

## Subcommittee Report to Work Group - Working Document

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## Charge

Charge A: Common Understandings Tasks

1) A chronological history of key Coffin Butte Landfill topics:

- A) Size
- B) Specific locations
- C) Assumptions (e.g. when will the landfill close?)

## Members

<b>Bill Bromann</b>
<b>Brian May</b>
<b>Chuck Gilbert</b>
<b>Daniel Redick</b>
<b>Ginger Rough</b>
<b>Ian Macnab</b>
<b>Ken Eklund</b>
<b>Mark Yeager</b>
<b>Paul Nietfeld</b>
<b>Shane Sanderson</b>
<b>Staff: Daniel Redick</b>
<b>Facilitator: Sam Imperati</b>

## Meeting #1 Report to BCTT Work Group DRAFT – 10/25/22

### Attendance

Member	Present
Bill Bromann	X
Brian May	X
Chuck Gilbert	X
Ginger Rough	X
Ian Macnab	X
Ken Eklund	X
Marge Popp	X
Mark Yeager	X
Paul Nietfeld	X
Shane Sanderson	X
Staff: Daniel Redick	X
Facilitator: Sam Imperati	X
<b>Observers:</b>	

### Questions to be Explored by Subcommittee:

1. Landfill lifespan and closure
  - When will the landfill close?
  - What is the landfill's Service life?
  - How does the expected quarry excavation status at time of cell 5 capacity change the projected lifespan for cell 6 and total landfill lifespan estimates?
  - Can cell 6 start being used in 2025 (at completion date of cell 5)?
  - How much airspace will be created by the quarry excavation?
  - How can the landfill's current state provide information about capacity and lifespan, given uncertainties about the future and future variables?
  - Can we use probability distributions when uncertainty exists?
  - What is the projected annual tonnage anticipated moving forward? How can variables like garbage volumes, market shifts, and wildfires be used in these projections?
  - What leads to increase in annual tonnage?
  - What leads to changes in lifespan estimates?

- What are possible scenarios?
- What do we know what will happen based on each scenario

## 2. Landfill Site and Operations information

- Is 178 available acres included only on north side?
  - Yes, only on North Side. Includes quarry space.
- What are the Closed, active, and future active cells? North vs. South?
- Is Republic contractually obligated with knife river to let them remove all material from the quarry?
- What are the contractual obligations?
- What does Republic Services consider to be feasible regarding operations impacting site life, including the amount of material accepted annually?
- Can Ian and Bill (Republic Services) present to the group to provide a calendar look at what planning looks like at the landfill, including various aspect of the business side, collection, and franchises, for best projecting waste on annual basis?
  - Yes

### Recording:

- [Recording](#)

### Next Steps/Action Items:

### Next Meeting:

- Meeting #2: November 8, 2022 – 10:30am-12:00pm
- Meeting #3: November 15, 2022 – 10:30am-12:00pm

### Relevant Documents located on [Subcommittee Webpage](#):

- [DRAFT Report Common Understandings: Solid Waste History \(IV.A.1.A\)](#)
- [DRAFT Report Common Understandings: Landfill Size and Development History \(IV.A.1.B\)](#)

- [DRAFT Report Common Understandings: Specific Landfill Locations and Cell Size \(IV.A.1.C\)](#)
- [DRAFT Report Common Understandings: Assumptions \(IV.A.1.F\)](#)
- [Whitcombe - 9/12/22](#)
- [Nietfeld - 9/14/22](#)
- [Geier - 9/3/22 - History](#)
- [Geier - 9/4/22 - Site Description](#)
- [Common Understandings Feedback - Republic 9-30-22](#)
- [Landfill Site Life - Republic Services 9-30-22](#)

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## Meeting #2 Report to BCTT Work Group DRAFT – 11/9/22

### Attendance

Member	Present
Bill Bromann	X
Brian May	X
Chuck Gilbert	X
Ginger Rough	X
Ian Macnab	X
Ken Eklund	X
Marge Popp	X
Mark Yeager	X
Paul Nietfeld	X
Shane Sanderson	X
Staff: Daniel Redick	X
Facilitator: Sam Imperati	X
<b>Observers:</b>	

