

Memorandum

To: MPCA Closed Landfill Program Staff
From: Dan Fetter, Eric Lund, Bryan Pitterle, and Seth Hueckman (Barr)
Subject: Freeway Landfill and Dump – Design Overview as of March 2020
Date: April 2020
Project: 23191372.05

This memorandum summarizes the status of the closure design options that are under consideration for the Freeway Landfill and Freeway Dump, located in Burnsville, Minnesota. Site background, history, and additional project details are presented in the Focused Remedial Investigation Report (Barr, 2019a) and Focused Feasibility Study (FFS, Barr, 2019b). The objectives of this memorandum are to (1) briefly summarize advancement of the design development since the publication of the October 2019 FFS, (2) highlight the current key assumptions and uncertainties, and (3) describe the key tasks to be completed.

1.0 Background

There are two options that are under consideration for closing the unlined Freeway Landfill and Freeway Dump sites. Option 1 involves excavating the waste from both properties and consolidating it in a new, modern landfill that will be constructed within the existing Freeway Landfill property. There are three variations of this option, each offering a different blend of landfill height and area that is preserved for potential future uses. Option 2 involves excavating the waste from both properties and transporting it off-site for disposal in a permitted solid waste disposal facility.

The FFS options were developed through a multi-year process of working with stakeholders, including the cities of Burnsville and Bloomington, Dakota County, Minnesota Pollution Control Agency (MPCA), United States Environmental Protection Agency (EPA), and the property owner, to come up with options that would be environmentally protective and address a range of stakeholder concerns and interests. The options were formally evaluated in the FFS which concluded that either option would meet EPA threshold criteria for protection of human health and the environment and compliance with applicable and/or relevant and appropriate requirements. The MPCA made the decision to retain both options, including all three variations of Option 1, for further design development.

The anticipated path forward for selecting an option is detailed in Section 3.0 of this memo and involves selecting one variation of Option 1 this Spring, finalizing the designs and obtaining contractor bids for the selected variation of Option 1 as well as Option 2, and then providing the bid information and funding requests to the state legislature to finalize a determination of which option will be implemented.

2.0 Design Summaries

The following subsections provide an overview of the design status, summarize the design developments and changes that have occurred since publication of the FFS in October 2019, and document the key assumptions related to the project design and implementation (e.g., estimated costs, construction duration, etc).

2.1 Status

The MPCA intends to solicit input from the public and stakeholders in order to finalize a determination of which variation of Option 1 will be retained for final design and inclusion in the bidding process. In support of public engagement, the status of the design development as of March 2020 is being summarized for public review in April 2020. Updated graphics, quantities, cost estimates, and schedules have been developed for the options. General layouts of each variation are shown on the attached figures.

The design progress has been affected by several factors outside of Barr control, including property access restrictions and stakeholder input on stormwater management and floodway/floodplain requirements. Property access restrictions have prevented completion of an updated topographic and boundary survey and delayed the on-site technical evaluation panel (TEP) meeting to advance the understanding of wetland delineations and mitigation requirements. These efforts are now anticipated to occur later in spring 2020.

2.2 Refinements Since the FFS

At the time that the FFS was published, the options were at an approximately 30% design level. As the project moves towards a decision for narrowing down to a selected variation for Option 1 this spring, the designs are approximately 50% complete. This section highlights some of the key design refinements that occurred since publication of the FFS in October 2019. Those changes have occurred as a result of general design development as well as incorporating input from various stakeholders. The key changes to the design that have occurred as a result of general design development and client input include:

- The northern limit of liner has been shifted to the south and the base liner grades have been raised in areas based on updated understanding of groundwater elevations
- Base liner grades were adjusted to factor in the presence of peat and inconsistent bedrock surfaces
- The site layout was modified in order to avoid construction of permanent infrastructure on several parcels
- Consideration of a leachate recirculation system has been added for Option 1 variations
- The preliminary schedule estimates have been updated to longer durations to reflect a design understanding that earthwork within the constrained site area will be the primary limiting factor on project execution, rather than earlier assumptions related to seasonal liner/cover installation constraints as the limiting factor.

