ALBERNI-CLAYOQUOT REGIONAL DISTRICT

West Coast Landfill

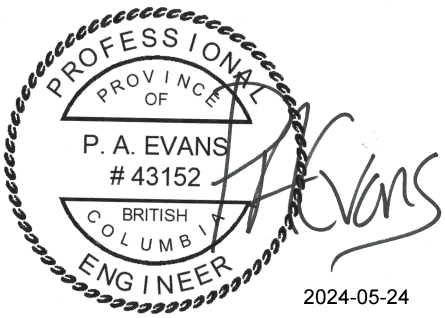
2023 ANNUAL REPORT

Submitted to British Columbia Ministry of Environment and Climate Change Strategy

Prepared by the ACRD Community Services Department

Reviewed by: Tetra Tech Canada Inc

Paul Evans P.Eng.



Lauren Quan P.Eng.

Permit #1001972

May 2024

Report Summary

	Reporting Year 2023	Unit
Waste Tonnage Disposed at WCL	6,240	t
Landfill Airspace Consumed	9,888	m^3
Landfill Airspace Remaining	680,626	m^3
Anticipated Closure Date at Current Fill Rate/Density	Approx. 2062	
Waste in Place at Landfill	173,000	t
Leachate Generated & Treated	Not measured	m^3
Landfill Gas Management	none	
Closure Works Undertaken	none	
Inspection Works	No formal Ministry inspection in 2023. Ongoing internal inspections.	
Changes from Approved Plans	None	
Ministry Non-Compliances	• Requirement for Active OMRR registration. • MOE missing leachate overflow piping documentation and contaminated soil.	
Progress on Non-Compliances	From 2023 • OMRR registration submitted, acknowledged by MOECCS and approved. Ops plan for organics to be updated and submitted. • Leachate overflow docs and contaminated soil to be incl. in 2024 permit amendment.	

WCL Waste Shed Projects Undertaken in 2023	Future Projects/Initiatives Proposed
LF Upgrades/Organics Composting Facility – Phase 1	Organics Composting Facility (2024)
Waste Reduction Education	Waste Educator Onboarding (2024)
Landfill Environmental Monitoring Improvements	Update of Solid Waste Management Plan-Phase 2 (2024)
Rope and Netting Project (begun in 2019)	Landfill Contract Renewal (2024)
Update of Solid Waste Management Plan-Phase 1	Installation of Flow Monitoring (2024)
Waste Composition Study	3-phase power upgrade (2024)
Tipping Fee Review	Operational Certificate Update (2024-2025)
Landfill Gas Supplementary Report	Organics Ban (Future Initiative)
	Construction and Demolition Waste Diversion (Future Initiative)
	Design Operations and Closure Plan Update (Future Initiative)
	Leachate Treatment Facility (Future Initiative)
	Explore Temporary Cover Options (Future Initiative)

	Target	Actual
1 - Waste Disposal Rate	< 400 kg/capita	525 kg/capita
2- Diversion of Waste	>50%	26%
3 - Airspace Consumption Ratio	>750 kg/m^3	631 kg/m^3
4 – Capital Contributions	>$70,000/year	$100,000
5 – Water Quality	Meet FWAL	Within envelope defined by FWAL
6 – Landfill Gas Generation	<1,000 tonnes CH_4/year	Est. 339 tonnes CH_4/year

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Background

The Alberni-Clayoquot Regional District (ACRD) operates the West Coast Landfill (WCL) under the British Columbia Waste Management Act Operational Certificate Number OC-5634, issued April 12, 2005. The "waste shed" for municipal solid waste destined for the WCL includes the District of Tofino, District of Ucluelet, Parks Canada, ACRD Electoral District C - Long Beach, Millstream and Port Albion and the First Nations communities of the Toquaht, Yuułuʔiłʔatḥ, Ahousaht, Tla-o-qui-aht, and Hesquiaht. The WCL is located approximately 9 km northwest of the Tofino-Ucluelet junction, on the east side of the highway, along Alaska Pine Road. The WCL has been operational since 1980.

This report was prepared by staff at the ACRD to satisfy the annual reporting requirements for the WCL, 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). The report has been reviewed by solid waste engineers from Tetra Tech Canada Inc. that are familiar with the facility and operations. The content of the Annual Report and supporting materials were reviewed by Tetra Tech Canada Inc. in conjunction with the ACRD staff prior to the report being finalized.

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 WCL accepted 6,240 tonnes of municipal solid waste (MSW) and construction and demolition (C&D) waste as shown in Table 1. The cumulative waste in place at the WCL as of the end of 2023 is 173,007 tonnes.

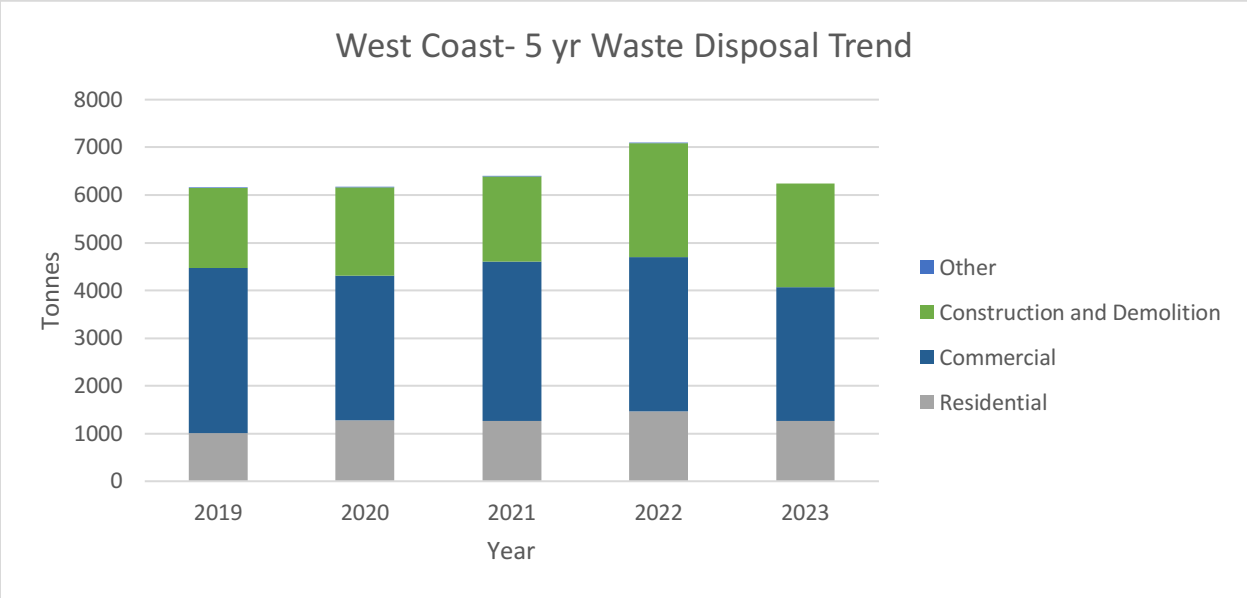
Table 1 - Waste disposed in 2023

Waste Breakdown	Tonnes	Percentage
Residential Garbage	1,262	20%
Commercial Garbage	2,803	45%
Construction and Demolition	2,174	35%
Other Garbage	0	0%
TOTAL	**6,240**	100%

