ALBERNI-CLAYOQUOT REGIONAL DISTRICT

Alberni Valley Sort'nGo Centre

Formerly Alberni Valley Landfill

2023 ANNUAL REPORT

Submitted to British Columbia Ministry of Environment and Climate Change Strategy

Prepared by the ACRD

Community Services Department

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Report Summary

	Reporting Year 2023	Unit
Waste Tonnage Disposed at AVL	**14,867**	t
Landfill Airspace Consumed	30,453	m^3
Landfill Airspace Remaining	2,195,814	m^3
Anticipated Closure at Current Fill Rate/Density	2088	year
Waste in Place at Landfill	865,910	t
Leachate Captured & Treated	283,982	m^3
Landfill Gas Management	N/A	
Closure Works Undertaken	None	
Inspection Works	Last Ministry inspection conducted 2021, ongoing internal inspections	
Changes from MOECCS Approved Plans	None	
Non-Compliances	None	
Progress on Non-Compliances	From 2021 • DOCP updated and submitted. – addressed. • Leachate interception infrastructure commissioned – 2nd t full year of operation – addressed. • 2021 Annual reports submitted on time – addressed.	

AVL Wasteshed Projects Undertaken in 2023	Projects/Future Initiatives Continuing and Proposed
VIU LFG Monitoring Partnership	Landfill Working Group (2024)
Update of Solid Waste Management Plan	SWMP Master Plan (2024)
Landfill Working Group	Waste Education On-Boarding (2024)
Monitoring Well Install/Clay Dam Inspection	Bamfield Hauling – solution (2024)
Monitoring Well Re-Survey	Updates to Water Monitoring Program (Future Initiative)
Waste Composition Study	Mosaic monitoring well (2024)
Waste Education	Household Hazardous Waste (Future Initiative)
Annual Aerial Survey	Bamfield Transfer Station Upgrades (Future Initiative)
Airspace Consumption	Airspace Consumption Improvement (Future Initiative)
Tipping Fee Review	3rd Ave Depot upgrades (HVAC) (Future Initiative)
3rd Avenue Restore	Organics Ban (Future Initiative)
	Phase 3 Organics – AV/Bamfield (Future Initiative)
	Landfill Gas Flare (Future Initiative)

Solid Waste Management Goals	Target	Actual
1 - Waste Disposal Rate	< 400 kg/capita	548 kg/capita
2- Diversion of Waste	>50%	29.1%
3 - Airspace Consumption Ratio	>660 kg/m^3	488 kg/m^3
4 – Capital Contributions	>$115,000/year	$169,148/year
5 – Water Quality	Meet FWAL	No spikes detected
6 – Landfill Gas Generation	<1,000 tonnes CH_4/year	Est. 860 tonnes CH_4/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; Bamfield and First Nations communities of Tseshaht, Hupačasath, 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 and Climate Change Strategy (MOECCS).

Alberni Valley Sort'nGo Centre

In 2022, the AVL was renamed the Alberni Valley Sort'nGo Centre. The purpose of this change was to reflect not only the branding of the ACRD's Waste Program but also to capture the operational site enhancements made to expand recycling/diversion opportunities. Throughout this report the Alberni Valley Sort'nGo Centre is referred to as the "Centre."

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 2023, the Centre accepted 14,867 tonnes of municipal solid waste (MSW) and other wastes including, construction and demolition materials (C&D); and asbestos-containing materials (ACM). The breakdown of waste types disposed in 2023 is shown in Table 1. The cumulative quantity of waste in place at the Centre as of the end of 2023 is 865,910 tonnes.

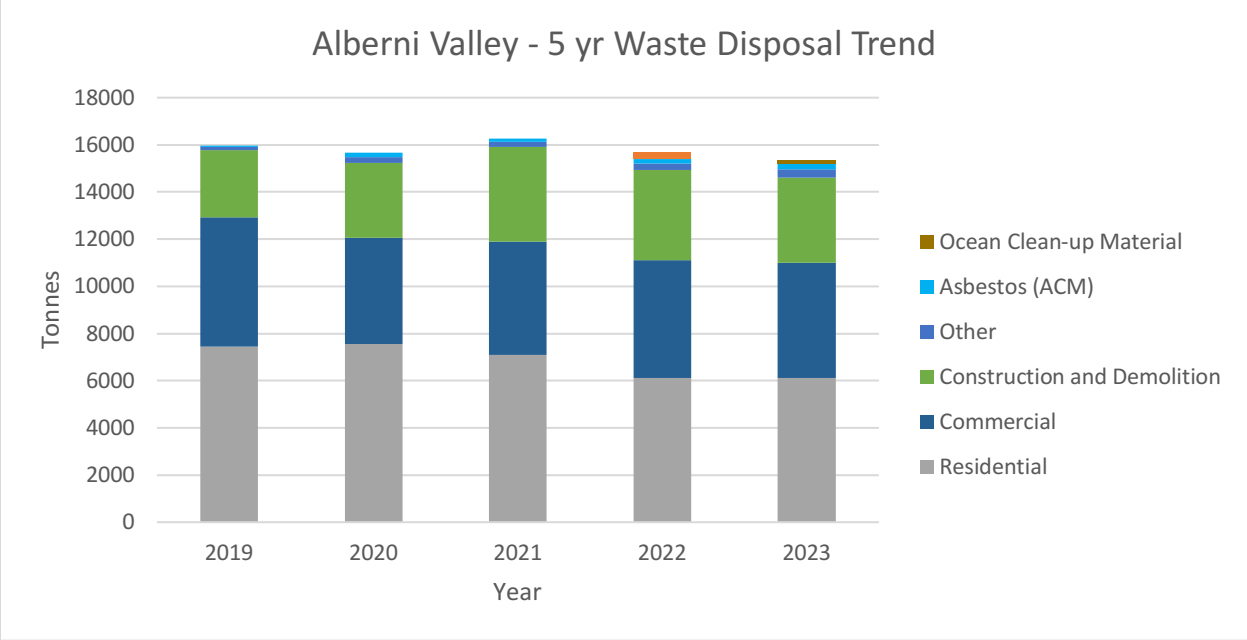
Table 1 – Landfilled Waste 2023

Waste Breakdown	Tonnes	Percentage
Residential	6,111	41%
Commercial	4,887	33%
Asbestos (ACM)	253	2%
Construction and Demolition	3,617	24%
Total	**14,867**	**100%**

A year over year comparison of waste processed through the Centre was compiled over a 5-year period (Chart 1 below). The key trends are:

- The tonnages of residential garbage disposed has steadily reduced over the last 5 years, with significant reductions in 2022 and 2023, primarily as a result of the new organics diversion program.
- Commercial garbage and C&D (combined) tonnages have also decreased.

Chart 1 – 5 Year Waste Disposal Trend in the Alberni Valley



Since the last waste composition audit in 2019, waste disposal rates in the Alberni Valley have dropped from 600kg/capita to 548 kg/capita (2023). The introduction of 3-stream collection contributed to this reduction and boosted waste diversion from 24% (2021) to 29% (2023); organics processing capacity, coupled with expansion of other diversion programs and waste education, have increased access to diversion of recyclables and organics. However, a recent waste composition study shows compostable organics remains a large component of the waste disposal stream that would be available for diversion, along with recyclables. The waste shed data shows that landfilled waste contains at least 52% divertible materials (20% compostable organics; 21% recyclables including paper, plastic & stewardship items, as well as 11% reusable material).

