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Subject: "Common Understandings" document for the Workgroup and appropriate subcommittees
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Hello,

On behalf of the Solid Waste Advisory Council I am providing you our “Common Understandings” document, for use in your draft products. This is the same document as provided to the Facilitator’s staff earlier at their request, just in a different format (this is in PDF format). This “official” version should supplement an earlier version. In particular it should be provided to the subcommittee addressing Common Understandings.

Thanks,

Ken Eklund
Chair, Solid Waste Advisory Council

Ken Eklund, writerguy

Creator of
World Without Oil
Ed Zed Omega
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and other storymaking games

Common Understandings:

Subject Areas for Understanding the Coffin Butte Landfill and the Solid Waste Futures for Benton County

Expressed as questions to be answered

Like the Solid Waste Workgroup, the Solid Waste Advisory Council and the Disposal Site Advisory Committee of Benton County seek “common understandings” about the landfill and the future of solid waste in Benton County, and we’re guided in this by the county community, county staff, and various citizens’ groups. For the Workgroup, we have compiled a list of the common understandings that we are seeking, which includes questions we’ve received from the community. The understandings being sought are best expressed as questions that must be answered before we can begin work on solving the issues themselves.

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A key part of our quest for information is (a) we are seeking better, more future-oriented viewpoints and insights and (b) we are seeking better visualization of the information. What information exists is typically presented in “snapshots” when it would be more accurate to show it as flows from one state of being to another. What information exists is also typically presented in its hardest-to-parse form: a table of numbers rather than a graph, a sentence rather

than a photo, etc. For understandings to be common, they must be expressed in forms that make them commonly understood.

We hope these questions and the deep dives about them are useful to the Workgroup, and that the Workgroup can use its special status to highlight the need for better answers than we currently have for them, and persevere until those better answers emerge.

Approved October 5, 2022
The Solid Waste Advisory Council of Benton County

Coffin Butte Landfill Capacity/Operating Life: “When is the landfill expected to close?”

This fundamental bit of information has not been answered; there is currently no common understanding about when, under the status quo, the landfill will run out of capacity and close.

Four factors in answering this fundamental question:

1. Factor 1: What is the current capacity of the landfill?

Discussion: As established in the last DSAC meeting, the capacity stated in the most recent Coffin Butte Landfill annual report (17.6 M cubic yards left, 38.7M cubic yards total) is not accurate / is misleading: this capacity will only be available by the year 2030 at the earliest, and it assumes that quarry operations have continued through those years (increasing capacity) without interference from landfill operations. The non-quarry part of the landfill is set to fill by the year 2025, however, and then presumably landfilling must move into the quarry area and disrupt/end operations.

As established in a past DSAC meeting, the capacity that Republic has reported to the Environmental Protection Agency is also suspect. That number for total metric ton volume changes from 26.7M in 2016 to 35.5M in 2017, and no one seems to be able to explain this sudden increase in capacity. The landfill representative stated the Republic corporate office provides those numbers to the EPA.

Clear understanding is also confounded due to the various metrics invoked. The core metric for capacity is volume, but you will hear capacity expressed in units of weight (tons) or of time (years), and these expressions contain hidden assumptions about esoteric conversion factors. How many tons in a cubic yard? for new garbage vs. emplaced garbage? What is the volume differential between a ton of quarried rock vs. a ton of garbage? What is the assumed intake rate for each “year” of volume? And so on.

Specific questions to be answered, to determine “When is the landfill expected to close”:

- How often are LIDAR volumetric assessments performed? Have these measurements been independently verified?
- What is the area of the open (active) cell?
- What is the current usable airspace volume of the open (active) cell?
- What is the current usable airspace volume of Cell 6 (quarry)?
- What is the volume extraction rate for Cell 6 due to ongoing quarry operations? What is its extraction history?
- What is the intake volume history?
- What is the expected intake volume over the remaining landfill lifetime?

- What is the delay time in tabulating intake volume by weight?
- What penalties if any will be applied if the annual tonnage cap is exceeded in the future? Are these penalties sufficient to disincentivize runaway intake?

2. Factor 2: What is the current fill rate of the landfill?

Discussion: To calculate its estimate of the life of the landfill, Republic uses an average disposal rate of 750K tons per year in the 2021 landfill annual report. The last year intake was that low, however, was 2016. After annual intakes of 853K tons (2017) and 937K tons (2019) the current fill rate (2022) appears to be on course for 1.1M tons – almost 50% over the “750K” estimate.

Specific questions:

- What is the intake volume history?
- What is the expected intake volume over the remaining landfill lifetime?
- How close each year has the intake come to the cap?

3. Factor 3: How will the capacity of the landfill likely change in the future?

Discussion: There are factors such as quarry operations and “settlement” (gasification of garbage) that cause the landfill capacity to fluctuate over time.