The largest source of solid waste disposed on the West Coast from a single sector is commercial waste. This sector includes resorts, hotels, restaurants, retail and other businesses; making up 45% of all waste that is landfilled. The residential sector produces 20% of the waste and includes materials collected at the curbside and materials self-hauled by residents to the landfill. Construction and demolition (C&D) waste makes up a relatively large portion of the waste stream at 35% (higher than the Alberni Valley Sort'nGo Centre rate of 24%). It includes roofing, drywall, and wood materials. A year over year comparison of waste processed through the WCL over a five-year period is presented in Chart 1 below. The key trends are:

- The total waste tonnage accepted in 2023 was back down to the tonnage received five years ago.
- The quantity of residential waste disposed has decreased slightly from the 2022 level.
- Commercial waste tonnages have reduced slightly compared to five years ago.
- C&D Waste tonnage has decreased since last year.

Chart 1 – 5 Year Waste Disposal Trend on the West Coast



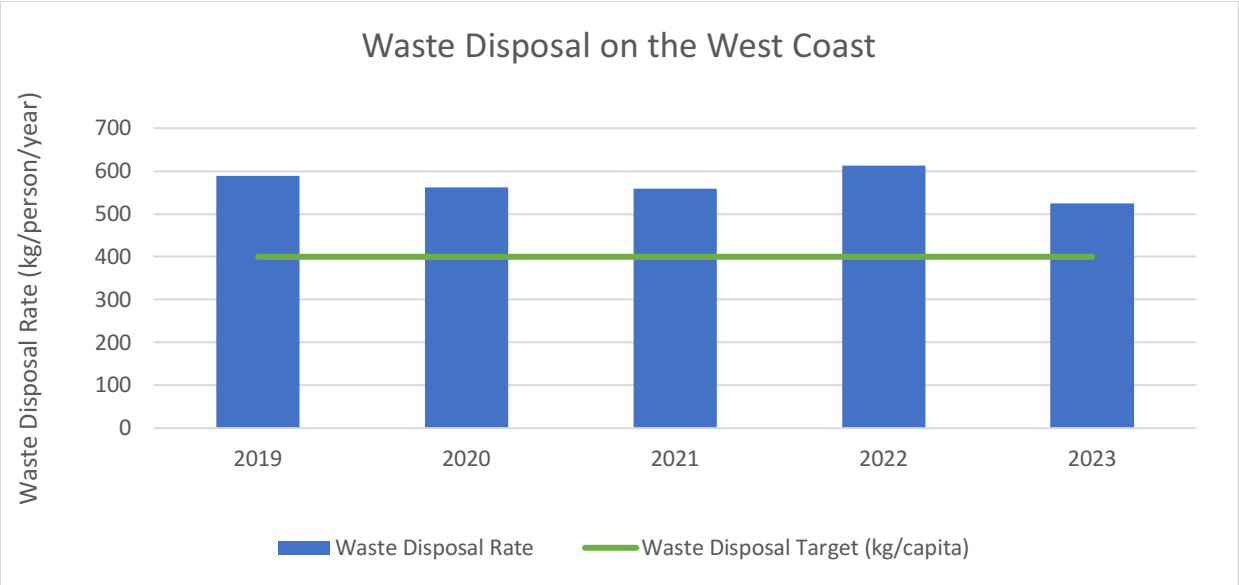
The estimated permanent population served by the landfill was 7,250[1] in 2023. However, the West Coast has a significantly higher equivalent population due to the strong tourism sector. Equivalent population estimates put the total population to be 40% higher. With an average 3% increase in permanent population over the last five years[2], the revised equivalent population was 11,894 in 2023. This results in a disposal rate of 525 kg/capita per year which is markedly less than 2022 (613 kg/capita). This is a significant reduction and the lowest generation rate in years. However, it is still well in excess of the target of 400 kg/capital as shown in Chart 2.

There was an external factor that affected waste generation in 2023. Highway links to the west coast were severely disrupted in the summer of 2023 resulting from the Cameron Bluffs fire and subsequent stabilization works on Highway 4 to the east of Port Alberni. Ground transportation was greatly impacted for most of the summer months causing the hospitality industry to be greatly curtailed. Visitor numbers were reduced and there was less economic activity from June to September.

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

[1] BC Population Statistics 2022, factoring 3% population increase.
[2] BC Population Statistics, Districts of Tofino & Ucluelet.

Chart 2- Waste Disposal 2023



Several projects are planned or have been implemented to assist in the goal of reducing per capita waste disposal, including:

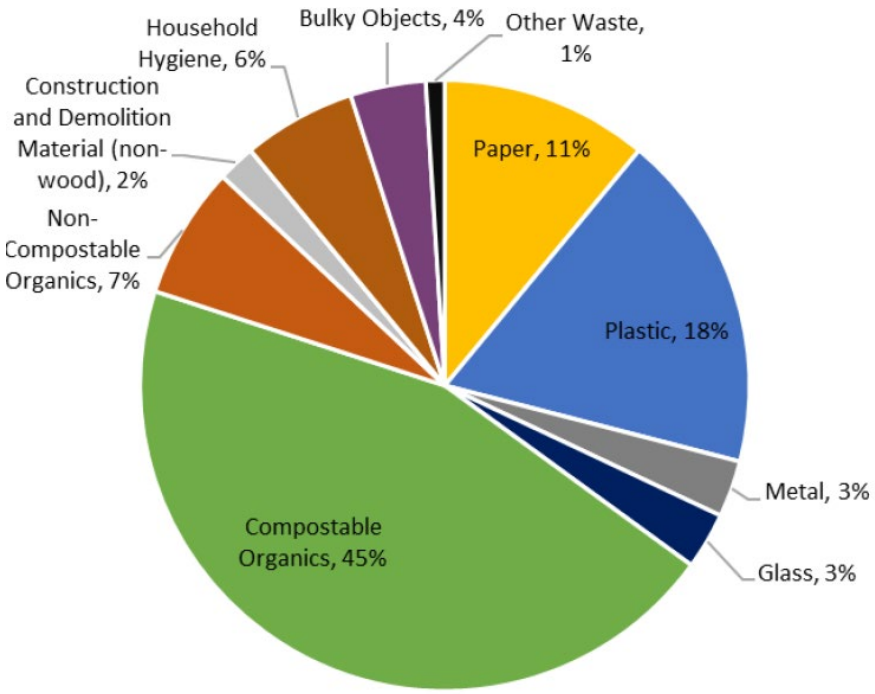
- The rollout of 3-stream curbside collection to over 1800 homes in December 2022;
- The recent installation of a new organics processing facility commissioned in Spring 2023;
- A waste composition audit in 2023; and
- The update of the Solid Waste Management Plan that will investigate other options for waste management, such as Construction and Demolition waste diversion.