Waste accepted at the landfill from the Alberni Valley and Bamfield areas is predominantly produced by the Residential and Industrial, Commercial and Institutional (ICI) sectors as shown in the results. Key takeaways from the study include:

- The top category of landfilled waste included 39% organics (made up of 19% non-compostable [textiles/dirty wood] and 20% compostable material [food waste/yard waste]).

- Recyclable materials (plastics and paper) made up the next highest divertible materials (27%); followed by Construction Demolition waste (16%).

- Total diversion potential of 52% of the waste stream (Organics – 20%; Recycling – 14%; Reuse – 11% and EPR 7%).

- The highest diversion potential is compostable organics, made up of food and food-soiled material and recyclables(plastic/paper/metal):

    - Single Family curbside (Compostable Organics – 32%; Recycling – 14%)

    - ICI (Compostable Organics – 21%; Recycling – 17%)

    - Self-hauled waste (Reuse – 22%; Recycling – 8%)

While we recognize that this audit is a snapshot in time, if we project garbage being landfilled (11,000 tonnes annually over 5 years), assuming avoidable organics and recyclables continue to make up 34%, an additional 3,740 tonnes could be diverted each year.

Waste sort in progress at the Centre in 2023

Chart 2 Alberni Valley Sort'nGo Centre 2023 Overall Waste Composition

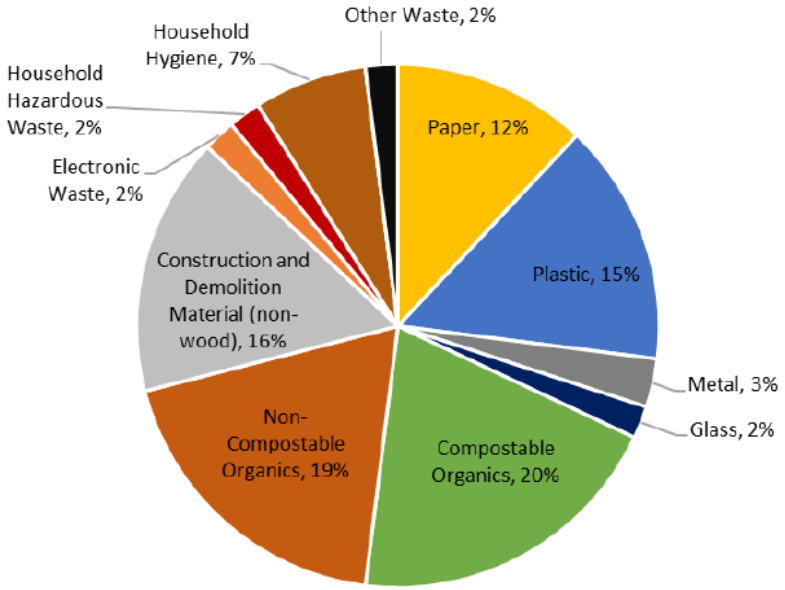
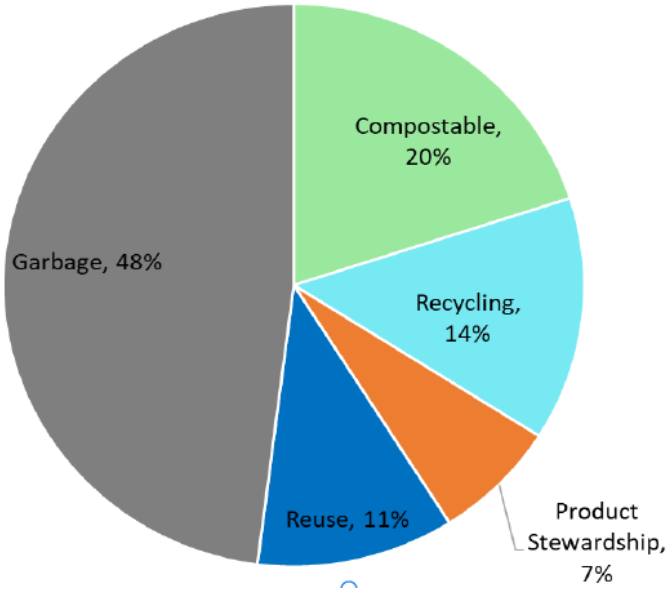


Chart 2 represents the weighted average waste composition for the Alberni Valley Sort'nGo Centre with all sectors combined. Weighted averages were calculated using the waste composition results for each sector and the amount of waste from each sector. The overall waste stream was primarily composed of compostable organics (20%), non-compostable organics (19%), construction and demolition material (non-wood) (16%), plastic (15%), and paper (12%).

The graph below (Chart 3) illustrates the diversion potential, which represents the percentage of materials that could be diverted through composting, recycling, product stewardship, and reuse programs. The total diversion potential was 52% and consisted of 20% compostable, 14% recycling, 11% reuse, and 7% product stewardship.

Chart 3 – Alberni Valley Sort'nGo Centre 2023 Overall Diversion Potential

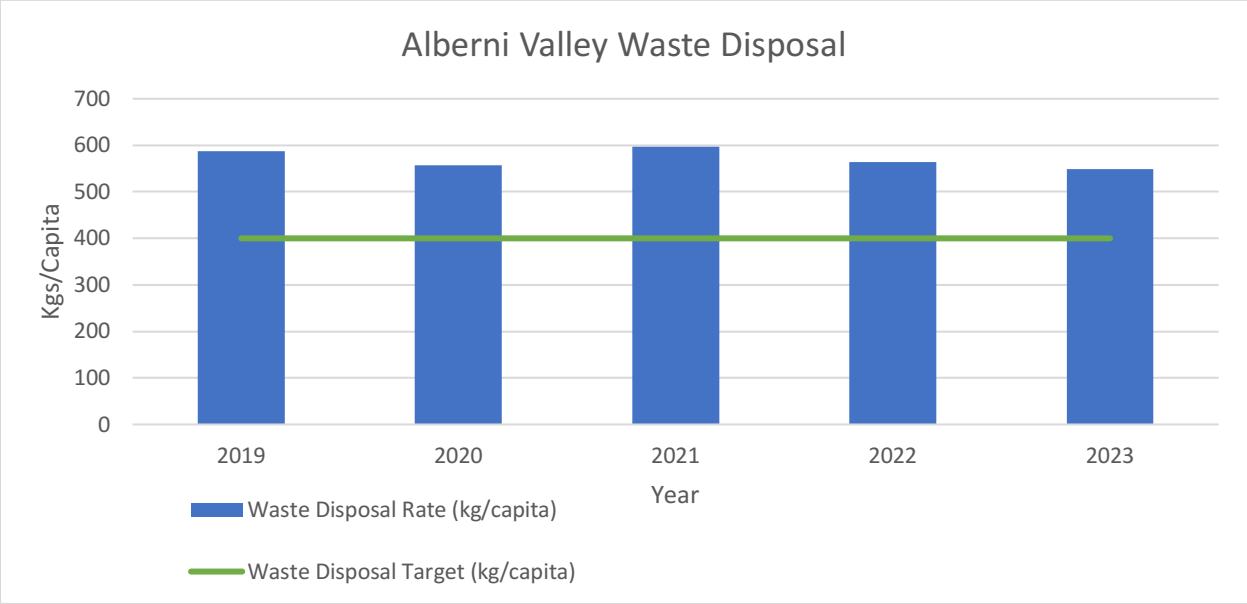


The estimated population served by the landfill was 27,277 in 2023, resulting in a waste disposal rate of 548 kg/capita per annum, a 2.3% improvement compared to564 kg/capita per annum measured in 2022.