4. Factor 4: How will the fill rate of the landfill likely change in the future?

Discussion: Theoretically, the landfill currently has an intake cap of 1.1M tons a year, but (a) it’s unclear if that cap has actual penalties associated with it or is just on paper, and (b) by the 2020 franchise agreement, that cap is removed if any landfill expansion is permitted. Also (c), there appear to be loopholes by which garbage can be taken in yet not count toward the cap.

Coffin Butte Landfill Environmental Impacts:

“What is the environmental cost of the landfill?”

The environmental cost of the landfill is a fundamental part of the cost-benefit analysis of the landfill, but not commonly understood at all.

Not unexpectedly, environmental factors typically do not appear in official communications about the landfill. The word “methane” for example does not appear in the latest landfill annual report, nor the acronym “PFAS.”

It’s important here to differentiate the environmental costs of the landfill from the environmental regulations on the landfill. It’s insufficient, in other words, to claim that “regulations were followed” and therefore to assert no significant environmental harm is taking place. Laws and policies are imperfect; they lag behind actual conditions on the ground; judging compliance with laws is fraught with error; and so on; this is all commonly understood.

A salient example: an expansion attempt by the Riverbend landfill in Yamhill County failed because, although the landfill asserted that it was following regulations regarding flyaway trash, the courts determined that trash was still flying away and neighboring properties were being actively harmed. That landfill has stopped operations and the local community has initiated proceedings to force it to close.

A partial list of environmental cost areas, to answer this fundamental question:

1. Leachate: the landfill produces leachate, which is toxic. What are the costs of leachate?
 - a. What is the generated volume of leachate? How much of this comes from the primary collection system and how much from the secondary?
 - b. What is the composition of leachate?
 - c. What are the levels of PFAS (“forever chemicals”) in leachate?
 - d. How much does it cost to process (pump out, store, ship, etc.) leachate?
 - e. How much does it cost to have leachate disposed of? Where is it taken to be treated? (City of Corvallis? Salem?) What is ‘Plan B’ if the leachate can no longer be disposed of locally?
 - f. How long will the landfill be generating leachate? How will the rate of leachate production change year by year in the future?
 - g. Who will be paying the costs of leachate over time?
 - h. How much leachate is bypassing the collection system? How much is or will be polluting the groundwater?
2. Waste gases: the landfill generates landfill gas, which contains methane, carbon dioxide, hydrogen sulfide and other gases. Some of this gas is recovered; whatever is not recovered leaks into the atmosphere. (Landfill experts estimate that recovery systems only collect around a quarter of landfill gas produced, on average.)

The landfill also operates a cogeneration plant, which burns landfill gas and produces exhaust. The landfill also operates two flare stacks, which burn landfill gas and produces waste gases. What are the costs of all these landfill, exhaust, and waste gases?

- a. What are the volumes and composition of gaseous emissions of the landfill?
- b. Presence of water increases the anaerobic activity that generates landfill gas. How does the output of the Coffin Butte Landfill, which is in an area of moderate rainfall, compare with landfills in low-rainfall areas?
- c. Methane: methane is a potent, destructive short-term greenhouse gas, and methane emissions from landfills are a significant contributor to global warming worldwide. Unit for unit, methane is considered to be 86x more destructive in short-term greenhouse effects than carbon dioxide. The EPA has estimated that methane emissions from landfills are understated by at least a factor of two, and considers landfills to be one of the three major sources of this potent greenhouse gas in the US, along with agriculture and the oil and gas industry. The Benton County Board of Commissioners has identified addressing methane pollution from the landfill as a priority going forward.
 - i. How much methane is generated in all by the landfill (daily / monthly / yearly)? How much of this is captured?
 - ii. What methods are being used to quantify how much methane is being generated / being captured / leaking from the landfill? Methane detection is notoriously difficult: are there more accurate methods available? Are there direct measurement technologies now available, from aerial or satellite surveys for example? What should we make of the studies that show that collection systems are net-negative, because of their leakage?
 - iii. Landfills convert solid waste to methane over time; a ton of solid waste will continue to generate significant methane for over a decade, usually two. Given the input history of the landfill and the projected intake, what is the projected methane output over the next 40 years?
 - iv. New environmental regulations in the Inflation Reduction Act enable the EPA to regulate greenhouse gases as pollutants. What measures has the landfill taken to reduce its emissions of greenhouse gases?
 - v. New environmental regulations in the Inflation Reduction Act impose a waste emissions penalty of \$1500 a ton on methane leaks in the oil and gas industry. If a similar waste emissions fee is imposed on the landfill, what will the effect be?
- d. Carbon dioxide: carbon dioxide is a greenhouse gas; carbon dioxide emissions are the prime driver of climate damage. Carbon dioxide is a slow-acting but long-lived greenhouse gas.