These projects are described later in this report.

Waste Composition Audits

In 2023, the ACRD completed a Waste Composition Study to determine the make-up of materials in the "garbage" streams for curbside residential, self-haul and commercial waste. Charts 2 & 3 illustrate the weighted average material composition for commercial and residential curbside garbage with compostable organics as the single biggest contributor to landfill waste at the time of the study in 2023.

Chart 2 - WCL Commercial Waste Composition 2023



ICI waste composition for materials taken to West Coast Landfill. ICI waste was primarily composed of compostable organics (45%), plastic (18%), paper (11%), and non-compostable organics (7%). These four primary categories represent 81% of the materials.

Chart 3 - WCL Residential Curbside Waste Composition 2023

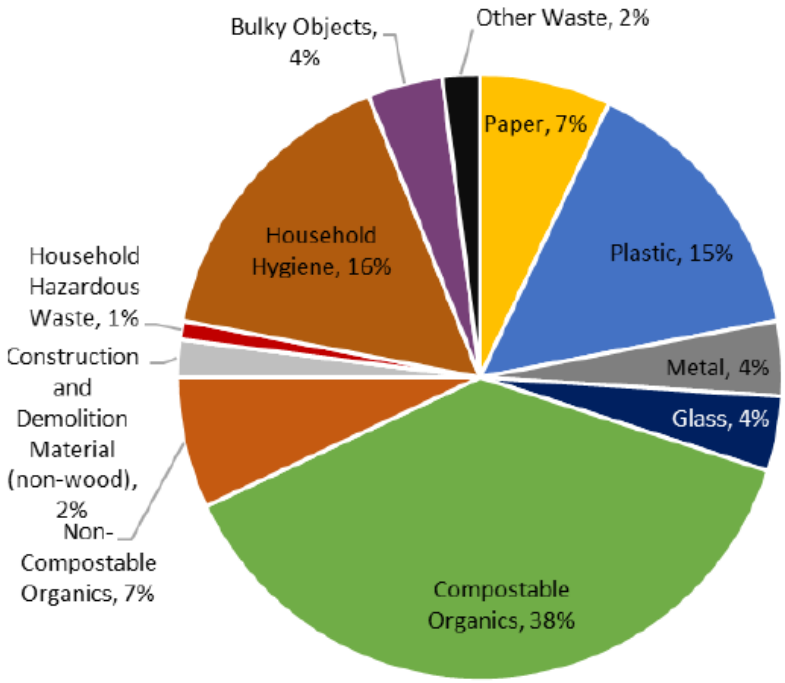
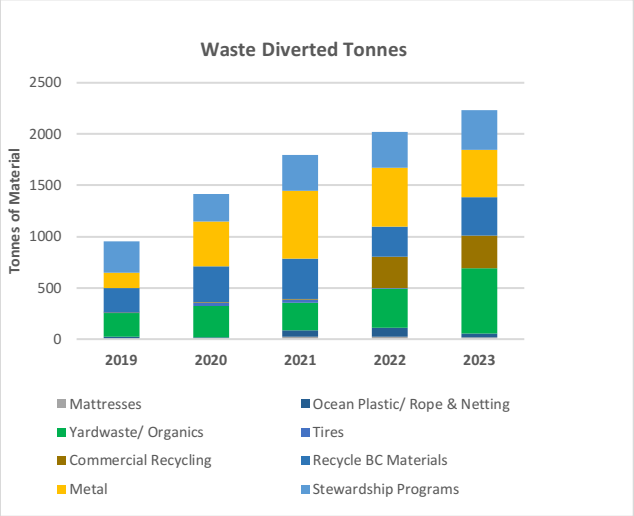


Chart 3 represents the average Single Family waste composition for materials delivered to the West Coast Landfill. SF waste was primarily composed of compostable organics (38%), household hygiene (16%), plastic (15%), paper (7%), and non-compostable organics (7%). These five primary categories represent 83% of the materials.

Diverted

In 2023 good progress was made in improving the collection of data on waste diverted from disposal. This progress was made largely outside of the EPR programs. The quantity of materials diverted from landfilling in 2023 was 2,234 tonnes, of which 1,171 tonnes was collected directly at the landfill. The diversion rate is influenced by both the quantities of materials collected through recycling programs and the amount of waste going to landfill, as shown in Chart 5, below. The diversion rate has improved both by way of the reduced tonnage of waste accepted for landfill and the increased tonnages of materials recovered.