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

The Waste Disposal Rate of 548 kg/capita is still well above our target rate of 400 kg/capita as shown in Chart 4. However, the trend shows a 5-year reduction with the exception of 2021, where the COVID-19 pandemic induced increases in at-home and at-business renovation work. This in turn generated more waste sent for disposal.

Chart 4 - Annual Waste Disposal Rates



Diverted

Approximately 6,134 tonnes of materials were diverted from landfilling in 2023. This represents a slight decrease since 2022. This decrease in total diversion was a result of the Hwy 4 Cameron Bluffs Wildfire closing Highway 4 for the summer months and severely disrupting transportation. The Depots in the Alberni Valley and Bamfield had to stop accepting materials for collection because there was no outlet for their materials. Residents were asked to hold on to their recyclable materials, however based on the data, it appears more recyclables went to landfill for disposal during this time.

The consolidated Alberni Valley diversion rate for 2023 was 29.1% (down by 2.3% of the total waste stream from 2022). It is important to also note that this 29.1% does not include all of the diversion 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. The diversion rate would be considerably higher if such reporting were required and included.

Chart 5 - Reported Annual Waste Diversion

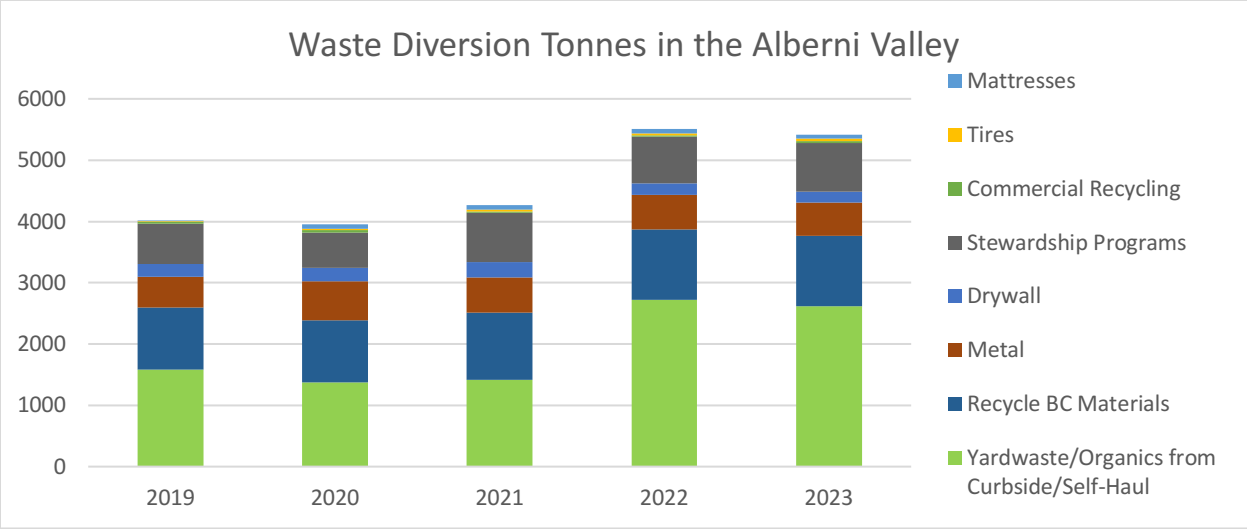


Chart 5 displays diversion rates over the last five years, collected through the following key programs (values shown are for 2023 alone):

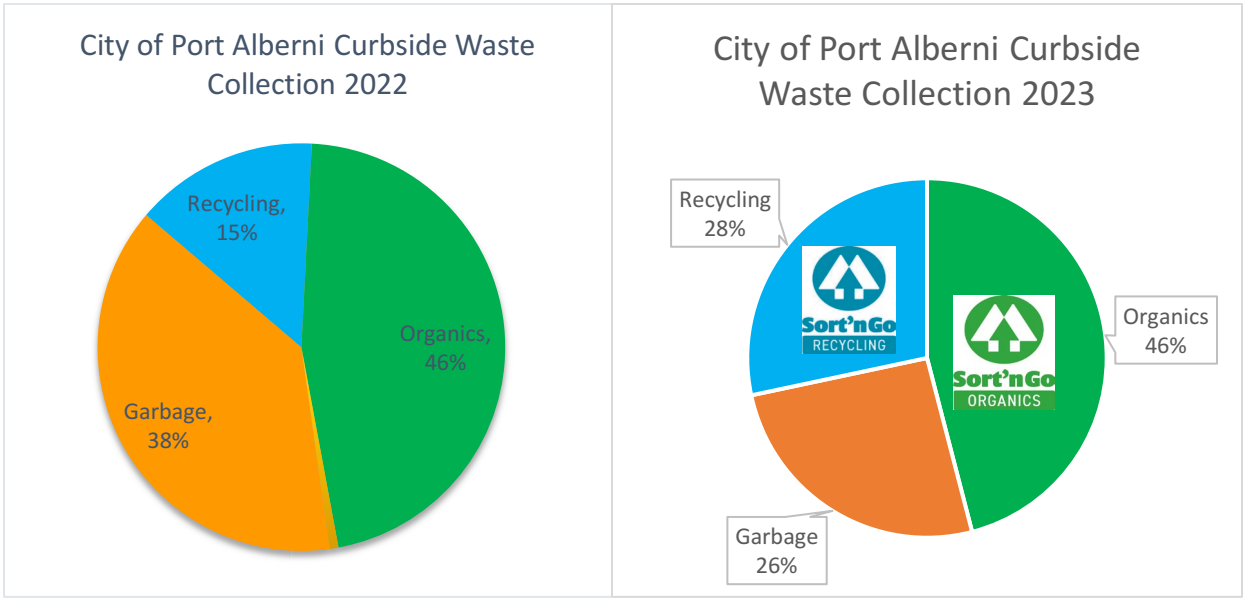
- Organics/Yard Waste Collection (3,331 tonnes):
  - Self-hauled wood waste (61 tonnes)
  - Self-hauled yard/green waste (509 tonnes)
  - Curbside organics collection in City of Port Alberni (CPA) (2045 tonnes)
  - 3rd party organics processing from private sources (716 tonnes)
- The Bottle/Return-It Depot (on 4th Ave) – privately operated;
- Three ACRD operated Waste/Recycling Centers (2023 diversion tonnage):
  - 3rd Avenue Depot at 3620 3rd Ave in CPA (197 tonnes)
  - AV Sort'nGo Centre near McCoy Lake Rd (183 tonnes)
  - Bamfield Depot at 570 Bamfield Rd (16 tonnes)
- Curbside Recycling Collection in CPA, Tseshaht First Nation (Tseshaht), Hupačasath First Nation (Hupačasath) and Beaver Creek (758 tonnes)
- Stewardship Programs, including MARR, Product Care, & Encorp at the ACRD Recycling Centres (972 tonnes)

Organics

The largest contributor to landfill diversion rates is organic material (54% of all waste diverted).

The prioritized organics diversion efforts have included the introduction of curbside organics collection from 6,700 single-family homes in CPA in September 2021. From 2022 to 2023, organics diversion in CPA remained relatively unchanged at 46% while curbside recycling increased from 15% to 28% (reference Chart 6). The ACRD believes that the increased attention to waste diversion has also improved awareness of recycling amongst CPA residents. That has been a great benefit of their 3-Stream program.

Chart 6 – CPA Curbside Collection (3-Stream)



The organic materials collected in the City of Port Alberni's curbside program are consolidated with self-hauled organic materials at the Centre then transported to a local composting contractor, Earth Land & Sea (ELS).

