. The costs are influenced by inflation and the volume of material landfilled.

Chart 6 - Annual Costs and Tonnages



2016 saw a five year low in costs due to staffing shortages, and that also resulted in projects not being completed. 2017 and 2018 started to see an increase in costs as landfill operations changed including a different method of managing wood waste, a diversion spotter pilot program, and the start of drywall diversion.

Along with the many benefits and additional revenues streams that new programs and initiatives provide, there are inevitably increased costs. In 2020, the cost of the residential recycling collection contract and recycling depot contract increased following renewal. This was partially offset by moving all depot operations to the AVL for a while, but the curbside collection charges rose by $140,000. It is eight years since the last Design Operations and Closure Plan (DOCP) and a new DOCP was largely undertaken. This and other unexpected consultant fees amounted to $120,000. Although accounted for in one year, these charges will have benefit to the AVL for years to come as well as satisfying a regulatory requirement. Likewise, preparation for the organics diversion program began in 2020 and cost approximately $110,000. The benefits will be felt for years ahead and include reduced greenhouse gas emissions and negating the requirement for installing and operating an active landfill gas removal system.

Greater costs were partially offset by an increase in revenues of approximately $300,000 coming from the Gas Tax Grant assistance for the organics program and user fees. The user pay approach for recycling mattresses also meant additional revenues to offset the additional costs.

Environmental Monitoring

Leachate Monitoring

The ACRD measures water quality parameters at fixed locations in and around the AVL on a fixed quarterly schedule. The locations include two leachate drains, eighteen monitoring well sites, two leachate interception wells and six surface water monitoring points. Samples are analyzed by an independent laboratory for metals, volatile organic compounds (VOCs), inorganic compounds, pH, conductivity and other water quality parameters. All monitoring data are provided directly to our environmental monitoring consultant, Piteau Associates Consulting, for their review. Piteau compiles

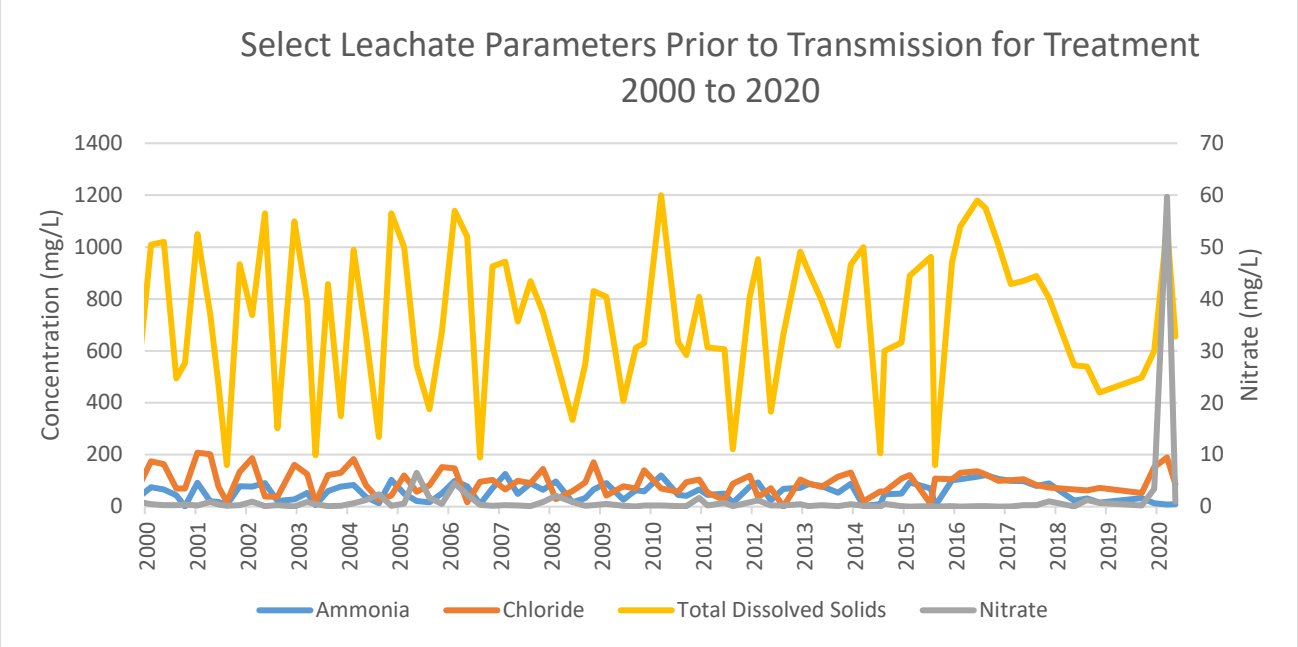
and analyzes the data and prepares an annual environmental report to accompany this report to be supplied to the BC Ministry of Environment and Climate Change Strategy (MOECCS).