Charts 5A & B- Annual Waste Diversion Rates 2023



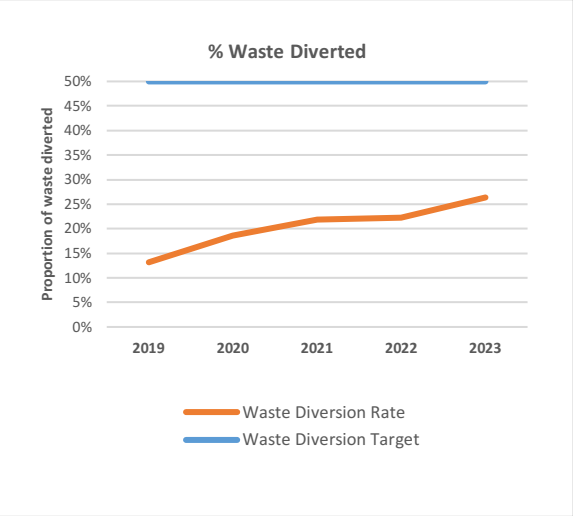


Table 1 – 5 Years By the Numbers

Population	9897	10099	10323	10647	10966	11445	11548	11894	
Population growth		2.0%	2.2%	3.1%	3.0%	4.4%	0.9%	3.0%	
Waste	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	Prop in 2023
Residential	1031.48	1049.84	912.52	1003.10	1276.98	1268.40	1464.66	1262.36	20%
Commercial	3284.38	3424.26	3568.26	3462.80	3029.61	3333.24	3229.14	2803.38	45%
Other	168.21	77.67	84.71	136.26	0.00	0.00	0.00	0.00	0%
Construction and Demolition	1530.95	1917.11	1468.16	1675.63	1860.67	1793.26	2388.30	2174.27	35%
Total	**6015.011**	**6468.88**	**6033.647**	**6277.79**	**6167.26**	**6394.9**	**7082.1**	**6240.01**	100%
Diversion	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	Prop in 2023
Mattresses	0.00	0.00	0.00	0.00	10.30	25.23	21.54	18.84	1%
Ocean Plastic/ Rope and Netting	0.00	0.00	0.00	26.68	6.10	61.13	86.89	34.12	2%
Yardwaste/ Organics	204.08	295.57	216.45	227.57	307.43	269.31	383.29	635.98	28%
Tires	0.00	0.00	0.00	3.69	32.62	27.17	3.55	0.00	0%
Drywall	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0%
Commercial Recycling	0.00	0.00	0.00	0.36	4.12	6.04	307.92	322.00	14%
Recycle BC Materials	133.96	189.24	221.39	240.33	352.01	397.37	296.49	371.02	17%
Metal	105.97	79.91	149.53	148.94	432.86	660.71	569.29	466.69	21%
Stewardship Programs	307.85	300.49	303.57	304.35	268.62	347.87	354.26	386.13	17%
Total	**751.86**	**865.21**	**890.94**	**951.92**	**1414.06**	**1794.83**	**2023.23**	**2234.78**	100%
Waste Disposal Rate (kg/capita)	607.76	640.55	584.49	589.63	562.38	558.75	613.28	524.64	
Waste Diversion Rate	11%	12%	13%	13.2%	18.7%	21.9%	22.2%	26.4%	
Waste Diversion Target	50%	50%	50%	50%	50%	50%	50%	50%	
Waste Diversion Target (kg/capita)	400	400	400	400	400	400	400	400	

Key takeaways include:

- Metal recycling remains high since 2019, though tonnage dropped from 2022-2023.
- There was an increase in the Recycle BC material tonnages diverted in 2023.
- There was a slight improvement overall in stewardship tonnages diverted from landfill.
- A new category of commercial recycling was noted, due to data not previously available from private haulers. ACRD staff have established connection with local haulers to track this data starting with this annual report.
- An increase in organics waste being diverted, covered in the next section.

West Coast Sort'nGo - 3-Stream Curbside Collection and Organics

In 2022, the ACRD launched the Sort'nGo program on the West Coast, targeting organics diversion. This initiative, which originated in the Alberni Valley, aimed to add organics collection to residential curbside programs and expand processing capacity at the West Coast landfill. Funding of $6 million from the Federal Strategic Priorities Gas Tax Fund supported landfill upgrades and organics processing, along with Phase 2 implementation of the regional organics project.

A Sort'nGo working group, including stakeholders from various organizations, collaborated during the planning stages. Post-implementation activities involved monitoring contamination through operator feedback and communicated to the public through social media and local news outlets to support ongoing education and improvement efforts.

Ozzard Environmental manages curbside recycling collection, transitioning to automated trucks for organics, recycling, and garbage cart collection. Benefits of automation include standardized carts, enhanced waste diversion, reduced litter, and improved community aesthetics. Each truck is equipped with AI technology to identify and monitor contamination and address missed collections, with staff undergoing training to maximize its use.

Cart sizes were determined based on waste audits, with options offered to accommodate different needs. Residents were engaged in selecting cart sizes, and requests for larger garbage carts are being honored while inventory lasts. Ongoing engagement and technological advancements are integral to the success of the Sort'nGo program, ensuring efficient waste management and community satisfaction.

This new program achieved many successes, including:

- Onboarding 1,870 homes with new carts (and counting);
- Working with language specialists in Yuułuʔiɬʔatḥ (UFN) and Tla-o-qui-aht (TLFN) First Nations to develop new outreach material with traditional language terms for waste diversion;
- Diversion of 636 tonnes of organics.
    - 312 tonnes of which came from curbside collections

See Charts 6 and 7 below, which show preliminary data for 2023.

Chart 6 –3-Stream Curbside Collection 2023 (by Tonnes)

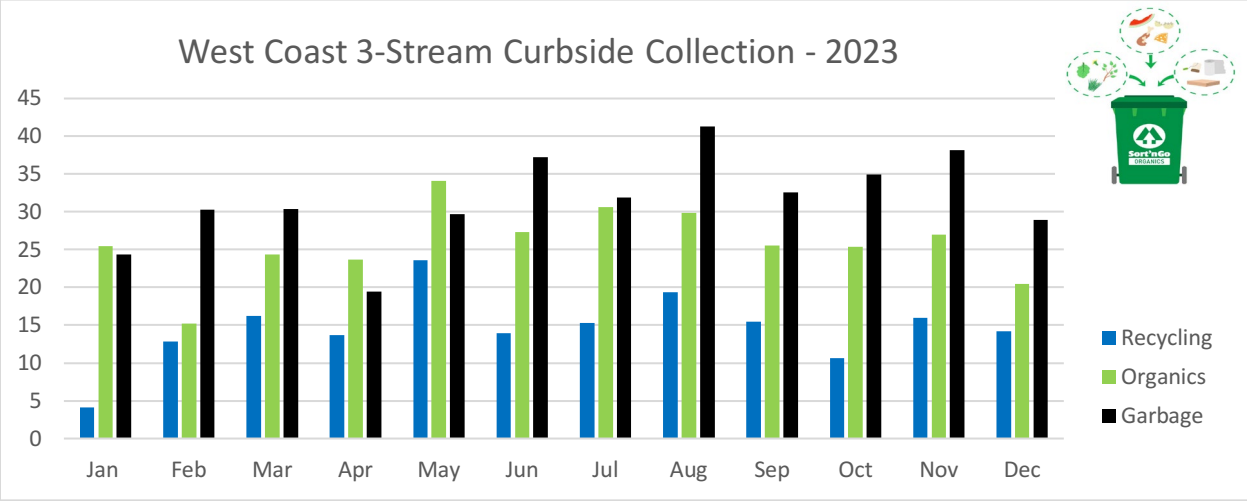
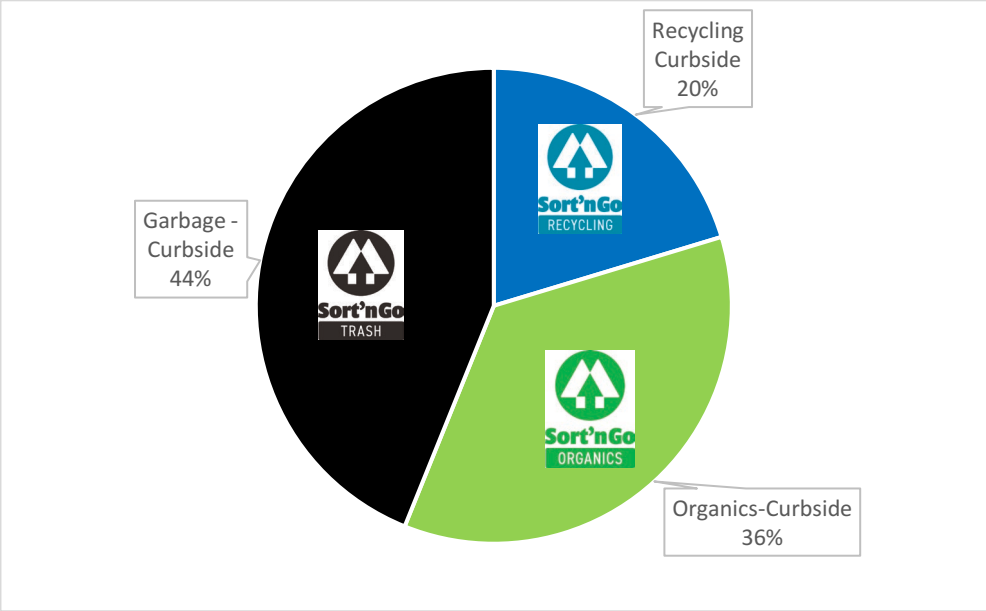