ELS also saw drop in privately collected and received organic materials from 1,453 tonnes (2022) to 716 tonnes (2023). These streams are comprised primarily of fish waste and residential organics.

Recycling

The 3rd Avenue Recycling Depot saw a slight decrease in tonnage, primarily due to the forest fire at Cameron Bluffs, closing Hwy. 4 throughout the summer of 2023. The Depot continued to receive stewardship products that included; batteries, paint, household hazardous waste, electronics, small and large appliances, lights, and outdoor equipment in addition to paper and packaging materials. The Centre also diverts a growing range of non-stewardship products including tires; metals, clean wood waste, mattresses, gypsum (drywall), as well as yard and garden organics.

Curbside recycling for CPA, Beaver Creek, Tseshaht and Hupačasath continues to increase for the fifth straight year as seen above in Chart 5 – Reported Annual Waste Diversion Rate.

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. The reported diversion rate is now 29.1% down from the 2022 at a rate of 31.4%, a 2.3% decrease. The overall decrease is due to a reduction in commercially self-hauled fish waste to the private compost facility. Excluding the private tonnage resulting from fish waste, organics diversion through our facility sees the diversion rate remaining unchanged from 2022.

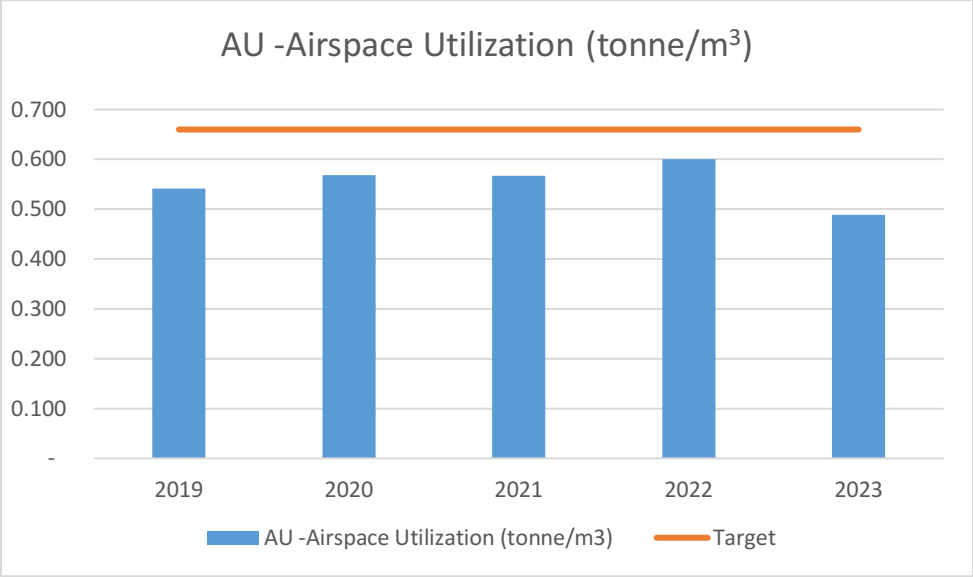
Landfill Capacity

Airspace Utilization (AU)/Consumption

In 2023, 30,453 m^3 of airspace was consumed by waste and cover material. This value is based on comparing the annual topographical surveys which are completed at year-end. The total disposed tonnage was 14,867, resulting in an airspace consumption factor of 488 kg / m^3 (waste tonnage divided by airspace consumed by that waste and associated cover material). This represents a decrease of 20%.

In reviewing the AU values from last year, there is a discrepancy due to a large volume of filling work around the crest of the slope, which affected the calculation. Lower waste densities and greater intermediate cover usage might be anticipated when compacting on the sideslopes. This is because the compaction equipment is less effective, and more cover material is needed than when working in conventional cells. Measured AU values, at multiple points on the slope were consistently higher than expected (between 1,000 and 1,200 kg/m^3).

Chart 7 - Airspace Utilization/Consumption Ratio



Target 3 – Minimum Airspace Consumption Ratio of 660 kg/m^3

The calculated volume of cover materials used in 2022 was 6,307 m^3, with the remaining 24,146 m^3 consumed by waste. The operations contractor already uses steel plates for providing alternative "daily cover." However, unsatisfied with this method, they have been exploring inventive strategies to minimize cover quantities and have implemented monthly surveys of test waste cells. The landfill contractor continues to make operational improvements which will not only reduce the costs of providing cover material but also preserve airspace and ultimately extend the life of the landfill.

Remaining Life

In 2022, the Design Operations & Closure Plan (DOCP) was updated to reflect revised population estimates; the introduction of organics diversion; staged adjustments in filling; and revised present day equivalent costs for closure and post closure of the site. The new filling plan in the DOCP identified an

estimated 2,277,400 m^3 of airspace available using 2020 as a baseline year. Based on the airspace consumed in 2023, there is an estimated 2,195,814 m^3 remaining airspace at the Centre at the beginning of 2024. Current population growth on a 5-yr rolling average is 1.1% and is slightly higher than the expected value used in the model of 0.9%. Despite these increases, the reduction in waste disposal of 548 kg/capita and the current airspace consumption ratio of 488 kg/m^3, the theoretical lifespan of the site remains relatively unchanged (approximately 2088). The target value of 660 kg/m^3 was selected as being representative of the most likely waste density to be achieved. That said, the DOCP estimates that the landfill will reach capacity in 2114. While only a model, the revised DOCP assumes 50% organics diversion for the entire waste shed, which has not yet been achieved. To achieve the target of 50% organics diversion, the next step includes a ban on organics in the landfill.

Operations

Variations from DOCP Plan

The Design, Operations and Closure Plan (DOCP) was updated in January 2022, by Sperling Hansen Associates. The updated DOCP includes, but is not limited to:

- Detailed filling for the current phase of the landfill (Phase 1) to assist operators.
- Updated Landfill Fire Safety Plan including updated emergency contact information.
- Updated landfill lifespan to include impact of organics diversion.
- Costs updated to present-day values for Landfill Closure/Post-Closure capital and monitoring.

There are no actual variations from the new 2022 DOCP nor the revised filling plan as operators are remaining within the defined design footprint of the site. A site conformance review completed in 2023 shows that the most notable achievements for the site also include:

- Implementation of the landfill working group in collaboration with the Tseshaht First Nation community.
- Establishing the organics diversion program in the Alberni Valley.

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 disposal to 400 kg/person; and increase diversion to 50%. Most of these initiatives have been adopted, including the implementation of curbside organics diversion in the City of Port Alberni. However, organics diversion for the commercial sector and for the surrounding electoral areas is still outstanding. The ACRD will continue to move forward with the SWMP update in 2024 to review and update the targets and initiatives for this service (see projects section of this report).

Compliance Resolutions

As identified in 2021, recommendations excursions relating to the DOCP were addressed as follows:

- An update to the 2012 DOCP was conducted and finalized. The newly-completed 2022 DOCP was submitted to MOECCS on July 15, 2022.
- Leachate interception infrastructure, including new wells and a SCADA monitoring system, was commissioned. This enlarged system has now completed its first full year of operations and continues to be monitored.

- 2021 annual reports were submitted on-time.

There were no compliance visits in 2023.

Landfill Working Group

In 2012, the ACRD had applied first for a 5-year License of Occupation (LOO) application (short-term), which would be followed by application for a 30-year (long term) lease. Subsequently, in 2020, the Ministry of Forests (MOF) began consulting with Tseshaht and Hupačasath regarding the subject of long-term lease of the site for continued landfilling.