- The method for calculating contingency for the dig-and-haul option was modified to a smaller range to only include the on-site construction factors, as the uncertainties around fees and taxes are appropriately captured by the ranges associated with the “low” and “high” estimates
- Unit rates and quantities included in the cost estimates were further evaluated and refined
- Preliminary grading concepts for on-site stormwater basins have been updated and are the subject of on-going regulatory input

Meetings were held with stakeholders, including the City of Burnsville, Dakota County, Minnesota Department of Transportation (Mn/DOT), and wetland regulatory agencies (Minnesota Department of Natural Resources (DNR), Lower Minnesota River Watershed District, Army Corps of Engineers, and the City of Burnsville). The key changes to the design that have occurred from incorporating stakeholder input include:

- A larger earthen berm surrounding the existing Freeway Transfer Station has been added to address visual screening requirements, based on the Planned Unit Development (PUD) Agreement that the City of Burnsville granted for the original transfer station construction
- Several of the landfill layouts were modified along the southern and eastern extent to allow space for a potential future east-west roadway and bike path corridor as well as a future interchange, in order to accommodate the City of Burnsville 2040 Comprehensive Plan to the extent possible
- Based on input from Mn/DOT and the City of Burnsville, on-road trucks traveling on I-35W will be used to transport waste from Freeway Dump to Freeway Landfill, whereas the FFS assumed that off-road trucks using an upgraded bike path would be used for that purpose
- Wetland mitigation requirements continue to be evaluated with regulatory authorities, but it is assumed that potential mitigation will be accomplished through purchase of credits at other locations
- The base liner system was upgraded from a standard MSW liner to an enhanced liner system

The following table summarizes the key characteristics of the current designs. Detailed cost estimates are attached to this memo.

Option & Variation	Landfill Liner Area	Landfill Elevation ¹	Potentially Available Area at Landfill ²	Estimated Cost (millions) ³	Construction Duration
1A – Smallest Footprint (Tallest Height)	60 acres	850 feet	22.1 acres	\$102	5 – 7 years
1B – Largest Footprint (Min. Height)	80 acres	790 feet	6.4 acres	\$121	6 – 8 years
1C – Moderate Footprint, Moderate Height (Hybrid)	76 acres	795 feet	9.4 acres	\$117	6 – 8 years
2 – Dig & Haul	N/A	N/A	100+ acres	\$165 - \$538	3 – 5 years

1 – Existing top of landfill elevation is approximately 750 feet

2 – Potentially available area at the Landfill is considered to be area that is outside of the following features: the future landfill and associated infrastructure, the Minnesota River floodway, the Freeway Transfer Station, the Quarry parcel, the parcel containing the depression north of the landfill, future potential City corridors, and existing wetlands that will remain immediately after the project. Potentially available area at the Dump may include the entire parcel.

3 – Option 2C includes a range of costs because of the current uncertainty in waste disposal costs at an existing landfill. For that reason, a “low cost” and a “high cost” estimate were developed. Among other favorable assumptions, the “low cost” option assumes that City, County, and State fees and taxes would be waived, whereas the “high cost” option has more conservative assumptions. Additional detail regarding the two estimates are included on the detailed cost table.

2.3 Key Assumptions

As the design process advances, there are several key assumptions that have significant impacts on the design, costs, and construction durations. As the project advances, these current assumptions will be refined based on permitting agency engagement, stakeholder input, and design progression. Current key assumptions include:

- The waste is primarily municipal solid waste. A waste screening procedure consistent with what has been done on previous CLP projects will be implemented. A contingency has been included to account for a minimal amount of waste that will be identified for special handling (e.g., hazardous waste).
- Waste can be excavated and backfilled with minimal groundwater dewatering
- There will be no property owner limitations to site access or work sequences during construction
- Temporary stockpiling of clean cover/imported soil materials and contractor staging area within the Quarry Properties, LLC parcel and within the regulatory floodway will be permitted.
- Existing cover soils are suitable for reuse as liner subgrade/embankment fill and final cover materials
- Not all Dakota County solid waste requirements will be met – specifically, daily cover and complete visual screening will not be required
- Delineated wetlands that have formed on top of waste will not be considered jurisdictional and compensatory replacement will not be required

Additional assumptions are included on the cost estimate detail table attached to this memo.

3.0 Next Steps

Based on public and stakeholder input, the MPCA intends to select one variation of Option 1 later this spring. The public input process involves updating the site landing page on the MPCA website, initiating a public comment process, and hosting a public meeting, which may need to be completed using remote/video techniques to address concerns with the on-going COVID-19 pandemic crises. This memo is available as a resource for understanding of the design status as part of the public process.