- i. How much carbon dioxide is generated by the landfill (daily/monthly/yearly)?
 - ii. Landfills convert solid waste to carbon dioxide over time; a ton of solid waste will continue to generate CO₂ for over a decade, usually two. Given the input history of the landfill and the projected intake, what is the projected CO₂ output over the next 40 years?
 - e. Hydrogen sulfide: this gas has a strong disagreeable odor, even in trace amounts. Its common name is “stinkdamp.”
 - i. Homeowners in the region of the landfill undergo “dump days” when the landfill smell is heavy and it’s unpleasant to go outdoors. What are the atmospheric conditions that cause “dump days”? Will these atmospheric conditions occur more often in a climate-changed future?
 - ii. Landfills convert solid waste to hydrogen sulfide (H₂S) over time; a ton of solid waste will continue to generate H₂S for over a decade, usually two. Given the input history of the landfill and the projected intake, what is the projected H₂S output over the next 40 years?
 - f. Other gases: what other gases are produced by the landfill? What are their health and environmental effects?
 - g. Particulate emissions: waste gases and exhaust from flaring/burning landfill gas.
 - i. What is the volume and composition of particulate emissions?
 - ii. Are there health or environmental effects from these gases?
 - iii. Will output of these waste gases increase as we move into the future?
 - h. Particulate emissions: dust from alternate daily cover, including Covanta ash.
 - i. What is the volume and composition of dust and other particulates generated by the landfill?
 - ii. Are there health or environmental effects from these particulates?
 - iii. Do these effects increase over time, as dust and particulates accumulate around the landfill?
 - iv. Are studies being done to measure these accumulations in organisms around the landfill? If not, why not?
3. Wildlife impacts: the landfill disrupts the natural environment. What are the costs of disrupting the area ecosystems?
- a. We have heard reports of abandoned nests/young at the northern heron rookery earlier this year. What were the results of heron rookery monitoring during 2022? Have these results been reported to ODFW?

- b. The landfill turns on bright lighting atop the landfill at 4:45 am on workdays, if it is dark (September to March). The lighting can be seen for miles. Bright lighting such as this has been shown to disrupt the ability of birds to migrate successfully, by disorienting them and other effects. The lighting seems to be connected with operations that are in violation of the county's franchise agreement (which specifies that operating hours begin at 8 am).
 - i. Are the environmental harms to wildlife caused by the lighting a result of infractions of the landfill's agreement with the county?
 - ii. If so, will the county enforce its agreement to curtail the harms to wildlife?
 - iii. Are there measures the landfill can take to reduce the harms to wildlife that the lighting causes (downhoods, shielding, for example)? Is the landfill in the process of implementing these measures?
- 4. Environmental impacts through chemical pollutants: the landfill becomes a concentration of heavy metals, PFAS, and other known toxic chemicals.
 - a. What are the costs of these?
 - b. What are the concentration levels of these toxics? Have any landfill audits been done to establish what levels of hazardous pollutants are actually going into the landfill? Or any other studies?
- 5. Environmental impacts through traffic generation: the landfill generates vehicle travel, which in turn produces traffic costs, exhaust pollution, dust, greenhouse gases, and other environmental impacts. What are the costs of these? How do alternatives compare?
 - a. What is the total number of landfill-related vehicle miles generated by the landfill? What is the environmental cost and other costs of these trips?
 - b. What do we learn from an origin and destination study of landfill-related traffic? i.e., looking at both where vehicles are coming from / returning to, as well as the number and types of vehicles. This should be created as a coded and keyed map.
- 6. Impacts on the visual environment: the landfill is both monumental and an eyesore. What is the cost of this?
 - a. What is the viewshed of the landfill (past, present, and future)? Displayed as a map.
 - b. What will the landfill look like over time? Displayed as photo-visualizations of the landfill 5, 10, 15 years in the future.
 - c. What will the landfill look like when post-operational? Displayed as a photo-visualization.
- 7. Dust and trash. Landfilling is a dirty operation, generating airborne dust and particulates. It is also a vector for litter, as trash leaks out of transporting vehicles and

accumulates in large amounts in area properties and along roadways. What are the costs of this pollution? Who pays them?