As part of the consultation process, MOF provided funding for each Nation to complete an independent environmental review of the application. Hupačasath completed their independent review and provided support for the application.

However, in 2021, MOF requested ACRD to respond to a number of concerns raised by Tseshaht:

- Lack of provincial consultation on the original siting of the landfill within traditional lands;
- Through an environmental assessment completed by Tseshaht consultant, PGL Environmental Consultants (PGL) noted:
    - Questions on the sufficiency of the groundwater monitoring well network surrounding the landfill; and
    - Lack of notification to Tseshaht for any Ministry of Environment & Climate Change Strategy (MOECCS) non-compliance advisories resulting from inspection.

The ACRD received approval for a 5-year LOO for the landfill site from the Province in August 2022. The Regional Board supported the allocation of resources to fulfill ACRD commitments and maintain ongoing engagement with Tseshaht to ensure confidence that the landfill will not have a detrimental effect on their community or the environment.

In 2022, ACRD staff met with MOF, Tseshaht, and MOECCS to discuss these concerns, culminating in the ACRD providing written commitment to:

- Create a quarterly landfill monitoring group;
    - In 2023 the ACRD and Tseshaht Landfill Working group met in January, April, August and December.
- Install additional groundwater monitoring wells;
    - In 2023 a new Monitoring Well was installed at Stevens Creek
    - ACRD awaits approval from Mosaic to install another Monitoring Well at a location east of the landfill.
- Formalize an existing ad hoc agreement for waiving tipping fees for the community of Tseshaht (completed in December of 2023);
- A draft Terms of Reference which is being reviewed in collaboration with Tseshaht; and
- Additional operational improvement initiatives.

PGL conducted a Tseshaht Cultural Use Study of the – McCoy Rd Landfill Site.

In August of 2023 the following recommendations from the study were:

- Hire a Tseshaht landfill monitor.

- Provide accessible information.
- Conduct annual open houses.
- Strengthen environmental protection measures.
- Preserve native plant species.
- Closure and restoration monitoring.
- Restoration planning.
- Environmental Control.
- Long-term healing and preservation.
- Traffic safety measures and neighbouring community education.

Public Feedback on Landfill Operations

The ACRD and its contract operator work hard to minimize potential nuisances from the site, such as odor, noise and litter. The feedback from landfill visitors is also important, whether positive or negative. A formal feedback tracking system was created in 2021 with an enhanced program launched in 2022 to encourage more customer input, via feedback@acrd.bc.ca. This information was distributed at the ACRD's local waste disposal sites as well as the Tseshaht and Hupačasath First Nations offices. While initially utilized by the public and still advertised, the feedback email address saw no use in 2023. However, feedback was also received at the ACRD main reception as well as the ACRD's Sort'nGo line (250-736-SORT). Additionally, the landfill working group referenced in the previous section also provides another avenue of feedback on site operations.

What we heard in 2023:

- Prices are high.
- Cardboard (recycling) bin slots are too small.
- The paperwork that goes along with Drywall drop off is too much to fill out.
- Some customers don't like to pay for disposing of branches, grass and leaves.
- There is still quite a bit of commercial recycling being found in the landfilled garbage.
- Google Reviews 2023:
    - *"Cleanest dump in Canada"*
    - *"Fast. Reasonable price. Friendly staff. Yard staff are helpful. Nice drive."*
    - *"Always helpful"*
    - *"It's awesome!! I find all the staff very friendly and will always take the time for a little chat providing It's not too busy. A very clean and well-organized landfill. Always fun to go there."*

There were no issues raised by the general public on the road with respect to noise, dust, traffic, litter, odour or wildlife attractants.

Due to upgrades made in 2021-2022, a visit is no longer a "trip to the dump" but the focus has changed to all the many destinations for materials instead of simply burying them. Naturally, people have questions about those destinations, and we have the staff ready to assist on site and the Sort'nGo app to assist customers when they are away from the facility.

Inspections

No formal inspections were conducted by the MOECCS in 2023. Regular site inspections and reporting requirements have been incorporated in the updated operations contract for 2023. The solid waste team and the landfill operations staff are performing regular internal inspections, coupled with monthly update meetings, to ensure compliance with the contract, operations certificate and provincial requirements. The user experience and any interactions with our neighbours also are included in these reviews.

Overview of Work for Upcoming Year

Environmental monitoring will continue in 2024 and will follow the Centre's environmental monitoring plan. The accompanying report by Piteau contains detailed recommendations on the execution of that plan and their recommendations will be followed.

There are several projects planned for 2024. These include update of the Solid Waste Management Plan; continued work with the landfill working group and other items as detailed in the Projects Upcoming section.

Finances

Operating Expenses

In 2023, the operating expenses for the AV and Bamfield Waste shed were:

Table 2 - Operating Expenses

Category	2023
Landfill Operating Costs	$1,501,902
Admin & Education Costs	$461,316
Recycling/Organics	$644,739
Total Costs	$2,607,957
Recoveries	-$549,862
Net Cost	$2,058,095
Reserve Funds Allocation	$760,220

Capital and Closure Funding

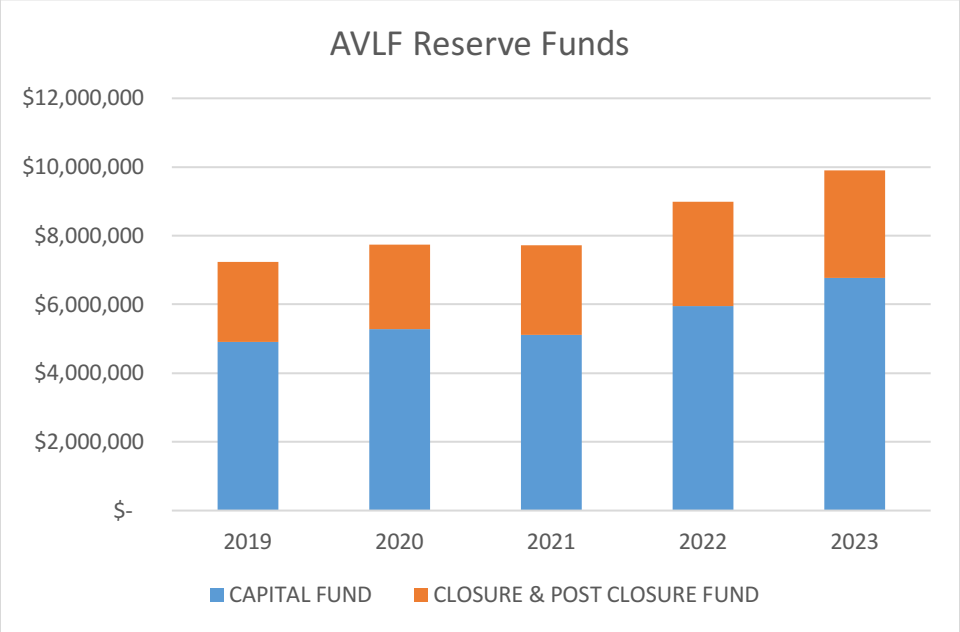
As per the new DOCP, $22,000,000 is required for closure and post-closure activities. To support this, the ACRD contributes a base amount of $167,000 (2022), increasing by 3% each year. The contribution for 2023 was $169,148 and is shown in Chart 8.