The selected variation for Option 1 will be carried forward with Option 2 in the design and permitting process. The MPCA will finalize EPA's concurrence with establishing a record of decision for the site that include the two options. When the design and permitting are finalized, the MPCA will obtain bids for the selected Option 1 variation and Option 2, and submit the bids with a request for funding to the state legislature, who will decide which option to approve and fund.

4.0 References

Barr, 2019a. Focused Remedial Investigation Report, Freeway Landfill and Freeway Dump. Prepared for Minnesota Pollution Control Agency. October 2019.

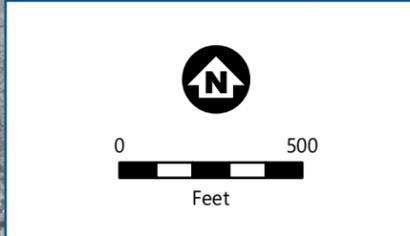
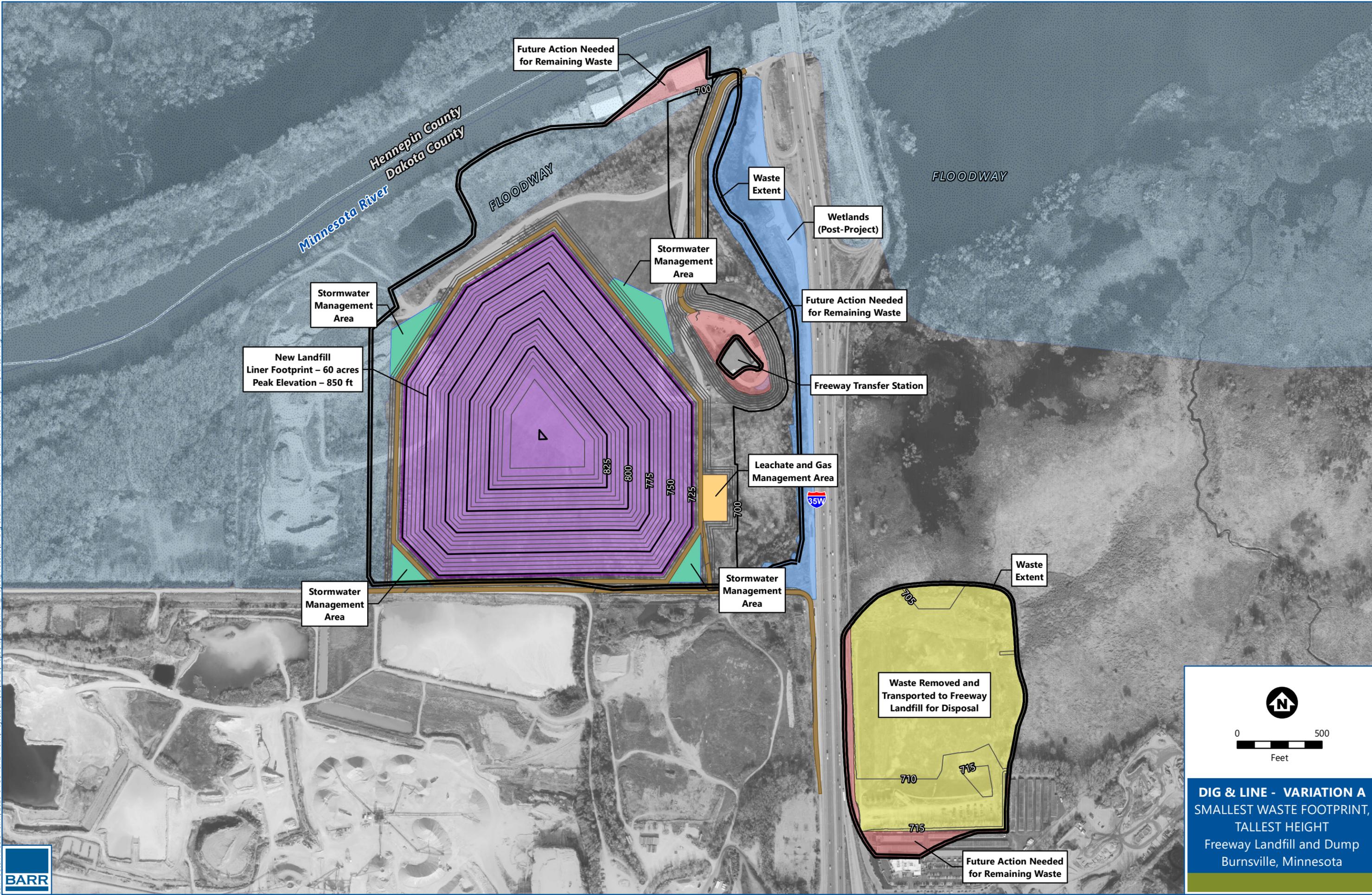
Barr, 2019a. Focused Feasibility Study Report, Freeway Landfill and Freeway Dump. Prepared for Minnesota Pollution Control Agency. October 2019.