8. Long-term impacts (impacts that last 100 or 1000 years or more)
 - a. The landfill creates a “dead zone” hundreds of acres big, where no other land use can take place. What is the long-term cost of that?
 - b. The landfill has “mature areas” already, in which garbage cells have been filled, covered over with plastic, and then covered with a layer of dirt and planted with grass. Do they require maintenance to prevent trees and other large plants from taking root there, and penetrating the landfill liner with their roots?
 - c. The landfill creates a “avoidance zone” possibly thousands of acres big, where land uses are proscribed due to the inevitability that leachate will enter the groundwater and create an underground plume of contamination. What is the long-term cost of that?
 - d. The landfill creates an enduring maintenance situation regarding pollutants and toxics. One example: leachate. Rain falls on the landfill every year and creates more leachate, which must be pumped out and disposed of properly, or else it will overflow into the surrounding land and its groundwater. There are similar effects for landfill gases and microplastics. How long must these maintenance tasks continue? What is the long-term cost of these and other maintenance?
 - e. The landfill creates an enduring replenishment situation. Its wells for leachate and gas processing, for example, have relatively short lives and must be regularly replaced. How long must these maintenance tasks continue? What is the long-term cost of these and other maintenance?
 - f. The landfill creates an enduring public security situation. Its supporting systems must be continuously protected from vandalism and unintentional damage and from natural degradation. Each breach in its cap, for example, will let in more rainwater, thus adding to the maintenance burden. Misguided or rogue drilling or mining could breach the bottom liner layer. What is the long-term risk of this?
 - g. Long-term risks and costs like these are subject to a “future discount,” i.e., a degree to which they are reduced because it is assumed that our descendants will be better able to handle the burdens than we are. Long-term risks and costs like these are also often minimized or dismissed because our descendants are not here yet and therefore cannot speak up in their own defense. If a future discount is being applied to these costs, what is it? How was that number derived? Or are these costs and risks being discounted for the second reason?

Warning sign text for long-term waste disposal sites

THIS PLACE IS A MESSAGE.
AND PART OF A SYSTEM OF MESSAGES. PAY ATTENTION TO IT!
SENDING THIS MESSAGE WAS IMPORTANT TO US.
WE CONSIDERED OURSELVES TO BE
A POWERFUL CULTURE.
THIS PLACE IS NOT
A PLACE OF
HONOR.
NO HIGHLY ESTEEMED DEED
IS COMMEMORATED HERE.
NOTHING VALUED IS HERE.
WHAT IS HERE WAS DANGEROUS
AND REPULSIVE TO US.
THIS MESSAGE IS A WARNING ABOUT DANGER.
THE DANGER IS IN A PARTICULAR LOCATION.
IT INCREASES TOWARDS A CENTER.
THE CENTER OF
DANGER IS HERE.
OF A PARTICULAR SIZE AND SHAPE,
AND BELOW US.
THE DANGER IS STILL PRESENT,
IN YOUR TIME, AS IT WAS IN OURS.
THE DANGER IS TO THE BODY, AND IT CAN KILL.
THE DANGER IS UNLEASHED IF YOU
SUBSTANTIALLY DISTURB THIS PLACE PHYSICALLY.
THIS PLACE IS BEST SHUNNED
AND LEFT UNINHABITED.

Coffin Butte Landfill Operational Impacts:

“What are the rules that govern the landfill? Is it complying?”

The landfill currently operates as a regulated nuisance, or disamenity – that is, its operations are known to negatively affect neighbors, visitors, the community and the region, but these impacts are theoretically kept at or below tolerable levels, and the community and public-at-large protected, by regulations pertaining to the landfill’s various permits to operate. Compliance (or not) with these regulations is a fundamental part of the cost-benefit equation of the landfill.

Permitted operation of the landfill relies on effective oversight and enforcement of the regulations that pertain to its operations – this is also a fundamental part of the cost-benefit equation of the landfill.

It’s important, therefore, for there to be a common understanding of the legal and economic envelopes that the landfill operates in, both as a theoretical construct and how it actually plays out in reality.

It’s especially important for there to be a common understanding of how the legal and economic envelopes of the landfill extend and change into the future, because the landfill will be a negative presence on the community and the region for hundreds or thousands of years.

Specific questions related to understanding regulations on and compliance status of the landfill:

Coffin Butte Landfill Impact: Benton County Resources and Infrastructure

1. How do the current landfill traffic volumes (vehicles per day by type and total transported tonnage) compare to the baseline documented in the 2001 Baseline Study?

Coffin Butte Landfill Impact: Benton County Citizens and Landfill Neighbors

1. How do the sale prices of private properties sold to the Valley Landfills, Inc. over the past 40 years compare to similar properties not located near the landfill?

Regulatory: EPA & Oregon DEQ

1. What are the current governing permits and regulations?
2. What expected operational lifetime is on record with EPA and ODEQ for Coffin Butte?

Coffin Butte Landfill Closure: Process, Timeline, Operator Liability, Potential Franchisee Resistance

1. What lead time is required for proper closure?
2. What are the primary process steps in closing a landfill such as Coffin Butte?
3. What are the documented costs of closing landfills similar in size to Coffin Butte (e.g. slope and terrain restoration, continued monitoring, containment or removal of toxic material, compensation for damages resulting from environmental hazards, fires, etc.)?
4. What guarantees are in place that the owner will close the landfill upon substantial completion? (i.e., not drag out the process, as is happening with the Riverbend landfill)

5. What guarantees are in place that the landfill owner will not declare bankruptcy and abandon the landfill?

Franchisee Business Impact

1. What is the gross profit ratio for Republic Services landfill operations nationwide in the US? For the Coffin Butte Landfill?
2. What is the annual gross revenue for Republic Services landfill operations in the US, and how does this compare to the annual gross revenue for nationwide collection operations?