Target 4 – Annual Capital Contributions meet Funding Requirements

The DOCP model identifies a theoretical lifespan of the landfill area extending to 2114. That said, the ACRD annually reassesses the lifespan based on current population estimates; annual airspace consumption; current disposed and diverted tonnages. The current assessment of the site gives a conservatively estimated closure date of 2088, equaling 65 years remaining of landfill life. At the end of 2022, the Closure and Post-Closure Reserve is approximately $3,122,451. Closure and post-closure

contribution requirements have been updated to align with the 2022 DOCP (refer to "Remaining Life" section for detail).

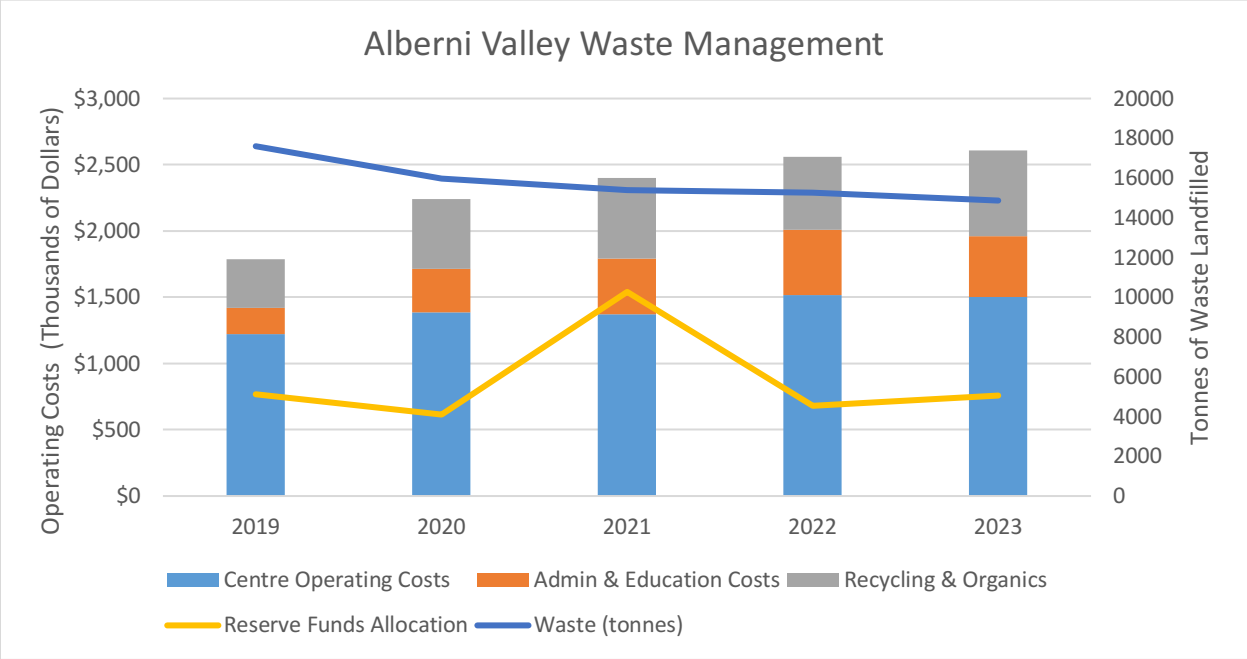
Chart 8 - Capital Reserve Funds



Operational Efficiency

Chart 9 below shows the total operating costs including Sort'nGo Centre operations, administration and education, and diversion programs to manage solid waste in the Alberni Valley. It covers the operation of the Centre, 3rd Avenue Recycling Depot and curbside recycling collection but excludes costs related to the Bamfield Transfer Station. The costs are influenced by cost inflation and the volume of material landfilled.

Chart 9 - Annual Costs and Tonnages



2023 saw a significant increase in recycling costs due to the wildfire at Cameron Bluffs and the resulting Hwy. 4 closure. The detour along a logging road added to the cost of transportation from the depots to the receiving facilities.

Operations costs also rose due to rising contractor costs resulting from changes in the global economy. In contrast, we were able to significantly increase organics diversion but with relatively low increases in costs because this was done with local resources.

In 2024, these trends are likely to continue with the following factors considered:

- A wide-ranging tipping fee review was conducted in 2023 resulting in tipping fee increases to better recover costs.
- Increased diversion success will result in increased costs related to diversion efforts/initiatives.
- Ongoing management of materials and increased efficiencies in managing materials at the Centre.

Environmental Monitoring

Leachate Monitoring

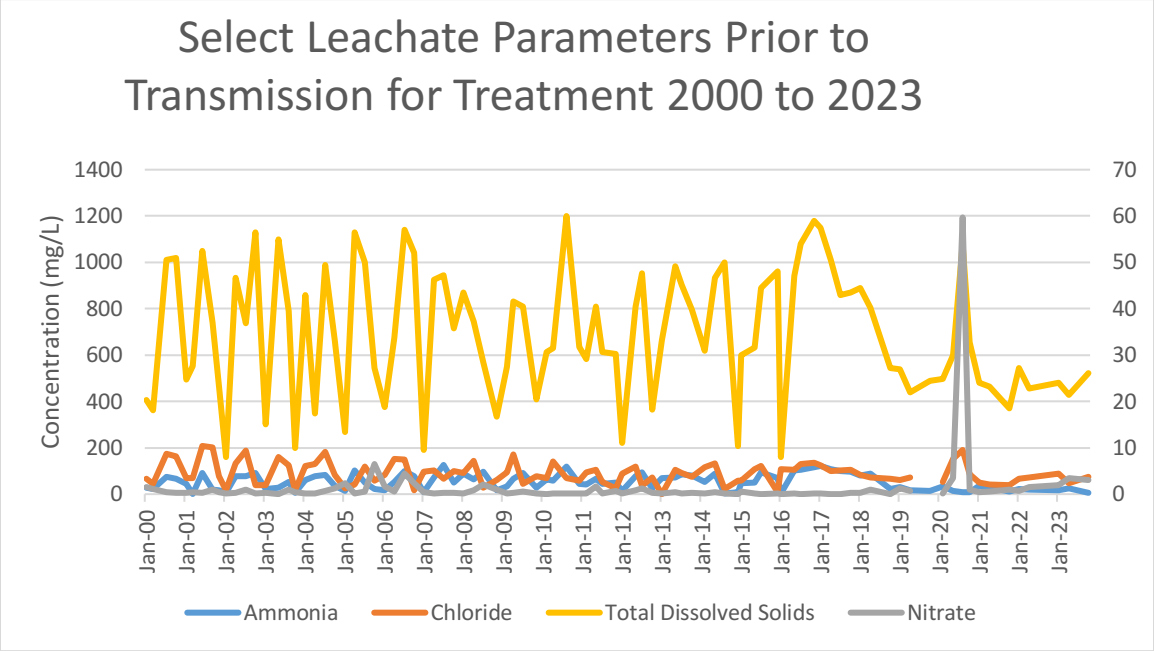
The ACRD measures water quality parameters at fixed locations in and around the Centre on a fixed quarterly schedule. The locations include two leachate drains, eighteen groundwater monitoring well sites, two leachate interception wells and six surface water monitoring points. Samples are analyzed by an independent laboratory for metals, volatile organic compounds (VOCs), inorganic compounds, pH, conductivity and other water quality parameters. All monitoring data are provided directly from the laboratory 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 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, an aeration lagoon and a flow equalization pond. Once collected, leachate is piped directly to the CPA's wastewater facility for treatment. Based on input from subject matter experts, ACRD is revising Target 5 in 2024 to better reflect performance of the site's environmental controls.