Target 5 – Confirm all leachate is treated to meet the FWAL criteria

The landfill includes a leachate collection system comprised of internal drains, pumping systems, collection trenches, aeration lagoon and a flow equalization pond. Once collected, leachate is piped directly to the City of Port Alberni's (CPA) wastewater facility for treatment.

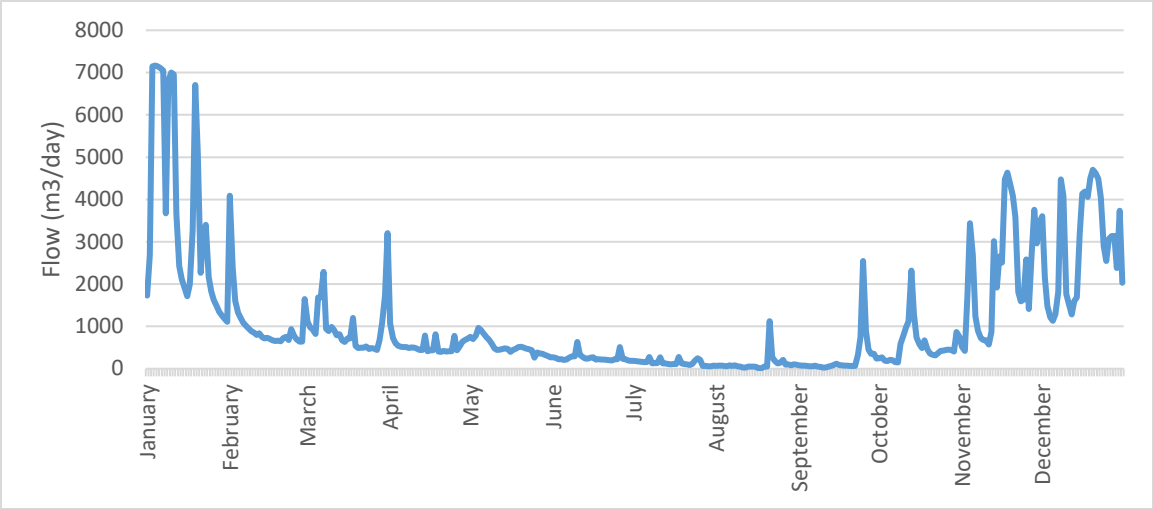
The water quality parameters of the leachate leaving the landfill have been monitored since 1990. Chart 7 below illustrates the recorded levels of ammonia, chloride, nitrate and total dissolved solids for the past 20 years. Note the seasonal variations in key parameters reflecting the lower flow conditions in the summer months. In this period of low flows in the summer of 2020, there was an unusual spike in ammonia and nitrate values. This had not occurred in previous years and Piteau recommends collecting a few more years of data to see if similar summer spikes occur or if this was a one-time event.

Chart 7 - Leachate Parameters



Leachate is transferred by a dedicated pipeline to be treated. The ACRD does not monitor the quality of treated effluent leaving the City of Port Alberni's (CPA's) lagoon but requests and receives treatment results from the CPA. Whilst the water quality of the discharges from the CPA facility meet the relevant criteria, the CPA data does not include dissolved and total metal concentrations that are important parameters for assessing the quality of landfill leachate. The graph below shows the 2020 leachate flows into the CPA sewage lagoon with a total volume of 497,588 cubic meters for 2020. Currently, there is no diversion of clean runoff water, so the graph below (Chart 8) is indicative of the amount of water generated by rainfall within the disposal area at the landfill. Future works, including final capping, will be able to divert clean runoff.

Chart 8 - 2020 Leachate Discharge Flows



Water Quality of Surrounding Environment

Piteau (2020) reported on the results of environmental monitoring conducted throughout the year. Their conclusions were as follows.

1. Groundwater flow in the limited surficial sediments beneath the landfill property is interpreted to dominate the flow regime, due to the low hydraulic conductivity of the bedrock. Flow in surficial sediments to the north are managed with a clay berm and interception trench pumping system. The French Drain in the South Expansion Area and the seepage cut-off wall/berm at the west of the property control seepage that may have migrated west to Heath Creek. Seepage east of the property is managed by the leachate interception wells.