Attachments

Plan View Figures

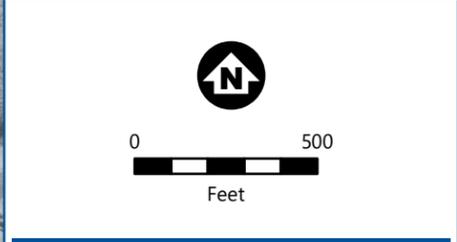
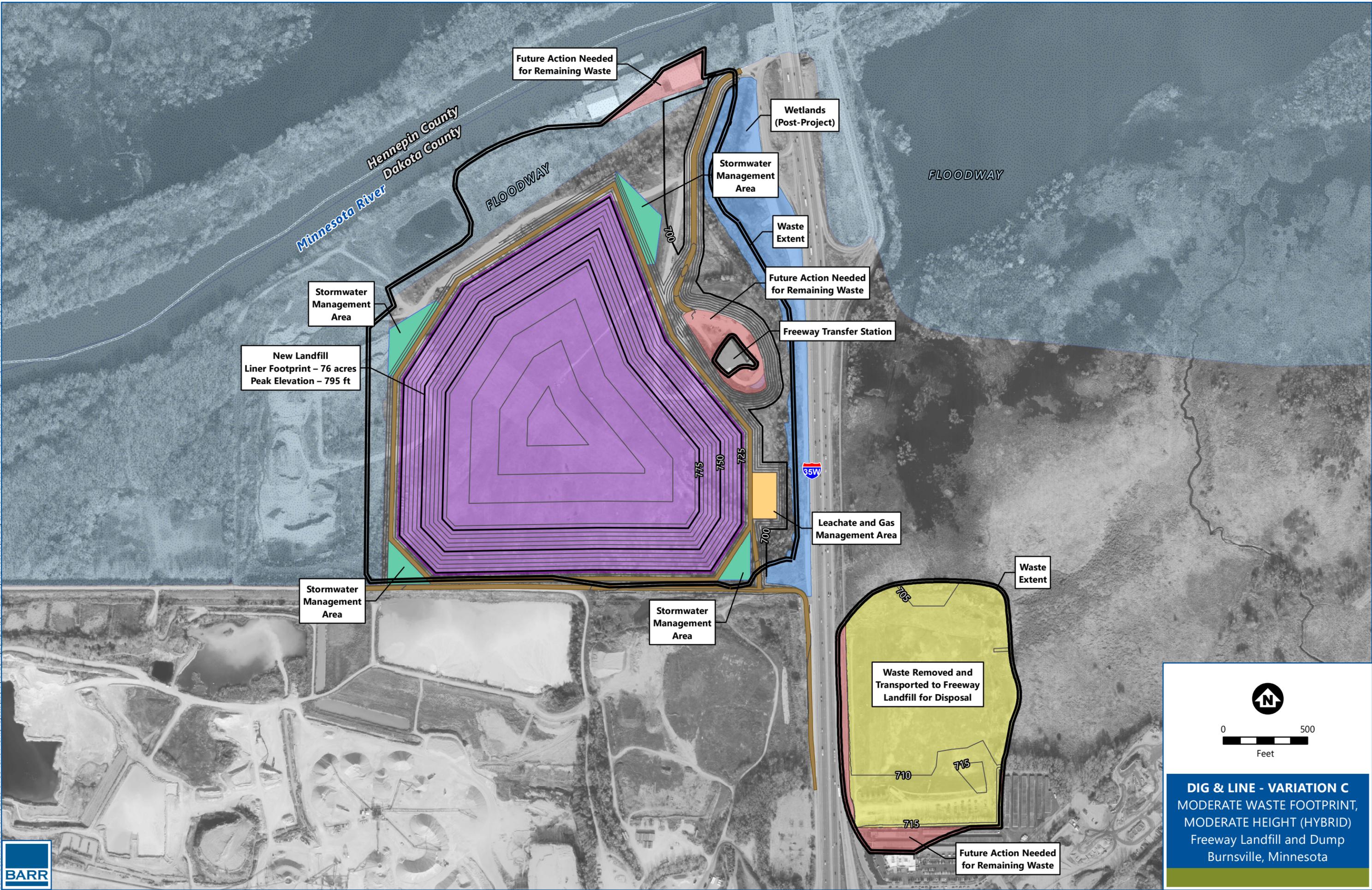
Construction Cost Estimate