### Agenda and Notes:

#### Proposed report outline:

1. SIZE
  - a. Landfill lot size – Cell size or lot size? Brief summary for how tax lots have progressed over time. 1980's+, 1974+
    - i. Table of VLI purchases over time, with notes on those sections subjected to zoning changes (e.g. FC -> LS)
      - a. Include other land-use info, using land-use subcommittee information
      - b. Does this tie-in to the subcommittee charge?
    - ii. Permitted space grants, perhaps in a simple table

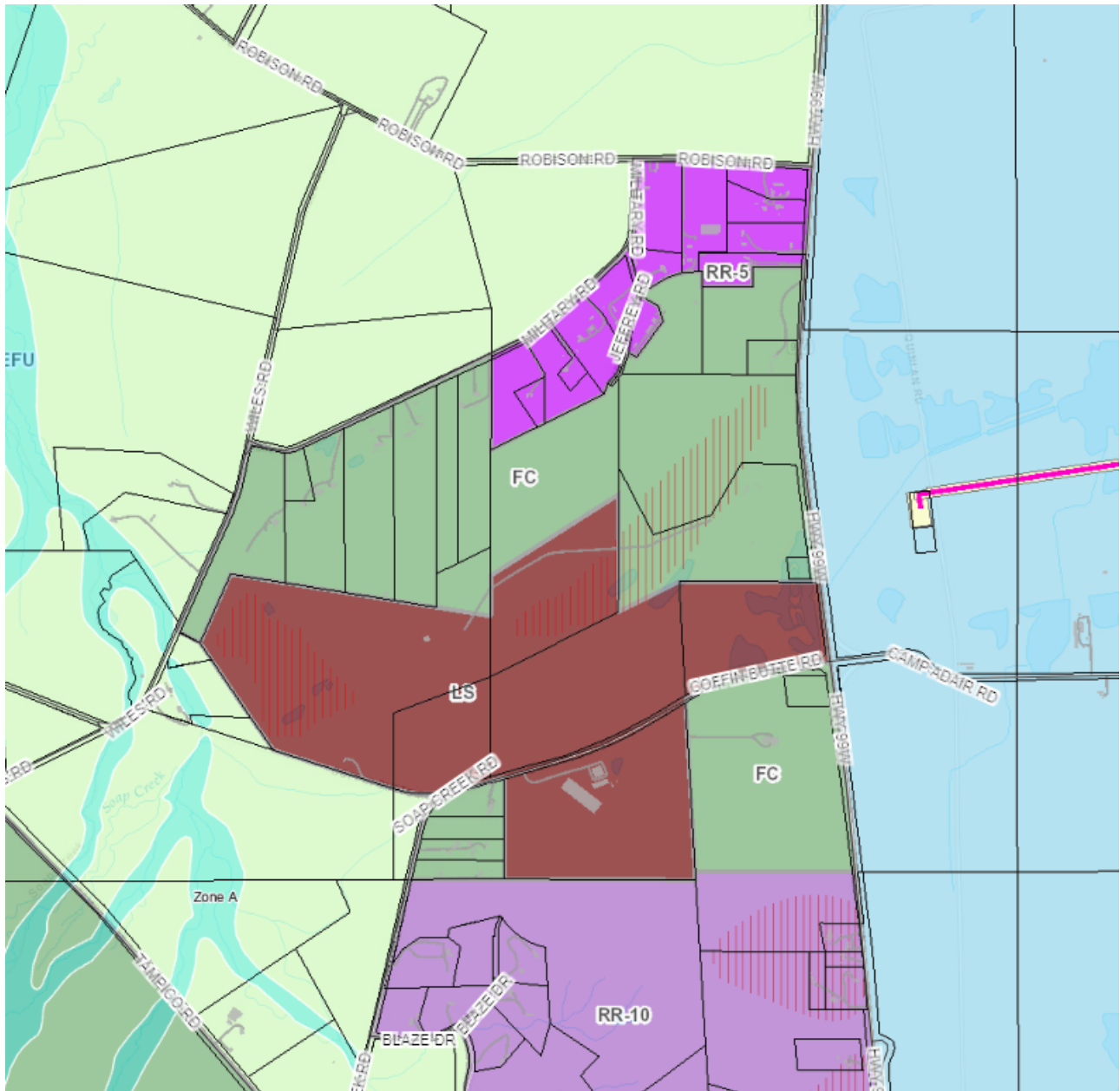
- a. Only certain instances of the permitted space changing – aiming to outline how permitted space changes
- b. Differentiate what has occurred within permitted footprint, and what has occurred in VLI parcels/other property. Two tracks:
  - i. VLI Tax Lots
  - ii. Landfill site, cells and operation on permitted space