2. Current leachate indicator concentrations are typical for a landfill of this size and age. Samples from the French Drain in the South Expansion Area indicate no significant landfill effects except for slightly elevated ammonia concentrations.

3. Leachate effects in surficial sediments were only noted at MW94-6S on the north side of the landfill, and PW-2, MW02-3S and MW05-1S near the flow equalization pond. Flow past MW94-6S is captured by the north leachate interception trench and pumping system. Minor effects by the pond can be mitigated with the operation of PW-2 and PW15-2, as described below.

4. Monitoring data for bedrock monitoring wells sampled in 2020 indicate no leachate effects have occurred to the south and only slight leachate effects have occurred to the west, north, northeast and east of the present landfill footprint.

5. When operated as recommended, the interception wells control the migration of leachate towards Christie Creek. Shallow leachate interception well PW-2 was recommissioned in 2020 and was providing adequate containment by the end of the year. PW-1, the original bedrock pumping well, appears to have been inducing a gradient from nearby observation wells MW05-1D and MW02-3S since it was recommissioned in May 2020. PW15-1 and PW15-2, the backup leachate interception wells, are being commissioned in 2021.

6. As in previous years, no leachate effects were detected in Heath Creek in 2020. Water quality results from this site in 2020 complied with all receiving surface water criteria except for phosphorus, aluminum, and copper.

7. Slight leachate effects have been detected in Stevens Creek, which flows over the north landfill property boundary onto Lot 105. With the exception of phosphorus, aluminum, and copper and manganese, water quality results from this site in 2020 complied with all receiving surface water criteria.

8. Water quality in Christie Creek has improved significantly since the discharge from the aeration lagoon was diverted to the leachate pipeline in 1998. In 2020, water quality complied with all receiving surface water quality criteria, except for phosphorus, aluminum, copper, iron, manganese, and zinc, which are unlikely to be associated with leachate.

As Piteau reported, a significant well rehabilitation project was then undertaken in 2020. The rehabilitation included cleaning the wells, installing new instrumentation and replacing the pumps. In addition to rehabilitating the existing pumps, the new wells (the "back up wells) that were previously drilled in that area of interest are to be equipped with pumps and pressure transducers. The entire well field will then be controlled automatically. The effectiveness of this enhanced groundwater diversion capability will be able to be monitored by SCADA on the AVL system.

Landfill Gas Monitoring

Target 6 - Landfill Gas Generation Less than 1,000 tonnes/year of methane

MOECCS requires that assessment of landfill gas is completed using the Provincial spreadsheet model. In 2020 Sperling Hansen and Associates (SHA) prepared an updated assessment of Landfill Gas emissions using two approaches, one of which was the Provincial Landfill Gas Assessment Tool. There was good agreement between the two methodologies. SHA projected emissions using a waste composition that was based on the waste composition study that was conducted across the ACRD in 2019.

The SHA modelling showed approximately 900 t of methane was emitted in 2020. This is less than the 1,000 t of methane threshold set by MOECCS above which a landfill gas management system would be required.

Landfill gas emissions will be monitored in 2021 as part of a research initiative in partnership with Vancouver Island University. They will also be included as part of the environmental monitoring program in 2021.

Other Greenhouse Gas Emissions

Landfilling operations require the use of motorized equipment including small machinery such as power washers, small utility vehicles (ATVs), and pickup trucks, as well as heavy duty machinery such as compactors, graders and excavators. The fuel used for this equipment is primarily diesel. In 2020, the contractor burned approximately 38,916 liters of diesel in the operation of the landfill which is estimated to have produced 102.7 tonnes of CO_2. The ACRD will continue to work with the contactor to reduce the greenhouse gas emissions from the use of equipment for the landfill operations. This can be improved with the use of newer equipment with more efficient engines. Other options to explore would be to switch the types of other power sources or fuels such as biodiesel.

Illegal Dumping

Illegal dumping of wastes is of concern to both residents and to the ACRD. These wastes include yard and household wastes dumped in quiet locations. Typically, illegal dumping has taken place on private forestlands and local forest companies are now restricting access to forestry lands to reduce illegal dumping and for fire concerns. We are also aware that waste has been illegally dumped on First Nation Lands. The frequency of illegal dumping acts is not currently measured but it is addressed in a complaint driven process. In 2020 the weight of illegally dumped waste recovered and received for proper disposal at the AVL was 5.45 tonnes.