Chart 7 –3-Stream Curbside Collection 2023 (% by Mass)



Other expanded waste diversion programs also contributed to the increased diversion trends including the recycling of ocean plastic debris, begun in 2021. This program continued in 2023 through partnerships between the ACRD and the Ocean Legacy Foundation as well as the ACRD and Surfrider Foundation. Surfrider spearheads ocean debris collection from coastline clean up events, feeding rope, netting and ocean plastics debris through the WCL for diversion to Ocean Legacy. From there, Ocean Legacy take diverted material and recycle it into feedstock for new products such as signboards. As a result of these efforts:

- 34 tonnes of ocean plastics and rope and netting were collected in 2023, compared to 87 tonnes in 2022.

Mattress recycling, begun in mid-2021 in partnership with Recycle Matters, saw another 19 tonnes of mattresses diverted from landfilling in 2023, compared to 22 tonnes the previous year. This diversion

is important not only for environmental reasons, but mattresses are also difficult to manage in landfill disposal. To date, nearly 2,534 mattresses have been diverted from landfilling, an important success in a region in with a strong hospitality industry.

Bicycles are also diverted for reuse. A dedicated storage shed is provided so that bikes may be reused whole or in part. The tonnages are small, but it is an important statement that they may be reused and are not disposable items.

The ACRD contracted the WCL waste reduction education services to Surfrider Pacific Rim Chapter which is present in both Tofino and Ucluelet. The waste reduction education program run by Surfrider has three main thrusts:

1. eliminating single-use and unnecessary plastics;
2. materializing a localized circular economy; and
3. engaging youth, businesses, the public and all levels of government in ocean-friendly initiatives.

These additional diversion efforts have resulted in a diversion rate of approximately 26%, which is up significantly from 2022 at 21%. However, this diversion rate is still low compared to the target set in the solid waste management plan of 50% and now reflects at least some commercial recycling data that was not previously available. Staff continue to investigate additional diversion options and monitor the organics program dating from late 2022 for possible improvements to help towards this goal.

Target 2 - Increase Diversion of Waste to 50%

The largest diversion opportunities on the West Coast are capturing commercial organics, increasing residential organics diversion and improving commercial recycling. Other opportunities for additional diversion streams on the west coast could include construction and demolition waste - residual drywall wood, gypsum and other building materials.

Landfill Capacity

Airspace Utilization

In 2023 the WCL consumed 9,757 m^3 of airspace. This value is based on the annual topographical survey completed at year end. With a total tonnage disposed of 6,240 tonnes, the airspace consumption ratio is 640 kg/m^3, which is much lower than in 2022. Although this is down from the higher density achieved in 2022 it remains above the five-year average of 560 kg/m^3. It is unclear whether there is a discrepancy in the survey data or filling work on the crest could have affected this calculation and as such, will be reassessed in 2024 and during the survey that will occur at the end of 2023.

Target 3 – Minimum Airspace Consumption Ratio of 600 kg/m3

The use of cover soils is a necessary and important part of safe landfill operations, but it consumes airspace within the landfill footprint. The volume of cover material used in 2023 was estimated at 2,376 m^3 which is a slight reduction over that of 2022 (2,662 m^3).

Remaining Life

Based on the airspace consumed in 2023, there is an estimated 680,626 m^3 of airspace remaining at the WCL. Based on the current population growth rate of 3%, waste generation of 525 kg/capita and airspace consumption ratio of 631 kg/m^3, the landfill will reach capacity near 2062. However, if the target for reducing waste disposal to 400 kg/person is met and minimum airspace consumption ratios continues to be met or exceeded, the landfill lifespan has the potential to extend to approximately 2070 and beyond.

Operations

Variations from DOCP

The last Design, Operations and Closure Plan (DOCP) was completed in 2012 by McGill and Associates Engineering and requires an update.

Exceptions from the 2012 plan include overflow (“decant”) events from the leachate holding lagoon. The current system was designed to capture the leachate generated on site. That leachate is then applied to an irrigation field. In 2015 Solinst Leveloggers were installed in the overflow pipes from the leachate lagoon to record overflow events. In 2023 there were seven decant events as detailed in the Environmental Monitoring completed by Piteau and Associates. By comparison, there were 16 events in 2022. These overflow incidents consistently happened during winter months following winter storms. However, in 2023, it's noteworthy that the bulk of precipitation occurred during, rather than preceding, each event. The pumping system has not had sufficient capacity to discharge the lagoon to accommodate the inflow of leachate coupled with extreme amounts of surface run-off that are experienced across the site and especially in the irrigation area.

Surface water discharged at the time of the decant events is to be sampled and analyzed as part of the environmental monitoring program, as soon as safely possible. Improved procedures are to be in place for managing the leachate pond and monitoring events for later in 2024.

Conformance to SWMP

The existing Solid Waste Management Plan (SWMP) (2008[3]), listed several initiatives to meet the first two targets in the report;

1) reduce per capita waste generation to 400 kg/person; and
2) increase diversion to 50%.

Most of these initiatives have been implemented, including the adoption of curbside organics diversion in late 2022. In addition, the West Coast Organics Processing Facility is now able to accept commercial material to increase organics diversion for the commercial sector. This is an important step and was especially welcomed by the hospitality sector. Options for remote communities are being considered however this initiative is still outstanding.

The ACRD initiated the process to begin SWMP renewal in 2023 to review and update the strategies, goals and targets to set a new direction for 2024/25 and beyond (see projects section of this report).