Barr Footer: ArcGIS 10.7.1, 2020-04-30 15:42 File: I:\Projects\23\191372\Maps\Reports\MPCA_Project_Website\04 Dig & Line - Variation A - Smallest Waste Footprint, Tallest Height.mxd User: rcs2

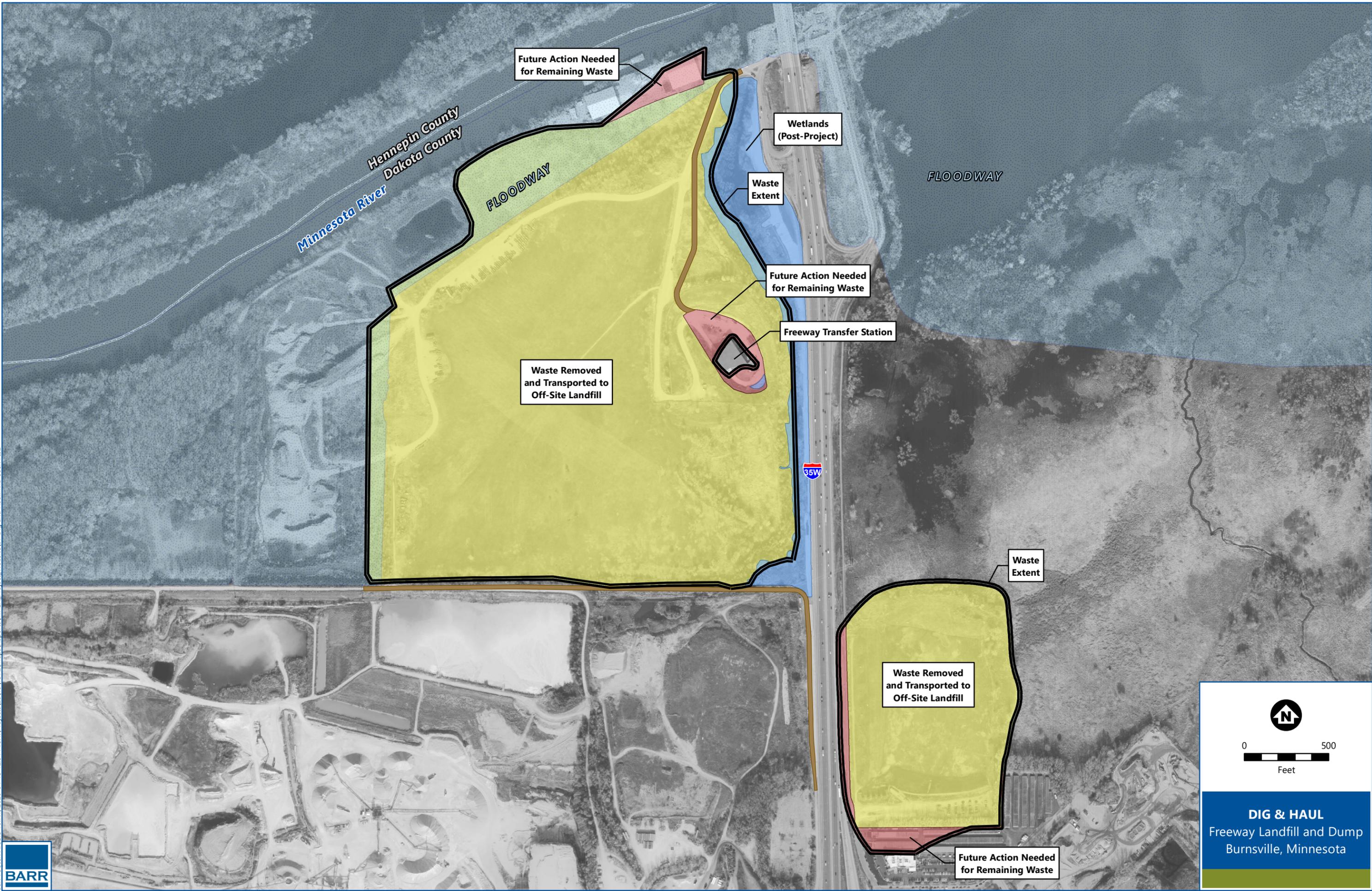


DIG & LINE - VARIATION A
 SMALLEST WASTE FOOTPRINT,
 TALLEST HEIGHT
 Freeway Landfill and Dump
 Burnsville, Minnesota

Barr Footer: ArcGIS 10.7.1, 2020-04-30 15:40 File: I:\Projects\23191372\Maps\Reports\MPCA Project Website\06 Dig & Line - Variation C - Moderate Waste Footprint.Moderate Height (Hybrid).mxd User: rcs2



DIG & LINE - VARIATION C
 MODERATE WASTE FOOTPRINT,
 MODERATE HEIGHT (HYBRID)
 Freeway Landfill and Dump
 Burnsville, Minnesota



0 500
Feet

DIG & HAUL
Freeway Landfill and Dump
Burnsville, Minnesota



Freeway Landfill - Construction Cost Estimate

PROJECT: Freeway Landfill
 LOCATION: Burnsville, Minnesota
 PROJECT #: 23/19-1372.00

SHEET	1	OF	1
BY:	SWH/CEG	DATE:	3/18/2020
CHECKED BY:	TJR/DJF/ECL	DATE:	3/18/2020
APPROVED BY:		DATE:	
ISSUED:	DRAFT	DATE:	3/19/2020
ISSUED:	FINAL	DATE:	4/30/2020

Construction Cost Estimate - March 2020 Alternative Cost Comparison

Pay Item No.	Pay Item	Option 1A Smallest Footprint (Tallest Height)	Option 1B Largest Footprint (Min. Height)	Option 1C Mod. Footprint, Mod. Height (Hybrid)	Option 2 Dig & Haul Low	Option 2 Dig & Haul High
1	Mobilization & Demobilization	\$ 3,510,000	\$ 4,140,000	\$ 4,000,000	\$ 3,000,000	\$ 3,000,000
2	Erosion Protection	\$ 1,250,000	\$ 1,500,000	\$ 1,500,000	\$ 750,000	\$ 750,000
3	CQA Surveying/Soil Testing	\$ 620,000	\$ 800,000	\$ 760,000	\$ 50,000	\$ 50,000
4	Mass Excavation, Embankment Construction and Perimeter Grading	\$ 9,720,000	\$ 12,640,000	\$ 11,640,000	\$ 6,390,000	\$ 6,390,000
5	Landfill Liner	\$ 13,250,000	\$ 17,100,000	\$ 16,250,000	\$ -	\$ -
6	Leachate Collection, Storage, and Transfer	\$ 4,130,000	\$ 4,830,000	\$ 4,630,000	\$ -	\$ -