The ACRD completes cleanup where significant quantities of waste are illegally dumped. The ACRD also waives tipping fees for approved community groups to clean up areas within the waste-shed.

Projects Completed 2020

Bamfield Free Tipping Fee Pilot Program – A Pilot Program was implemented for Electoral Area "A" (Bamfield) to provide free landfill tipping fee vouchers to all households that could be used between October 1, 2019 to September 30, 2020. The objective was to reduce the costs to the ACRD to transport garbage by encouraging residents to bring their waste directly to the landfill and hopefully limit the amount of illegal dumping, backyard burning and dumping of big items at the transfer station. This program has been extended until September 30, 2021.

AVL Stewardship Program Expansion – A part of the ACRD's solid waste management plan is to increase diversion rates, reducing the waste stream at the landfills and to help decrease illegal dumping. Therefore, it was determined to extend the stewardship programs to the Alberni Valley Landfill so residents had more than one location to drop items off for Product Care and Encore Pacific accepted materials.

Yard Waste Program Changes – To support the reduction of open burning and improvement of air quality in the Alberni Valley and to manage traffic volumes and costs at the Alberni Valley Landfill (AVLF), a $5 flat rate per residential load and a commercial rate for branches at $120.00 per tonne was adopted in the Alberni Valley Landfill Tipping Fee and Regulation Bylaw R1029-2.

Asset Management Plan - Version 1 was adopted June 24, 2020. The Alberni Valley & Bamfield Waste Management Plan (AVLF) Asset Management Plan (AMP) is part of the ACRD Asset Management program to facilitate informed decision-making and effective allocation of resources for infrastructure. The purpose of an AMP is to deliver sustainable, cost effective services to ACRD communities in a socially, economically, and environmentally responsible manner, while providing the level of service agreed upon by the Board of Directors.

Recollect Recycling App – This mobile App communicates digitally with people to provide all recycling information. This includes collection schedules, information on how to properly recycle and dispose of materials. This App allows the ability to update delays or changes due to weather conditions and build good recycling habits.

3rd Avenue Recycling Depot Upgrades – Due to COVID-19 a re-design plan was created in order to run the depot in a safe manner. The depot stopped bailing Recycle BC materials, therefore the building was

turned into the Stewardship Program drop off center with the outside of the building being the Recycle BC material drop off.

Bear Aware Program - The Bear Smart Community Program is designed and run by The Ministry of Environment and Climate Change Strategy in partnership with the British Columbia Conservation Foundation and the Union of British Columbia Municipalities. It is a voluntary, preventative conservation measure that encourages communities, businesses and individuals to work together. The goal is to address the root causes of human/bear conflicts, thereby reducing the risks to human safety and private property, as well as the number of bears that must be destroyed each year.

Landfill Operations Contract Update and Renewal – The AVL Operations Contract has been reviewed and updated to address several issues including airspace usage and safety and fire prevention requirements. The contract updated language to address a number of changes to operations over the past five years including collection of stewardship products and managing other new diversion streams and controlled waste on the site, as well as the SCADA system and additional tipping wall monitoring.

Leachate Treatment Monitoring – The AVL sends leachate directly to the CPA wastewater treatment system. The CPA now includes additional monthly testing of the treated effluent being discharged. The Ministry of Environment are now requesting the CPA to do metals analysis for iron and manganese for the leachate and other influents to their wastewater lagoon so that data will also be available going forward.

Monitoring Program Improvements – The field review recommended a number of improvements including; using dedicated bailers, increased calibration, immediate sample collection after purging and retention of field notes. The annual report also recommended using an updated procedure for dissolved copper requiring an increase in sampling.

Leachate Interception Well Rehabilitation - There are presently two pumping wells used for intercepting leachate and limiting the flow of groundwater leaving the site. These wells became fouled and their functioning was impaired. These two wells were rehabilitated in 2020 and new pumps were installed. The improvements are recognizable in the East Boundary Shallow and Deep Seepage graphs as the TDS and Chloride are now diminishing.

Solid Waste Services Resource Review – a staff time allocation review was undertaken. The objective was to determine if sufficient resources were being assigned to the solid waste service to meet regulatory requirements and to achieve the goals of the Solid Waste Management Plan. The review concluded that a gap existed as a consequence of a previous reliance on local engineering consultants. It also identified increased regulatory requirements and on-going operational deficiencies that highlighted the need to allocate additional staff resources to this service. A dedicated Solid Waste Manager position was created, with recruitment to occur in 2021 and the addition of a half time West Coast Solid Waste support staff person to begin in 2022.