Compliance Resolutions

The ACRD received an inspection on March 16, 2022. The WCL was shown to comply with the Hazardous Waste Regulation but later received an advisory notice for 3 items:

- Registration with the Organic Matter Recycling Regulation (OMRR) for the time of the inspection. While minor, the MOECCS noted that small volume composting operations are required to have a registration on file, though these operations will not trigger a permit due to their relatively small size. A registration was submitted to capture the new organics facility and response was received from the MOECCS in August, 2022. A new operations plan was submitted as per the regulation however, that plan is to be updated in 2024 to reflect changing and improved operations at the site.
- Use of previously accepted soils that do not meet the Contaminated Sites Regulation standards for Industrial Land Use as interim cover materials. These soils were legitimately accepted but the requirements for their reuse as cover in the landfill had changed before they had been reused. This will be addressed during the update of the operating permit, slated to begin in 2024.
- Instances of leachate at the property boundary not meeting British Columbia Approved Water Quality Guidelines and Working Water Quality Guidelines. Continued monitoring of leachate lagoon overflow (decant) events including acute toxicity to fish will be completed as recommended in the 2022 Annual Environmental Monitoring Report. Design for an upgraded leachate treatment system will be completed in 2025/2026 with construction to follow, pending securing funding.
- Documentation for leachate overflow piping not captured in MOECCS records including the WCL Operational Certificate No. 5634. Staff is working to establish a timeline and expectations for updating documentation and infrastructure upgrades. The Operational Certificate is expected to be amended if required following completion of the DOCP update in 2024/2025.

[3] Reviewed in 2014 and 2017.

Public Feedback on Landfill Operations

The ACRD received no documented community complaints regarding the operation of the landfill in 2023. It is beneficial that the landfill is located a significant distance from any residential communities, though staff engage with Parks Canada as the immediate neighbour to the landfill site. Typical complaints associated with other landfills are often due to odor and noise, but these are not an issue at the WCL. 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 activity in 2023.

Inspections

There were no formal inspections by the MOECCS in 2023. Internally, the Solid Waste team conducted regular site visits in 2023. This is done primarily for capital planning as well as oversight inspections to ensure compliance with the contract, operations certificate and ministry requirements. These internal site visits are conducted at least monthly.

Finances

Operating Expenses

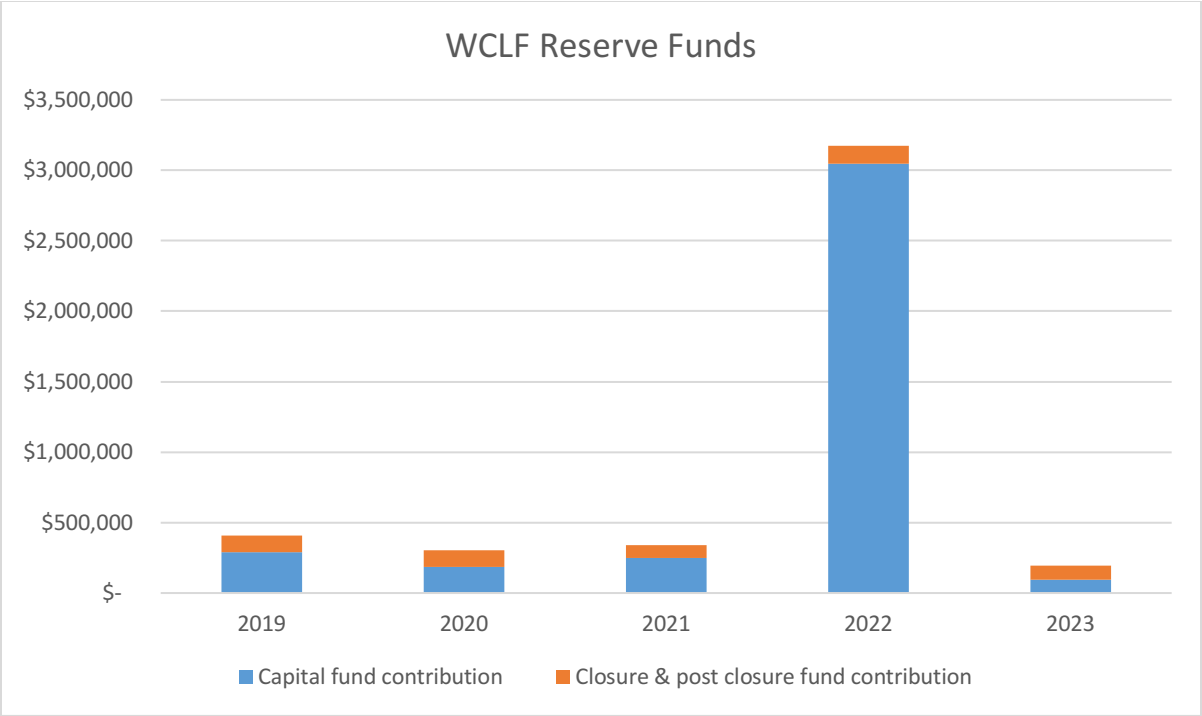
In 2023, the operating expenses for the WCL (inclusive of the composting facility) were:

Table 3 - Operating Expenses	2023
Landfill Operating Costs	$757,763
Admin & Education Costs	$168,004
Recycling	$615,746
Total Costs	$1,541,513
Recoveries	$628,130
Net Cost	$913,383
Reserve Funds Allocation	$196,756

Capital and Closure Funding

Regarding the closure/post-closure fund, the 2012 West Coast Landfill Design, Operations and Closure Plan (DOCP) identified the need for a fund of $5,600,000 for closure and post-closure activities. There was $1,388,393 in the closure and post closure reserve fund at the end of 2023. Contributions to this fund have exceeded the recommended minimum contribution of $70,000 in each of the past four years. The capital fund (Chart 8) shows a significant decrease from 2022-2023 to reflect a capital contribution for the construction for the first phase of the West Coast Organics Facility. This temporary jump in the capital fund reflects the transfer of $3 million dollars from the Federal Strategic Priorities Gas Tax Fund (referenced earlier in this report), to complete the Organics Facility and rollout the 3-stream program.