Business and Legal Envelopes

1. What are the current hours of operation (i.e. daily first employee arrival time – last employee leave time - daily)? What are the hours in which heavy equipment is active? What are the permitted hours of operation according to the current franchise agreement? What is the process by which these regulations are enforced?
2. What solid waste management plans has Benton County produced since the landfill was first permitted in 1974? What is the history of compliance to those plans?
3. What intake content monitoring measures are used (per load, sampling, open cell deposits, etc.)? How soon are those measurements released to the county and the public?
4. What are the current controlling documents for landfill operations (franchise agreement(s), site development plans, etc.)?
5. What are the inflow sources with weight and distance metrics (map form would be helpful)?
6. In the previous CUP application, Valley Landfills Inc. was listed as the applicant even though the application was submitted by Republic Services Inc. Which company is legally responsible, in perpetuity, for remediation of any environmental problems that may arise in the future? In other words, if Republic eventually sells or otherwise divests its financial interest in VLI, would Republic remain liable? Or would the liability be spun off to VLI?
7. Is Republic legally obligated to honor commitments made by its subsidiaries (VLI, Allied Waste etc.) during the application process for previous expansions that were allowed by the county?
8. What are the terms of Republic's lease agreement with Knife River Corporation, in terms of time period for excavation?
9. Knife River Corporation operates multiple quarries in the mid-Willamette Valley region. Are production rates at these other quarries reported to the state and/or counties? Or can the company make the numbers for recent years available to the Benton County working group?

10. What are the rules that govern the post-operational state of landfill components? What is the final grading plan and when will it be implemented?
11. What are the plans for reclamation of the 700+ acres of landfill? When does Republic plan to establish native vegetation on existing cells of the present landfill? Are there plans / Is there an obligation to make the area a wildlife habitat? Are there plans to make fishing ponds?

Coffin Butte Landfill Public Safety Impacts:

“What risks does the landfill create for the county?”

An operation as large as the Coffin Butte Landfill creates risks on a similar scale. These risks pose a conundrum, because they are often quite easy to hide or downplay, and it can be quite profitable to do so. It’s a common understanding that entire industries exist because they successfully acquire profit while generating risk and shifting it away from themselves, to other people, other places, other legal entities or to the future.

It’s vital therefore to establish a common understanding of the risks created by the landfill’s existence and operation, and how those risks will change over time. It’s especially vital to acknowledge that the modern landfill carries with it a large amount of unknown risk, because it contains materials that have never been landfilled before in such quantities or in combination, it contains materials whose toxic properties are not understood, and the landfill structures themselves are recent innovations and have not been field-tested for the timespans that this landfill will undergo.

Specific questions about landfill risks:

1. Risks of Fire, including persistent fire

- a. What is the fire history of the landfill?
- b. What is the risk of a subsurface fire that could persist for months or years? (Example: the multi-year, \$200M fire at the Bridgeton landfill in Missouri. How did that dump fire start?)
- c. What gaseous and particulate emissions typically result from landfill fires?
- d. Given that methane is a flammable gas, what is the relationship between methane generation and fire risk?
- e. The cogeneration plant actively extracts methane from the landfill, which draws air (oxygen) into the landfill. This is known to increase the danger of fire. What steps are in place to make sure a mistake or malfunction does not create an explosive situation? Does the cogeneration operation’s desire for profit cause increasing risk to the landfill and the area?
- f. Does methane generation increase with warmer weather? Will an increasing number of hot days cause a corresponding increase in fire danger?
- g. What emergency plans are in place in case of fire? What precautions have been taken?
- h. What training is necessary to limit risk to fire crews when fighting a landfill fire?
- i. Does the risk of fire increase if the landfill expands?