b. History

- i. Intake volume plot (intake per calendar year)
  - a. Summarize in a chart
- ii. Available space lot (available airspace over time)
  - a. Cubic yards, volume. Use landfill annual reports for this data?
  - b. EPA reported capacity (capacity increase from 2016-17)
    - i. GHG Reporting page
    - ii. Does it have relationship to quarry operation?
  - c. Some adjustments to permitted airspace, document reasons
    - i. Stability analysis implications – triangle – Republic staff to provide details on changes in capacity
  - d. 2000+ : Most relevant adjustments

c. Current state

- iii. Map showing current landfill area, annotated with tax lots and zoning
  - a. Drawing G03 from the SDP
  - b. Clearly defined boundaries around VLI owned property
  - c. Buffer property? Related to charge?



- iv. Map showing existing and planned landfill cells. Could simply reference the detailed maps and drawings of Appendix A of the 2021 Site Development Plan (SDP), with discussion if needed

- a. [Site Map - 2021 Coffin Butte Landfill SDP Drawing G02](#)

2. SPECIFIC LOCATIONS – redundant?

- a. Table of specific lots (with zoning designations and permitted constraints (if any)) making up the landfill property
  - b. Maps – G02-G03?



Republic to explain, walk through model that they use annually to help determine the site life – perhaps 15-20 minutes at beginning of 11/15 meeting

A. What assumptions and projections is republic making in this modelling?

Proprietary tool from republic. They can discuss key inputs.

How soon can the quarry be fully excavated for maximum airspace?

Post meeting addition:

- Sam requested that Republic Services provide more details around the quarry, including:
  - o When is the quarry going to be fully excavated?
  - o What factors impact the timeline for quarry excavation?

Recording:

- [Recording](#)

Next Steps/Action Items:

- Continue with Proposed report outline – “Landfill Life Projections”
- Open House Questions/Survey

Next Meeting:

- Meeting #3: November 15, 2022 – 10:30am-12:00pm

Relevant Documents located on [Subcommittee Webpage](#):

- [Nietfeld - 11/8/22 - Information for A.1 Subcommittee meeting of 9 Nov. 2022](#)
- [Site Map - 2021 Coffin Butte Landfill SDP Drawing G02](#)

## Meeting #3 Report to BCTT Work Group DRAFT – 11/15/22

### Attendance

<b>Member</b>	<b>Present</b>
<b>Bill Bromann</b>	<b>X</b>
<b>Brian May</b>	<b>X</b>
<b>Chuck Gilbert</b>	<b>X</b>
<b>Ginger Rough Richardson</b>	<b>X</b>
<b>Ian Macnab</b>	<b>X</b>
<b>Ken Eklund</b>	<b>X</b>
<b>Marge Popp</b>	
<b>Mark Yeager</b>	<b>X</b>
<b>Paul Nietfeld</b>	<b>X</b>
<b>Shane Sanderson</b>	
<b>Staff: Daniel Redick</b>	<b>X</b>
<b>Facilitator: Sam Imperati</b>	<b>X</b>
<b>Observers:</b>	
<b>Debbie Palmer</b>	<b>X</b>

### Agenda and Notes:

#### Republic Services Presentation:

- Survey the site in the fall, allowing for better window of good weather for using drones
- Request tonnage reports between surveys
  - o Drives impact on an annual basis for capacity
  - o Look at entire permitted footprint for flyover
    - Waste settles in previous cells, recovering some airspace that may have been occupied previously
    - Overall site density
    - Make determination how much airspace was consumed
      - Tonnage – computer scale system at the landfill, same as reported annually
      - Aerial survey cubic yardage
    - Calculate Density
  - o Next step in process:

- Around May, active landfill planning meeting
  - Republic Services' business sector leaders from the region
  - Follow set spreadsheet of categories to ensure all parties are knowledgeable about landfill developments, revisit existing developments, discussing current, near-term projects, and longer (5-year) projects.
  - Ensure meeting requirements/regulations, as well as environmentally sound
  - Landfill gas infrastructure, stormwater infrastructure, leachate aspects, when next capping projects are proposed
    - Some of these items don't occur each year at the landfill
- Update quantities and costs
  - Capping, closure
  - Factors impacting western Oregon landfills
- Tonnage projections
  - Forecasting next-year's tonnage
  - Based on existing annual tonnage recorded
  - Project what they believe to expect to receive the following year
  - Coordinating with those involved with franchise and collection
  - Projected population growth considered
  - Not including unanticipated occurrences like: wildfires, unforeseen accidents leading to large volumes of waste
- Capacity/site life calculations - Function of density, airspace consumed, and forecasts
  - Primarily driven by density and tonnage
  - Sometimes seeing reductions in tonnage, increasing site life
  - Waste agreement with Waste Management (Riverbend to Coffin Butte)
- Questions:
  - 5 year fill plan – projections revisited annually evaluating:
    - Rate, estimate input
    - Where to fill, ensuring ample footprint for customers and operations
    - Where they are in the hill, impacting gas infrastructure, water flow,
    - Revisited more frequently than annually in some instances
    - How major projects impact fill
  - Business development between landfill and collection operations. What processes coordinate these two, considering landfill capacity and collection agreements?
    - Planning meetings, and meetings surface on as-needed basis
    - Staff engaged in franchise agreements, like Julie Jackson, all parties are pulled together to ensure waste accepted meets regulatory requirements and capacity needs
  - How often are projections/modelling updated?
    - Primarily annually
    - Overall site is annual, quarterly in current fill section
    - Marion County uses annual projections – seeing consistent increases in last 6-year, not very predictable
  - Gain of 8 million cubic yards reported to the EPA?

### 3. LANDFILL LIFE PROJECTIONS

b. Simple projection of landfill capacity (filled + airspace) projected to the end of this year (2022); this will effectively be a projection of what will be in the 2022 Coffin Butte Annual Report “Landfill Capacity” section and can be used to detail and explain underlying assumptions of density, cover allocation and intake rate for subsequent longer-term projections (in 3(b) below), and can serve as a reasonably confident baseline for the longer-term projections

- Current data from 2021
- Should be able to pull 2022 aerial projection
- Forward-looking projection in two sections:
  - First, this 2022 projection
  - Consider factors that go into these projections
  - Is this useful?
  - Is SDP helpful to use as baseline?
    - SDP is a snapshot in time, can change
    - SDP Table 1 volume estimates are “the best we have”
  - Another table in exhibit B – tons/day, projects consumed airspace
  - An engineering document focused on design, with the best information available, providing anticipated tonnage/capacity
  - Overall site life, not by cell
  - Represents benchmark at end of 2021
  - Leverage expertise of SDP relating to capacity, at a finer resolution. Can the SDP table serve as a baseline, adjusted based on the assumptions the group wants to explore?
  - Leaving out the cell-by-cell detail can be problematic
  - Approved permitted airspace – the Table below uses total permitted airspace
    - Impacts to that volume are tonnage and density
    - Assume density, project tonnage – worst case scenario and other scenarios
    - Establish range
    - Variables – Baseline, tonnage cap tonnage level, percentage growth, extra variables shouldn’t be included in the baseline.
    - Annual planning and forecasting – why can’t we use that information as the baseline?
      - 3-year average density
  - Action Items
    - Words/Numbers on Paper for site life

- Stating permitted airspace
- Agree on date – forecast of remaining 2022, forecast 2023
- Quarry:
  - How soon can the quarry be fully excavated for maximum airspace? What factors impact the timeline for quarry excavation?
    - Requires acceleration based on the timeline
    - Republic is actively working with Knife River on this
    - Timeline based on the cell 5 lifespan
    - Can move into a small section of cell 6
    - Reasonable ETA for how soon the quarry can be excavated?
      - Cost/impacts
      - 2-3 hypothetical scenarios
      - Ramifications of those scenarios
      - Need to be in quarry by 2025 (estimate)
      - Ask for as much factual information as possible for next meeting
  - Human factors for scenario development

c. A detailed site life projection to End of Life (EOL). The most obvious model for this is contained in the 2021 SDP produced for the franchisee. Table 1 of this SDP provides a detailed breakdown of projected life by landfill sub cell, and Section 2.2 of this document details the assumptions underlying the numbers in Table 1.