Chart 8 - Reserve Fund Annual Contributions



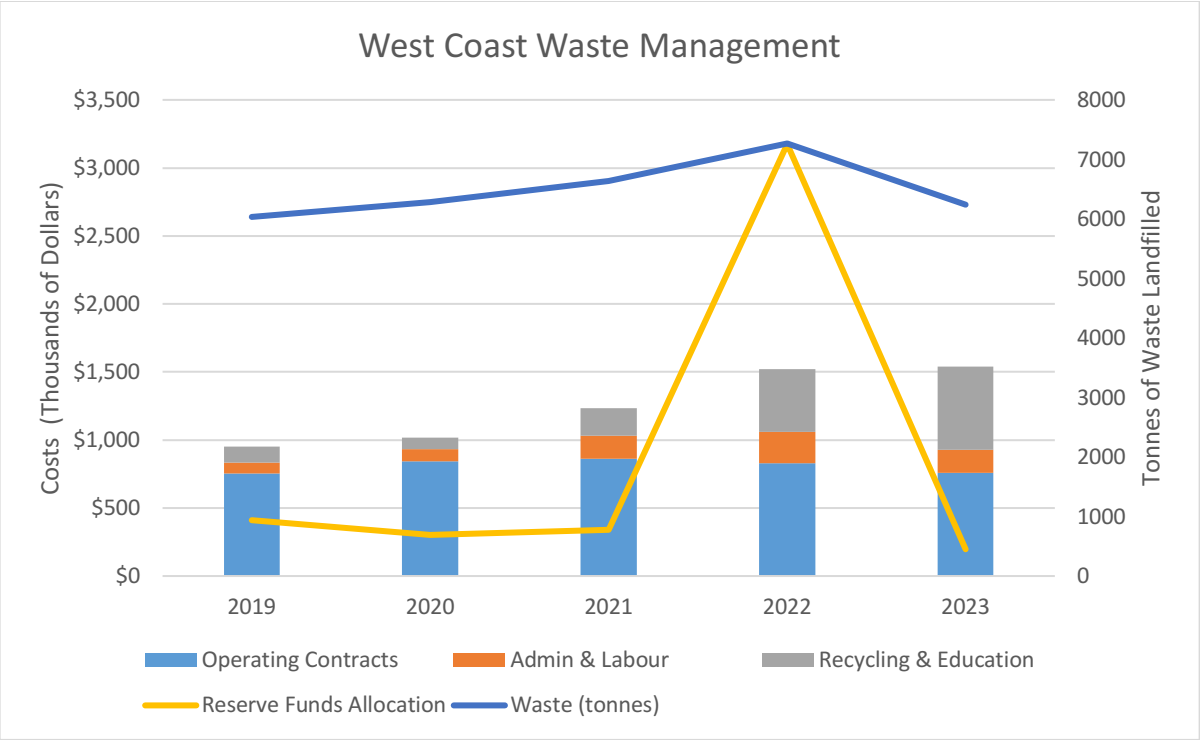
Target 4 – Annual Capital Contributions meet Funding Requirements

The 2012 DOCP assumed an estimated lifespan of 50 years and the potential to extend to 75-80 years with improved diversion and operation, the annual contribution should be between $65,000 to $115,000 per year. With the rollout of organics diversion being completed, the DOCP will need to be updated (see projects section). When the DOCP is updated, it will include a review of capital requirements and closure costs to provide an updated estimate of reserve fund requirements. Until the DOCP is finalized, the contribution to closure/post closure will be kept at least $90,000 to continue building reserves.

Operational Efficiency

Chart 9 below drills down further into the total operating costs including contracts, administration, and support to manage solid waste on the west coast. It covers operation of the WCL, the curbside collection program and education programs. The costs are influenced by inflation and directly influenced by the volume of material landfilled and diverted.

Chart 9 - Annual Costs and Tonnages



Reserve funds reduced by $2.9 million which reflects the previous year's contributions from the grant funding to complete the Organics Facility (phase 1) and roll-out of 3-Stream curbside collection. Additionally, cost increases for administration and waste education were also linked to those efforts. Finally, inflation from operating/recycling/education contracts and improving landfill operations to meet regulatory criteria have also contributed to increasing costs. Collectively these efforts have resulted in improved diversion of materials from the waste stream.

Environmental Monitoring

Leachate Monitoring

Leachate is generated when rain falls on the waste mound and comes in contact with the buried waste. The leachate is contained within the waste mound because of the low hydraulic conductivity of the marine clay foundation soils. The leachate is collected by ditches located at the perimeter of the waste mound. These ditches collect leachate that seeps from the edges of the landfill and transport it to a lagoon located on the southwest side of the property. The contents of the lagoon are pumped to the north of the landfill to a spray irrigation field. This field is designed to allow the leachate contaminants to attenuate prior to entering the eventual receiving waters of Sandhill Creek.

Since the marine clay sediments that make up the foundation are of such low hydraulic conductivity, environmental monitoring is focused on surface water and leachate. The ACRD monitors multiple sites in the leachate collection and irrigation field as well as background locations. The samples were analyzed by an independent laboratory for metals, VOCs, inorganic compounds, pH levels, conductivity, and other water quality parameters from the FWAL (Fresh-Water Aquatic Life) protection criteria. All monitoring data is directly reported to our environmental consultants, Piteau Associates Consulting, for

their review and reporting to MOECCS. The Piteau report (2023 Monitoring Report West Coast Landfill) accompanies this report.

Leachate Pond Overflow Monitoring

The west coast of Vancouver Island receives some of the largest recorded annual rainfall in Canada. Much of this precipitation occurs during winter storms. The leachate pond is subject to overflowing (decant events) during, and immediately following, these intense winter storm events. When this occurs, the lagoon decants to the north through pipes installed for that purpose but bypassing the irrigation field. Information from dataloggers that are downloaded twice per year record the number of overflow events and the duration. Seven overflow events from the leachate storage lagoon were recorded at WCL in 2023 following periods of intense rainfall. Water quality results from the two overflow events when samples were collected indicate that there was no measurable effect to Sandhill Creek at SW-1. A future design project is planned for the proposed enhanced leachate management system and will build upon the previously executed feasibility study.

Overview of the Monitoring Program

Target 5 – All water leaving the site meets the FWAL criteria

Detailed analysis of monitoring data (provided in the 2023 Monitoring Report West Coast Landfill, Piteau and Associates) concludes “Water quality in Sandhill Creek (SW-1) has generally been within the allowable envelope defined by the FWAL guidelines, and/or typical background concentrations for the area. Monitoring data for the lower reach of Sandhill Creek at Highway 4 do not exhibit any indication of leachate effect.”. However, there are no long-term increasing trends apparent that would suggest the effects of the landfill are increasing over time. This means that the target for having all water leaving the site meet the FWAL criteria was not met, but the water quality still remains in inline with background water quality. The report recommends continuing the environmental monitoring program with the following commitments:

1. To keep the leachate lagoon at as low level as possible during the winter months
2. Decant event sampling to be conducted near the mid-point of the event with one set of samples completed for each week within an event.
3. Temporary installation of a cumulative flowmeter on the leachate irrigation systems, as well as surveys of the culvert inlets, and continued records of leachate storage lagoon levels

These recommendations have been adopted, with the proviso that the leachate area is safe to access for sampling purposes.

Piteau also recommends partial capping of the landfill to reduce leachate quantity, the frequency of overflow events and impacts to the receiving waters. The landfill design does not lend itself to installing final cover at this time. However, partial temporary cover is to be considered during the update of the DOCP.

The design objective of the new leachate treatment project is that all water leaving the site meet the FWAL criteria. The recommendations of the monitoring report regarding flow gauging will be reviewed jointly with the project design team. The outcome of those discussions will be

incorporated into the project which is being designed to ensure that this target will be met once the new system is commissioned. Monitoring of leachate volumes sent to the spray irrigation system will begin in 2024.