2. Risks of Earthquake

- a. What magnitude earthquake are the slopes of the landfill expected to withstand? Specifically, will an earthquake collapse the south slope onto Coffin Butte Road? How susceptible is the landfill to liquefaction?
 - b. How susceptible is the landfill infrastructure (gas collection systems, leachate collection systems, cogeneration plant, and so on) to earthquake? What are the harms if systems are damaged or destroyed?
 - c. What emergency plans are in place in case of earthquake?
- 3. Risks from Hazardous Waste**
- a. How is hazardous waste officially defined?
 - b. How much hazardous material is received annually and what is it constituted of?
 - c. What safeguards are in place to prevent hazardous materials from entering the landfill?
- 4. Risks from PFAS, a class of persistent organic pollutants (“forever chemicals”) commonly used since 1940 in items that are commonly landfilled. PFAS are an emerging focus of health concerns, as we now know that PFAS accumulates in human tissue and exposure to it has been linked so far to increased risk of decreased antibody response, dyslipidemia (abnormally high cholesterol), decreased infant and fetal growth, and increased risk of kidney cancer, and other health impacts are likely to emerge. Concerns include health harms and economic harm from litigations**
- a. What studies have been done to identify the level of PFAS in the landfill? in leachate?
 - b. What plans are in place to prevent more PFAS from entering the landfill?
 - c. Do PFAS escape the landfill in leachate? In landfill gas? In other ways?
- 5. Risks from Flood – especially extreme flood conditions, which are becoming more prevalent as the climate changes**
- a. What level of rainfall will overwhelm the landfill’s leachate collection systems?
 - b. Will an “internal flood” cause stress to or overflow the landfill’s liner system? Will it potentially lead to leachate leaking into groundwater?
 - c. What plans are in place to prevent internal flooding of the landfill?
 - d. Have studies been done to pre-visualize the effects of extreme flooding (and other extreme weather) on landfill integrity and operations?
 - e. Does the risk of flooding increase if the landfill expands?
- 6. Risks of Extended Power Outages**

- a. What are the effects of power outages on landfill operations, especially necessary operations such as gas collection and leachate pumping? What studies or plans have been done to prepare for an extended power outage?

7. Risks of Concatenating Disasters

- a. What studies or plans have been done to prepare for situations where more than one disaster is happening, i.e., if a heat dome causes a power failure which starts a wildfire that jumps to the methane leaks of the landfill? Or an earthquake causes an extended power failure, critical damage to the landfill infrastructure, and a wildfire, which prevents emergency response?

8. Groundwater contamination

- a. Groundwater contamination is not a risk, it is an inevitability – the liner and other barriers to contamination will fail in time, and leachate and other contaminants from the landfill will enter the groundwater directly (the landfill currently sits directly on the water table). What are our best estimates as to that risk level currently? How does the probability increase over time?
- b. What are examples of liner failures at other landfills?
- c. What happens when this failure occurs? How will this failure be detected? How will the damage spread?
- d. What is the history of groundwater contamination at the landfill site?

Coffin Butte Landfill Economic Impacts: **“What are the economic effects of the landfill?”**

Customer Interests: “What effect does the landfill currently have on collection rates in the county? On recycling rates? What are the alternatives to landfilling and how do their rates compare?”

1. How do Benton County garbage collection rates compare to other Oregon counties?
2. How do Benton County recycling rates compare to other Oregon counties?
3. How do Benton County per-capita waste disposal volumes compare to other Oregon counties?
4. What rate changes did the residents of Yamhill county experience once the Riverbend landfill closure was underway?
5. Is Republic’s profit motive (the desire not to end quarry operations) a driving factor in their quest for expanding the landfill? Is the company seeking new landfill area so that they can delay using the already approved landfill area?
6. If the landfill decides to pursue an alternate means of disposal, in order to protect the profitability of its surface mining (quarry), will the extra cost for that be imposed on Benton County residents? Will the county act to prevent that from happening? Does the county have the legal protections in place to be able to do so?

Coffin Butte Landfill Future Directions:

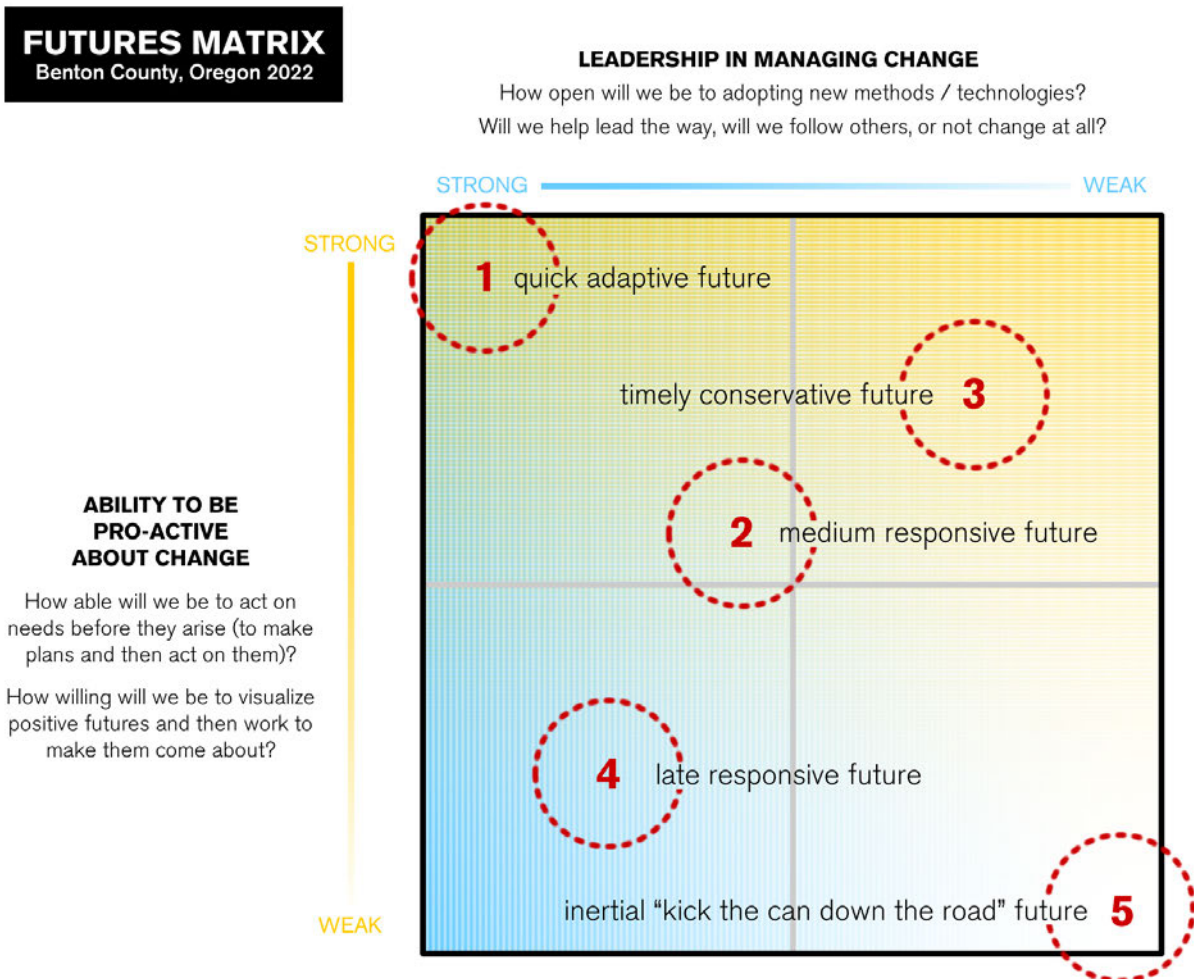
“What are our options as we move into the future?”

Another fundamental (perhaps the most fundamental) bit of information about the county’s solid waste future is: what are our options? In other words, what happens if we do nothing? What happens if we do something? What happens if we do a third thing? And so on.

All roads of this document lead here: all the other understandings lead us to favor choosing one possible future over another. If the landfill is generating significant amounts of climate-damaging methane, for example, we favor choosing a future which generates less.

It can be difficult to arrive at common understandings about possible futures, because (a) people have widely varying comfort levels with even thinking about possible futures, (b) people have widely varying comfort levels with imagining possible futures, and (c) possible futures are best made understandable as part of narratives, and creating good narratives is a fairly rare skill. Futurethinking is hard, and telling complex stories is hard, which empowers overly simplistic options such as doing nothing.

THE FUTURES MATRIX



The “futures matrix” is a tool to help people begin futurethinking about a situation. To use a matrix, first identify two major forces in the situation, and then plot the four possible binary outcomes based on whether these forces will prove to both be strong, or one is strong and the other weak, or both are weak.

For Benton County’s solid waste future, the two key drivers are (1) our collective ability to be open to making changes and (2) our collective ability to be pro-active toward making changes. You can think about these as:

1. **Will the county lead, or will it follow (or not choose change at all)? and**
2. **Will the county make changes on its own initiative or only when forced to by outside circumstances?**

The question about expanding the landfill doesn’t appear on this matrix. That’s because expansion/no expansion is not really a futures question – that is, it doesn’t directly address the future of solid waste in Benton County. Whether or not a landfill expansion is approved, the county community still faces the challenges posed in this matrix. The expansion would just “kick the (trash) can down the road” (see Futures 4 and 5, below).

Let’s look at the five futures called out in circles on the matrix:

FUTURE 1: the quick adaptive future

In this future, the county is strongly pro-active about changing the way it manages solid waste and strong in showing leadership in evaluating and adopting new methods for sustainable materials management.

- a. Benton County knows the landfill is filling up... and also:
 - i. The county realizes the risks that the landfill may close prematurely (by legislation, litigation, shifting economics, and so on)...
 - ii. The county realizes the risks that the landfill may be closed (by fire, toxics breach, systems failure, and so on)...
 - iii. The county begins to quantify the future costs of the landfill.
- b. ...so it begins an aggressive program of waste reduction as a transition to its post-landfill future, as a way to pre-emptively reduce the amount of trash the county produces, which the county will have to deal with when the landfill inevitably closes. This also is the county’s best course of action to be resilient in the event of “premature” landfill closure.
- c. ...the county begins to assess its post-landfill options, such as building a truck-to-rail transfer station, so that it has a way to gather competitive bids for the solid waste that cannot be recycled or reprocessed or otherwise diverted from the wastestream. This also increases the county’s resilience in the event of landfill closure.