7	Waste Excavation and Onsite Transport	\$ 19,240,000	\$ 20,770,000	\$ 20,770,000	\$ -	\$ -
8	Waste Transfer Off Site	\$ 70,000	\$ 70,000	\$ 70,000	\$ 21,880,000	\$ 109,330,000
9	Landfill Tipping Fees	\$ -	\$ -	\$ -	\$ 118,120,000	\$ 236,240,000
10	City Host Fees / Taxes	\$ -	\$ -	\$ -	\$ -	\$ 25,570,000
11	County Fees	\$ -	\$ -	\$ -	\$ -	\$ 62,070,000
12	State Fees (Metro Landfill Fee)	\$ -	\$ -	\$ -	\$ -	\$ 39,330,000
13	State Taxes (17%)	\$ -	\$ -	\$ -	\$ -	\$ 40,160,000
14	Landfill Cap	\$ 5,540,000	\$ 7,150,000	\$ 6,790,000	\$ -	\$ -
15	Gas Extraction	\$ 2,980,000	\$ 3,280,000	\$ 3,210,000	\$ -	\$ -
16	Stormwater Management	\$ 1,400,000	\$ 1,610,000	\$ 1,430,000	\$ -	\$ -
17	Water Management	\$ 2,740,000	\$ 2,950,000	\$ 2,950,000	\$ 880,000	\$ 880,000
18	Road Surfacing	\$ 800,000	\$ 840,000	\$ 830,000	\$ 560,000	\$ 560,000
19	Turf Establishment	\$ 1,030,000	\$ 1,160,000	\$ 1,130,000	\$ 580,000	\$ 580,000
20	Miscellaneous Items (Elect., Traffic Control, Fence, Transfer Station Screening Berm)	\$ 4,950,000	\$ 5,000,000	\$ 4,990,000	\$ 3,760,000	\$ 3,760,000
21	Administrative	\$ 2,500,000	\$ 3,000,000	\$ 3,000,000	\$ 1,500,000	\$ 1,500,000
22	Engineering, Permitting, CQA	\$ 8,850,000	\$ 10,420,000	\$ 10,070,000	\$ 3,300,000	\$ 3,300,000
23	30 Year O&M (NPV, 5% interest rate)	\$ 3,070,000	\$ 4,610,000	\$ 3,840,000	\$ -	\$ -
	Estimated Sub-Total Cost:	\$ 85,650,000	\$ 101,870,000	\$ 97,860,000	\$ 160,770,000	\$ 533,470,000
	20% Contingency:	\$ 16,500,000	\$ 19,440,000	\$ 18,790,000	\$ 4,150,000	\$ 4,150,000
	Estimated Total Cost (-15%):	\$ 87,000,000	\$ 103,000,000	\$ 99,000,000	\$ 140,000,000	\$ 457,000,000
	Estimated Total Cost:	\$ 102,000,000	\$ 121,000,000	\$ 117,000,000	\$ 165,000,000	\$ 538,000,000
	Estimated Total Cost (+20%):	\$ 123,000,000	\$ 146,000,000	\$ 140,000,000	\$ 198,000,000	\$ 645,000,000