Until a new leachate treatment system is commissioned, staff are working with consultants to develop assess, plan, and implement operational and infrastructure changes to improve performance of the leachate management system. Additional monitoring and sampling will be completed per the recommendations of the 2023 Annual Environmental Monitoring Report to assist in the design of the new leachate treatment system.

Landfill Gas Monitoring

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

A supplementary gas report was completed in 2023 as per Section 15 of the Landfill Gas Management Regulation. Using the required provincial model, the report estimated that the WCL produced 393 tonnes of methane in 2023. In the absence of the actual landfill composition data, this report used the average rural waste characterization data in the Landfill Gas Assessment Tool to calculate these volumes. This methane is generated by the waste in place. However, the diversion of current and future organic wastes from landfill will reduce emissions over time.

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 2023, the contractor burned approximately 14,617 liters of diesel in the operation of the landfill which produced the equivalent of 39.2 metric tonnes of CO_2.

Illegal Dumping

The west coast experiences illegal dumping. Many different types of wastes are involved including yard waste, such as leaves and branches, as well as household wastes, abandoned RV's and cars. These items are often found on logging roads surrounding the communities. In 2022 the WCL received 22.4 tonnes of illegally dumped wastes that were suitable for landfill disposal. These wastes had all been collected at community clean-up events. Community clean-up programs will continue to be supported with financial support from the ACRD and other community sponsors.

Projects Undertaken In 2023

Landfill Upgrades/Organics Composting Facility – Phase 1

Phase 1 of the new facility was completed and commissioned in 2023 in alignment with Ministry Regulations. Organics is now being collected and processed at the Facility. The transfer station/tipping area has also been opened to the public and is now in use.

With facility upgrades wrapping up in Spring 2023, staff worked with the landfill operator to transfer operations from the old tipping wall to the new transfer station area. Additionally, commissioning and testing of the new organics facility took place early in 2023. A phased approach to receiving and processing organics was followed to include residential curbside sources and by commercial sources later in the year.

Waste Reduction Education Program

In 2023, waste education aimed at the waste prevention hierarchy and was generally carried out through contractors and partnerships on the West Coast using different approaches and strategies. Focus was on public engagement through presentations and community booths, along with building online interaction through the application of social media and other tools .

Landfill Environmental Monitoring Improvements

Piteau and ACRD field staff continued to work together to sample surface water in various locations around the landfill.

Rope and Netting Project

This is a continuation of a 5-year pilot project with Ocean Legacy to sort and ship out rope and netting for recycling. This project is intended to establish an effective diversion system for these materials that can be used as a template for other coastal landfills in BC. 25.68 tonnes of Rope & Netting and 8.44 tonnes of Ocean Plastics have been collected by Ocean Legacy and utilized as plastic feedstock for manufacturing signboards.

Update of Solid Waste Management Plan Phase-1

The first step of the Solid Waste Management Plan (SWMP) was completed in 2023 with the establishment of the SWMP Advisory Committee (the Committee),which is made up of public and technical members representing the various ACRD services areas including First Nations, to ensure important perspectives and priorities are represented. Four Advisory Committee meetings took place in 2023 that were facilitated in different locations around the ACRD. They were held as a means for the Committee to gain perspective on the current operations including challenges and opportunities of existing waste management services will be incorporated into the updated SWMP.

Step 1 also included the first phase of public engagement, 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.

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 that 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

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.

Landfill Gas Supplementary Report

The landfill gas supplementary report was completed in 2023, as referenced earlier in this report.

Projects Upcoming

Organics Composting Facility (2024)

In 2024 additional cover buildings will be installed to protect the compost from weather and improve the curing process. Additional work will include prepping the site for the sale of Class A Compost to the public in the Fall.

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.

Update of Solid Waste Management Plan-Step 2-4 (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 Advisory Committee meetings and significant SWMP development followed by phase 2 of public engagement tentatively scheduled for fall 2024 . The finalized SWMP is expected to be available in 2025 and will be submitted to the Ministry upon completion.

Landfill Contract Renewal (2024)

The operating contract for Berry and Vale Contracting will end on June 30, 2024. Through public procurement, Berry & Vale successfully bid on and was awarded a new 5-year contract to operate the landfill, from July 1, 2024 until June 30, 2029, with an option to renew.

Installation of Flow Monitoring (2024)

As referenced in the Environmental Monitoring section, until future upgrade of the leachate treatment facility can be completed, staff are working with ACRD's environmental consultant to determine the best interim method of monitoring flow of the leachate discharge. As recommended a flow meter will be installed on the discharge pipe for the leachate system.

3-Phase Power Upgrade (2024)

With the installation of landfill upgrades, the compost facility, as well as a new cell tower, the landfill site requires power upgrades. Staff will be working with Parks Canada, BC Hydro and other entities to install 3-phase infrastructure along Alaska Pine Rd. The goal is to ensure sufficient power to support all current and future anticipated infrastructure upgrades to the site.

Operational Certificate Update (2024-2025)

As referenced earlier in the report, there have been multiple changes to the infrastructure on site as well as identified non-compliance advisories, which will be addressed through an amendment of the site operating permit. This process is expected to take 2 years based on procurement needs and Ministry timelines.

Organics Ban (Future Initiative)

With the success of the Organics diversion program in 2023, the next step is to move forward with banning organic wastes for disposal at the site. Staff is working on this and other initiatives as part of the Solid Waste Management Plan update.

Construction and Demolition Waste Diversion (Future Initiative)

As part of the Solid Waste Management Plan Update, there will be engagement with generators of this material to investigate options to divert as it makes up 30% of the waste stream on the West Coast.

Design Operation and Closure Plan Update (Future Initiative)

The current DOCP was created in 2012 and requires updating to address the leachate system operation, cover usage concerns and generally provide enhanced direction for the development of the landfill. The Province has created new landfill criteria and there are several areas identified that need to be improved to meet the new criteria. An important part of the new DOCP will look at runoff diversion with the completion of each stage of final cover as well as the addition of contact water from the Organics facility. The Water Balance Report estimates that the impact of precipitation on leachate generation will be significantly reduced when portions of the landfill are capped.

Leachate Treatment Facility (Future Initiative)

With the conceptual design complete and ongoing baseline sampling underway, the next step is to secure funding to complete the detailed design as well as capital construction of the leachate treatment facility. As capital costs are expected to be between $1.5 million and $2.6 million, there is insufficient funding available in reserves to complete the project. As such, funding is being pursued through grants as well as borrowing under the forthcoming Solid Waste Management Plan, pending approval from the Ministry.

Explore Temporary Cover Options (Future Initiative)

Options and costs for temporary cover will be assessed in cooperation with Berry and Vale and in alignment with a future Design Operation and Closure Plan Update. The goal of temporary cover would be to decrease leachate generation from portions of the site that will not be disturbed for several years. This work should be aligned with the plans for landfill development and progressive closure.