FUTURE 2: the medium responsive future

In this future, the county is somewhat pro-active about changing the way it manages solid waste and middle-of-the-pack in evaluating and adopting methods for sustainable materials management.

- a. Benton County knows the landfill is filling up, so it works toward waste reduction as a transition to its post-landfill future, as a way to reduce the amount of trash the county produces (and will have to deal with) when the landfill closes.
- b. Benton County knows the landfill is filling up, so it begins to assess its post-landfill options, such as building a truck-to-rail transfer station, so that it has a way to gather competitive bids for the solid waste that it cannot recycle or reprocess or otherwise divert from the wastestream.

FUTURE 3: the timely conservative future

In this future, the county is strong in showing leadership in evaluating and adopting new methods for sustainable materials management, but weak in actually implementing those changes. It splashes around in the shallow end of change.

- a. Benton County knows the landfill is filling up, so it develops a robust plan for transition to its post-landfill future, but is unable or unwilling to make the plan effectual, and still has a large amount of county trash to manage as the landfill closes.
- b. Benton County knows the landfill is filling up, so it assesses its post-landfill options (such as building a truck-to-rail transit station), but is unable or unwilling to make the post-landfill plan a reality.

FUTURE 4: the late responsive future

In this future, the county is weak in being pro-active about the necessity for change, but at some point the crisis cannot be ignored any longer, and then the county is quite willing to adopt bold new methods for sustainable materials management. It's asleep at the wheel at first, but then wakes up.

- a. Benton County knows the landfill is filling up, but it dithers in implementing a robust plan for transition to its post-landfill future until the last minute. It therefore has a large amount of county trash to manage all the way along and as the landfill closes.
- b. Benton County knows the landfill is filling up, but it is late in assessing its post-landfill options. Its options with long lead times (such as building a truck-to-rail transit station) are therefore off the table when it comes time to act.

FUTURE 5: the inertial, “kick the can down the road” future

In this future, the county is weak in showing leadership in evaluating and adopting new methods for sustainable materials management, and weak in being pro-active and anticipating the necessity of change. If this future seems familiar, it's because we are currently in this future: ten years ago, Benton County chose Future 5; twenty years ago, Benton County chose Future 5; and so on. That's the reason the county does not have a current Solid Waste Management Plan nor a coherent assessment of the landfill's risks and costs.

A key aspect of this future has been the county's loss of control over data about the landfill, especially independently derived data, and a lack of vision about alternatives to landfilling and ways to reduce landfilling.

- a. Benton County doesn't act as the landfill fills up.
- b. Benton County has no roadmap for its post-landfill options.

To return to the question we started with: “What are our options as we move into the future?”

1. **The Benton County community can decide to lead the way in evolving how it manages solid waste; or it can decide to follow as others lead the way; or it can do nothing. Which should it do?**
2. **The Benton County community can decide to be pro-active in its evolution away from landfilling; or it can wait until the situation becomes more urgent; or it can do nothing. Which should it do?**

Coffin Butte Landfill Future Directions, Next Steps: “What are our next steps as we move toward a more desirable future?”

One way to make it easier to futurethink about solid waste management is to break down each possible future into discrete steps, and then to focus on just the next steps for each. That way you don't have to be daunted by the exact route, you just need to be reasonably sure you're moving in the right direction. And you can remain open to new opportunities as they arise.

Specific ideas about next steps for the landfill and beyond:

1. Obtain independent, third-party, reliable data about key parameters relating to our waste stream and its effects.
2. Communicate with others who are also evaluating their options for their waste streams. Other counties in Oregon (and other entities across the nation and the world) are already operating successfully without a local landfill, and others are in the process of making the transition to post-landfill living. We can learn from their experience.
3. Study possible actions to take, and share that information. Some examples for Benton County: an intermodal transfer facility (which enables waste to be shipped more efficiently by rail); a materials recovery facility for construction debris; a materials recovery facility for advanced recycling; a waste-to-energy facility; upstream waste materials reduction policies; and so on. Net Zero and other strategies already exist, and they use policy and technology to begin to control and minimize damage from the county waste stream.
4. Hire a consultant who specializes in these transitions, to advise us.
5. Don't be afraid to engage the public at large. Asking “what if” is a game that anyone can play, and our ideas and values matter when envisioning a future and taking the first step, and then the next, and then the next, on the path to get there.



Approved October 5, 2022
The Solid Waste Advisory Council of Benton County

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