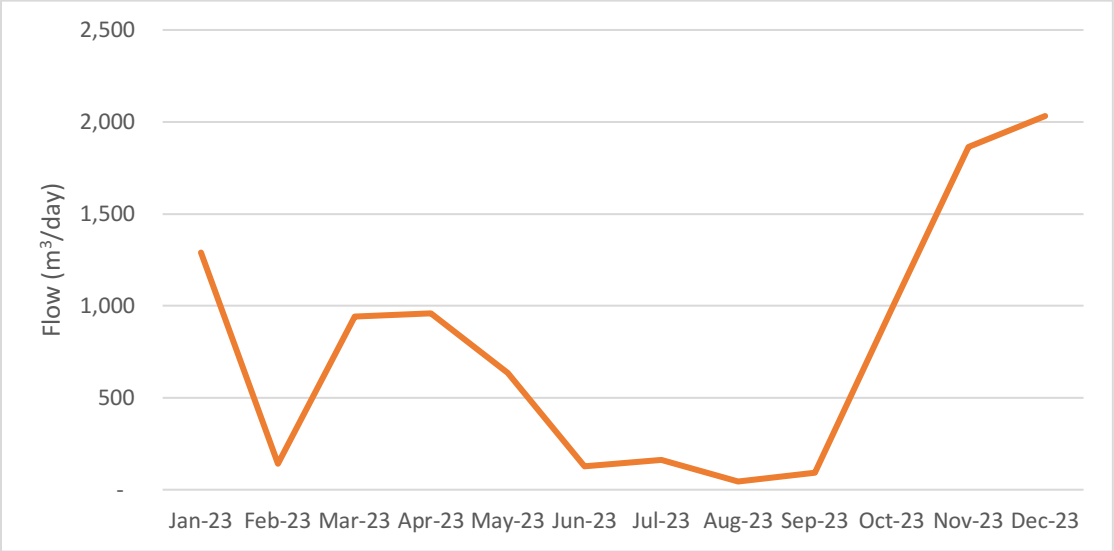
The water quality parameters of the leachate leaving the landfill have been monitored since 1990. Chart 10 below illustrates the recorded levels of ammonia, chloride, nitrate and total dissolved solids for the past 20 years. Note the seasonal variations in key parameters reflecting the lower flow conditions in the summer months. In this period of low flows in the summer of 2021, there was an unusual spike in ammonia and nitrate values. As this seemed to be a one-off occurrence at the time, Piteau recommended collecting a few more years of data to see if similar summer spikes occur or if this was a one-time event. No such spikes have been detected since 2021 at the accumulated leachate lagoon inlet.

Chart 10 - Leachate Parameters



Leachate is transferred by a dedicated pipeline to the CPA's wastewater system for treatment. The graph below shows the 2023 leachate flows into the CPA sewage lagoon with a total estimated volume of 283,982 cubic meters for 2023. Currently, there is no diversion of clean runoff water from within the catchment, so the graph below (Chart 11) is indicative of the amount of water generated from precipitation within the disposal area at the Centre. Future works, including final capping, will be able to divert clean runoff.

Chart 11 - 2023 Estimated Monthly Leachate Discharge Flows



Water Quality of Surrounding Environment

Piteau (2023) reported on the results of environmental monitoring conducted throughout the year. The complete monitoring report is supplied as a separate document.

Landfill Gas Monitoring

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

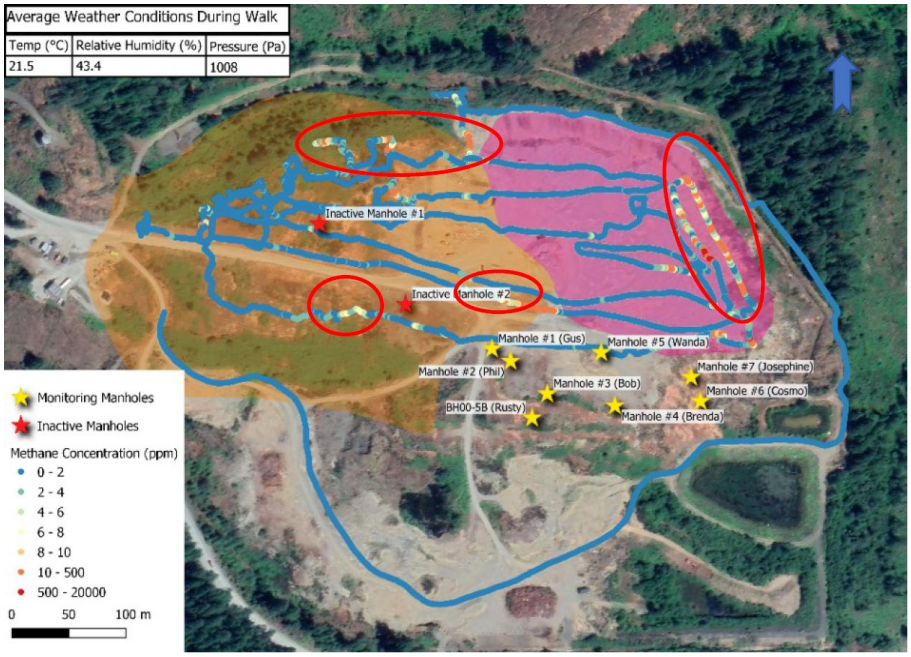
MOECCS requires that landfill gas (LFG) emissions be assessed every five years using the Provincial spreadsheet model. In 2021, Sperling Hansen and Associates (SHA) prepared an updated assessment of landfill gas emissions using two approaches, one of which was the Provincial Landfill Gas Assessment Tool. There was good agreement between the two methodologies. SHA projected LFG generation using values based on the waste composition study that was conducted across the ACRD in 2019. This projection has since been revised by SHA in 2022, captured in the 2022 DOCP.

The SHA modelling showed approximately 860 t of methane (21,500 t CO_2e)[1] was generated in 2023 (ref.2022 DOCP, Table 10-9). This is less than the 1,000 t of methane threshold set by MOECCS above which a landfill gas management system would be required. The next LFG assessment will be conducted in 2027, per the Landfill Gas Regulation.

Landfill gas emissions were monitored in 2022 as part of a research initiative in partnership with Vancouver Island University (VIU). The VIU work found that methane concentrations are localized but vary in intensity across the landfill site as shown in the figure below:

[1] For the reader, methane is a greenhouse gas which has approximately 25 times the warming potential of CO_2e (carbon dioxide equivalent) over a 100-yr period (ref. Environment Canada, 2030 Emissions Reduction Plan). 860 tonnes of methane X 25 = 21,500 tonnes CO_2e

Figure 1 – "Sort'nGo Centre" Overhead View Showing Mobile Sampling Paths



The red-circled areas show elevated but localized methane concentrations in the central and northeastern area of the landfill. Blue pathways show no methane present. The work was completed with permanent sensors mounted on the landfill for continuous measurement in 2022. The program with VIU was completed in 2023.

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 2022, the contractor burned approximately **27,972.90** liters of diesel in the operation of the landfill, estimated to have produced 75 tonnes of CO_2e. The ACRD will continue to work with the contractor to reduce greenhouse gas emissions from the use of equipment for 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. Reduction in use of heavy equipment used in the landfilling operation due to increased diversion of materials is also beneficial to reducing emissions at the site.

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 the forest companies are now restricting access to forestry lands to reduce both illegal

dumping and for fire concerns. We are also aware that waste has been illegally dumped on First Nation Lands. The frequency and locations of illegal dumping acts is not currently measured but rather it is addressed in a complaint driven process. 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 affected areas within the waste shed. In 2023, fourteen waivers for illegally dumped waste were approved for the Centre, with a combined weight of material received at the Centre of 16.32 tonnes, down 30% from 2022. The bulk of this material result came from various community clean-ups on Earth Day near Sproat Lake, within the CPA, on the Somass Estuary and on Crown Land.