SCADA for North Boundary and Stevens Creek Sites – In order to better monitor the north boundary pumping station level sensors were installed at two monitoring wells and have connected to the SCADA system. This now provides continuous monitoring of the water level in the two wells and ensures the pumps are achieving the design drawdown to limit groundwater from leaving the site in those locations.

Projects Upcoming

McCoy Pump Station Upgrade – The fresh water required for the operation of the AVL comes from the pump station located on McCoy Lake Road. This station needs a complete rehabilitation as the wood structure is rotting, pumps are at the end of their life and the piping manifold is in need of replacement. A completely new station including the building, pumps and manifold has come available from the City of Port Alberni. This will be an easy low-cost solution to upgrade the AVL's fresh water system.

3rd Ave Recycling Depot Contract – Social Focused RFP - The ACRD will be looking for businesses that create training and employment opportunities for people facing systemic barriers to entry into the mainstream labour market to take over operation of the Recycling Depot.

Design Operation and Closure Plan Update – The current DOCP was created in 2012 and requires updating as the detailed development phases set out in the plan have been completed. As well, the Province has created new landfill criteria and there are several areas identified with the landfill operation that need to be improved to meet the new criteria. The ACRD recently awarded the DOCP Updates for the Alberni Valley Landfill to Sperling Hansen and this project will be completed in 2021.

VIU Gas Monitoring Partnership – The ACRD is partnering with Vancouver Island University (VIU) on a project that will utilize sensitive scientific instruments to accurately measure the gas generation on-site. VIU has a mobile gas monitoring lab that can detect gases at much lower concentrations than handheld monitoring devices. In addition to the VIU mobile gas monitoring program, the ACRD is planning installing permanent sensors to be included in the real time monitoring of the landfill (SCADA system).

Flare Installation – In previous years, an existing monitoring water well was found producing high levels of landfill gas. In 2021 a new gas well will be drilled to facilitate the installation of a new flare to burn this off and reduce GHG emissions. A monitoring system of the flare will be incorporated into the SCADA system to determine how much gas is being destroyed and to assist in determining any future needs.

CPA 3-Stream Waste Collection – In 2021 the new Sort'nGo waste service, which includes the introduction of a three-stream (organics, recycling and garbage) automatic cart collection system, will begin for single family households in the City of Port Alberni.

AVL Upgrades: Recycling and Transfer Station upgrades at Alberni Valley Landfill, including new access roads, tipping bin walls, and associated earthworks and infrastructure. Upgrades to the landfill tipping area will be required to accommodate the new organics diversion stream.

Organics Diversion - The ACRD will begin implementing organics diversion in 2021, including public engagement and education on the new system as well as the acquisition of green bins for collection. Establishment of drop-off services as well as implementing organics bans is anticipated. As part of a phased approach the electoral areas of the Alberni Valley will be offered collection and other alternatives for organics diversion. Consultation in those areas will begin in the fall of 2021.

Alberni Valley Collections Contract – The AV Curbside recycling collection contract will be up for renewal in 2021. With the addition of organics diversion, the scope of the collection program needs to be reviewed and adjusted prior to issuing for competitive bids.

Leachate Interception Back-Up Wells Commissioning - In order to provide a more robust groundwater diversion capabilty, the leachate “backup wells” alongside the existing wells will be commissioned to operate in unision with the current wells. In 2021, these wells will be equipped with submersible pumps and the control system renewed to make these a single combined well field. The wells will then operate cooperatively and hence more effectively.

Replacement of the Leachate Monitoring Well – This well previously allowed sampling of leachate from within the landfill and requires replacement. The location of this new sampling well will be incorporated in the updated DOCP and installed in 2021. There is also some repair work needed at another location that will repaired at the same time.

Construction and Demo Diversion Program – Investigate potential Construction and Demolition waste diversion working with the CWMA Construction & Demolition working group.

Waste Licensing Bylaw – this is to enable the ACRD to receive reports from private resource recovery and recycling companies.

Update of Solid Waste Management Plan – the current Solid Waste Management Plan was completed in 2007. In British Columbia, Regional Districts are mandated by the Provincial Environmental Management Act to develop Solid Waste Management Plans that are long term visions of how each regional district would like to manage their solid wastes, including waste diversion and disposal activities.