**Table 1**  
**Site Life Projection**

	<b>Plan View Footprint (Acres)</b>	<b>Capacity (CY)</b>	<b>Cumulative Capacity (CY)</b>	<b>Total Life of Cell (Years)</b>	<b>Year Capacity is Reached</b>
Cell 5D/5E	6.1 <sup>1</sup>	4,834,330	4,834,330	4	2025
Cell 6A	19.8	1,482,260	6,316,590	1	2026
Cell 6B	11.3	1,029,430	7,346,020	1	2027
Cell 6C	4.3	1,742,130	9,088,150	2	2029
Cell 6D	11.0	1,859,820	10,947,970	2	2031
Cell 6E	3.9	1,078,420	12,026,390	1	2032
Cell 6F	5.1	1,686,070	13,712,460	2	2034
Cell 6G	2.4	2,015,260	15,727,720	2	2036
Cell 6H	1.1	1,295,450	17,023,170	1	2037
Cell 6I	1.2	1,622,130	18,645,300	2	2039

Notes: 1 – Cell 5 consists of Cells 5A through Cell 5E. Cell 5A through 5C are currently lined and accepting waste. Cell 5D (3.5 acres) was lined during 2021 and is awaiting approval for waste acceptance to begin in 2022. Cell 5E (2.6 acres) is planned to be lined in 2023. The plan view footprint presented in this table represents the areas of Cells 5D and 5E.

- d. Modifications of the projections in the SDP should be presented incorporating various scenarios for higher/lower flow (e.g. wildfire debris, recycling rates, washed population changes, status change to other landfills in the waste flow area, etc.)
- e. Summary table of EOL estimates for all considered scenarios (3(b) and 3(c))

Possible additional informative sections could include

- 3. Q&A – list key questions and answers derived by the subcommittee
- 4. Open Questions
- 5. Appendices
- f. Intake volume table (could be sourced from DEQ or franchisee records)
- g. Used/Available space table (franchisee records are probably best here)
- h. Life projection details (notes on assumptions, calculations, etc.)

Recording:

- Recording

## Next Steps/Action Items:

- Landfill Site Life - Numbers
  - Stating permitted airspace
  - Agree on date – forecast of remaining 2022, forecast 2023
- Human factors for scenario development – Relating to site life
- How soon can the quarry be fully excavated for maximum airspace? What factors impact the timeline for quarry excavation?
  - Reasonable ETA for how soon the quarry can be excavated?
    - Cost/impacts
    - 2-3 hypothetical scenarios
    - Ramifications of those scenarios
    - As much factual information as possible for next meeting

## Next Meeting:

- Meeting #4: November 29, 2022 – 10:30am-12:00pm
- Meeting #5: December 6, 2022 – 10:30am-12:00pm
- Meeting #6: December 13, 2022 – 10:30am-12:00pm

## Relevant Documents located on [Subcommittee Webpage](#):

- [Nietfeld - 11/8/22 - Information for A.1 Subcommittee meeting of 9 Nov. 2022](#);
- [Report to Work Group DRAFT](#);
- [MacNab - 11/11/22 - Coffin Butte Landfill Site Map and Cell Dates](#);
- [Site Map - 2021 Coffin Butte Landfill SDP Drawing G03](#);
- [Coffin Butte Landfill Annual Report Data, Airspace & Site Life - 2014-2021](#)

## Meeting #4 Report to BCTT Work Group DRAFT – 11/29/22

### Attendance

<b>Member</b>	<b>Present</b>
<b>Bill Bromann</b>	<b>X</b>
<b>Brian May</b>	<b>X</b>
<b>Chuck Gilbert</b>	<b>X</b>
<b>Ginger Rough Richardson</b>	<b>X</b>
<b>Ian Macnab</b>	<b>X</b>
<b>Ken Eklund</b>	<b>X</b>
<b>Mark Yeager</b>	<b>X</b>
<b>Paul Nietfeld</b>	<b>X</b>
<b>Shane Sanderson</b>	<b>X</b>
<b>Staff: Daniel Redick</b>	<b>X</b>
<b>Facilitator: Sam Imperati</b>	<b>X</b>
<b>Observers:</b>	
<b>Debbie Palmer</b>	<b>X</b>