Projects Completed 2023

VIU LFG Monitoring Partnership

Building on the work conducted in 2022, VIU wrapped up Phase 2 and presented their findings on their work conducted in the Alberni Valley at large. The program was completed in 2023, with stationary LFG measuring sensors remaining in place on site.

Update of Solid Waste Management Plan-Phase 1

The first phase of the Solid Waste Management Plan (SWMP) was completed. The SWMP Advisory Committee (the Committee) was established, made up of public and technical members to ensure that First Nations groups and the various ACRD subregions community interests and priorities are represented. Four Advisory Committee meetings took place in 2023 and were facilitated in different locations around the ACRD. They were held as a means for the Committee to gain perspective on the current operations and limitations of existing Transfer Stations, Depots, Landfills and other resources. Gaps and shortfalls were identified, and that information will be incorporated into the updated SWMP.

Phase one also included the first public engagement touch point where a survey was launched that provide residents an opportunity to provide feedback on current solid waste disposal and diversion practices, waste management services and future priorities.

An information portal was also established at letsconnectacrd.ca/SWMP that will continue to be updated with SWMP project related information and progress including the Solid Waste Overview technical memo, the Phase 1 Engagement summary, Advisory Committee Meeting summaries and other resources.

Landfill Working Group

The ACRD and Tseshaht Landfill Working Group continued to meet quarterly during 2023. Reference page 12 for a summary of the year.

Monitoring Well Installs

A pair of deep/shallow sentinel monitoring wells (MW23-1S and MW23-1D) were installed and added to the existing monitoring network at the landfill site in the north section, near the clay dam at Stevens Creek as well as the eastern section (near Christie Creek) (MW23-2). Related to Stevens Creek, regular inspections of the clay dam will be included as part of the monitoring program but were not completed in 2023.

Monitoring Well Re-Survey

All new and existing monitoring wells were re-surveyed in November 2023 to verify locations and elevations against existing landfill surveys.

Waste Composition Study

The study looked at waste from the entire region, separating it into the two major waste sheds within the ACRD, namely the West Coast and the Alberni Valley. Each waste shed was further separated by commercial (ICI), residential curbside from single-family homes (SF) and self-hauled waste (SH). The composition is further broken down into multiple materials which are generally grouped as:

- Recycling (from curbside or drop-off)
- Compostable (organics from curbside or drop-off)
- Product stewardship (divertible materials under extended producer responsibility (EPR) programs)
- Reuse (divertible materials such as textiles and furniture)
- Garbage

Waste Education

In 2023, waste education aimed at the 4R's was generally carried out through contractors and partnerships in Port Alberni using different approaches and strategies. Focus was on presentations and community booths, along with building online interaction through the application of social media.

Annual Survey

An aerial survey is conducted annually to provide a current site plan and topography. This allows airspace consumption to be calculated and permits planning of landfill operations. This used to be done by ground-based teams, but now an unmanned aerial vehicle survey is conducted using experienced operators.

Airspace Consumption

Focusing on landfill operations at the Centre, staff are working with the contractor to investigate different options for reducing cover usage such as additional alternate daily cover (roll tarping,

additional plates, etc.). Additionally, monthly site meetings included a review of garbage cell surveys to measure and assess progress to reach the goal of 660kg/m^3 in airspace consumption. This work will continue in 2024.

Tipping Fee Review

Staff conducted a rate review of tipping fees vs costs of management of waste materials which resulted in a tipping fee increase for most materials, this was established in our Tipping Fee Bylaw.

3rd Avenue Restore

A Restore has opened in the 3rd Avenue Recycling Depot. This has created a space to encourage a more circular economy by refurbishing and reselling gently used items within the Alberni Valley for those wishing to avoid purchasing new.

Projects/Improvement Plans

Landfill Working Group (2024)

As discussed previously, ACRD and Tseshaht will continue mutual engagement through planned quarterly meetings to monitor the landfill, assess the site proximity to the local community; and maintain mutual relations through active work on the Solid Waste Management Plan process.

Update of Solid Waste Management Plan-Phase 2 (2024)

Progress on updating of the SWMP across the Regional District has been good and the work will continue in 2024. There will be further public engagement events in addition to Advisory Committee meetings. The finalized SWMP is expected to be available in 2024 and will be provided to the Ministry.

Updates to the Monitoring Program (Future Initiative)

Piteau made the following recommendations to enhance the monitoring program:

- The three new monitoring wells to be incorporated into the monitoring program (MW23-1S, MW23-1D and MW23-2).
- Sample of leachate from the lagoon to be submitted for PFAS if sufficient water is available in the summer.
- Groundwater within MW13-1S and MW13-2S should be sampled quarterly. Dataloggers to record water levels should be installed in MW13-1D and MW13-2Sto assess responsiveness to recharge events.
- A multilevel piezometer to be installed to replace BH00-1C and BH00-2C along with a datalogger connected to the SCADA system.
- The SCADA system should record water levels and pumping rates in each leachate interception well (PW-1, PW-2, PW15-1, PW15-2). These data should be evaluated to allow periodic adjustments to the pumping controls to maintain effectiveness.

Waste Educator Onboarding (2024)

The ACRD has hired a waste education group, Let's Talk Trash, to support in-region waste education efforts and train community champions to expand our outreach presence.

Bamfield Hauling – solution (2024)

Due to the remote location of Bamfield it is challenging to find a sustainable waste hauling solution, therefore the ACRD will be purchasing 6-yard bins for the collection of municipal solid waste in the Huu-ay-aht Community and surrounding businesses and for the Bamfield Transfer Station. This will allow more options for local haulers to bid on a hauling contract for the area.

Mosaic monitoring well (Future Initiative)

The ACRD, in collaboration with Tseshaht, identified a need to install an offsite monitoring well to bolster the landfill monitoring program. As a result, staff from both organizations are engaging with the adjacent landowner (Mosaic) for permission to install and monitor this new monitoring well.

Household Hazardous Waste (HHW) (Future Initiative)

Options will be considered to collect orphaned HHW as there are no sites collecting residential orphaned HHW at this time.

3rd Ave Depot upgrades (HVAC) (Future Initiative)

The recycling depot, centrally located within the Alberni Valley, provides waste diversion options through a number of stewardship programs. This site will be undergoing minor upgrades to its HVAC system.

Organics Ban (Future Initiative)

With the initial success of organics diversion in 2022-2023, the next step is to move forward with banning organic waste from being landfilled at the Centre. Staff is working on this and other initiatives as part of the Solid Waste Management Plan update.

Bamfield Transfer Station Upgrades (Future Initiative)

The ACRD applied for a grant to pursue upgrades which would include organics diversion, however, that application was unsuccessful. Future upgrades for the Transfer Station are being considered and will be pursued pending the completion of the Solid Waste Management Plan update.

Phase 3 Organics – AV/Bamfield (Future Initiative)

As part of the Board Strategic initiative to divert organics from landfilling, a preliminary survey was conducted with the electoral areas in the Alberni valley to assess interest in 3-stream curbside collection. As described previously, an overwhelming majority of the respondents were not in favour of this option, due to natural barriers in the rural areas. As a result, opportunities for the diversion of organics in the rural areas will be revisited after the update of the Solid Waste Management Plan.

Landfill Gas Flare (Future Initiative)

The ACRD is re-assessing the installation of a passive landfill gas flare to accommodate the recently updated DOCP and its new fill plan.