### Agenda and Notes:

- Review Report Outline from previous two meetings
  - This is not intended to be the body of the report, just an appendix
- Landfill Site Life - Numbers
  - Stating permitted airspace
  - Agree on date – forecast of remaining 2022, forecast 2023
  - Meeting in the middle of scenarios and background/assumptions
  - Paul and Ginger will start to draft report, copying
- Human factors for scenario development – Relating to site life: Presentation from Ken Eklund
  - Human factors determine inflow of material to the landfill
    - Business relationships, signed contracts
    - Climate change and surrounding social/political/legal structure
      - Youth activist lawsuits about climate change



- Legislation – international to local
  - Methane
  - Methane emissions reduction program
    - Rewards and penalties
      - Funds
      - Fee schedule for regulation
    - Landfills included
- Activism
  - Direct action
  - Removal of high methane elements of landfill
- Changes to landfill infrastructure, disruptions from climate change
  - Wildfires
  - Floods
  - Population migration
- Unforeseen territory
  - Cannot predict, but can estimate risk assessment
- Direct measurement for emissions monitoring can help compare landfill emissions to alternatives, as opposed to modelling tools
- Gas at Roosevelt is owned by Klickitat PUD
- EPA model uses a calculation for emissions
- Republic uses aggressive approach to capture that gas
- How can two landfill gas modelling efforts come up with two vastly different numbers for emissions? How do these compare to reality? It might be time to measure the gas to find out what is actually happening.
- Fines on Inflation Reduction Act are related to Oil and Gas Industry, and currently do not relate to the solid waste industry (landfills)
- SPS and NESHEP regulates emissions/pollution
- Oregon requires emissions monitoring
- EPA is looking for methane emissions, including fugitive emissions
- How soon can the quarry be fully excavated for maximum airspace? What factors impact the timeline for quarry excavation?
  - Planning to begin excavation next year, working with Knife River. Republic will not be sharing agreement details, or what it costs to excavate.
  - How soon? Still to be determined. Actively communicating with Knife River to plan out quarry planning details, but it is not ready to share at this time.
  - Looking at specific window to move material to achieve necessary airspace to support remaining life of the landfill as specified in SDP

- How much volume is needed to be extracted from the quarry?
- Remaining timeline prior to requiring Quarry space? Possible cell development schedule is construction in 2025, to be ready by 2026. More details to be shared as it is available.
- Reasonable ETA for how soon the quarry can be excavated?
  - Cost/impacts
  - 2-3 hypothetical scenarios
  - Ramifications of those scenarios
  - As much factual information as possible for next meeting

#### Recording:

- [Recording](#)

#### Next Steps/Action Items:

- Review progress to date
- Paul and Ginger present report progress, guide discussion to missing items
- Quarry questions/updates:
  - How soon can the quarry be fully excavated for maximum airspace? What factors impact the timeline for quarry excavation?
    - Reasonable ETA for how soon the quarry can be excavated?
    - Cost/impacts
    - 2-3 hypothetical scenarios
    - Ramifications of those scenarios
    - As much factual information as possible for next meeting

#### Next Meeting:

- Meeting #5: December 6, 2022 – 10:30am-12:00pm
- Meeting #6: December 13, 2022 – 10:30am-12:00pm

Relevant Documents located on [Subcommittee Webpage](#):

- [Nietfeld - 11/8/22 - Information for A.1 Subcommittee meeting of 9 Nov. 2022 ;](#)
- [Report to Work Group DRAFT;](#)
- [MacNab - 11/11/22 - Coffin Butte Landfill Site Map and Cell Dates;](#)
- [Site Map - 2021 Coffin Butte Landfill SDP Drawing G03;](#)
- [Coffin Butte Landfill Annual Report Data, Airspace & Site Life - 2014-2021](#)
- [MacNab - 11/22/22 - Coffin Butte Landfill Capacity](#)

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