Notes:

- 1) Cost estimate represents American Association of Cost Engineering (AACE) Class 2 classification (-15% to +20%) with a project definition of less than 50%.
- 2) Cost estimate represents 2020 dollars and does not include unit price escalation or fuel surcharge for multi-year project.
- 3) Basis of unit costs include RS Means, bid results from similar local projects, high-level local contractor input, and professional judgement.

Assumptions:

- 1) Mobilization & Demobilization cost estimate is 5% of construction costs for dig-and-line alternatives (excluding line items 9 through 13).
- 2) Engineering and Permitting cost estimate is 4% of construction costs for dig-and-line alternatives (excluding line items 9 through 13).
- 3) CQA cost estimate is 8% of construction costs for dig-and-line alternatives (excluding line items 9 through 13).
- 4) Contingency is 20% of estimated sub-total costs (excluding line items 8 through 13 and 23).
- 5) No tipping fees required for the dig-and-line options.
- 6) City, County, and State agree to waive all fees and taxes in Alt 3-Low dig-and-haul alternative.
- 7) Landfill liner costs include enhanced liner option.
- 8) Waste volume/weight ratio is 1:1 CY to Ton.
- 9) Waste volume excavation and placement is 1 Bank CY:1 Compacted CY.
- 10) No requirement for extensive special waste sorting procedures for ash, asbestos, and other non-MSW materials.
- 11) Nominal amount of hazardous waste will be managed and disposed of offsite.
- 12) No major flood event will occur during critical excavation sequences.
- 13) Property owner will not limit access in and out of site throughout construction.
- 14) No significant public road access constraints will occur around the site, e.g., Cliff Road exit closed for construction.
- 15) Visual site screening berm of Transfer Station is required.
- 16) Visual screening of the landfill is not required.
- 17) Waste can be excavated and backfilled with minimal groundwater dewatering effort.
- 18) Leachate and waste-contact water can be discharged through a direct connect to the MCES sewer system.
- 19) Daily cover of waste is not required.
- 20) Between 20%-33% of excavated waste (depending on alternative) is double-handled to facilitate dig-and-line construction.
- 21) Waste excavation and cover soil stripping activities can be performed year-round.
- 22) Import of topsoil materials is not required.
- 23) Temporary stockpiling of clean cover soil material in Quarry is allowed.
- 24) Temporary stockpiling of clean cover soil material within Floodway boundary is allowed.
- 25) Only minimal amounts of peat over-excavation and backfill will be required to construct liner subgrades.
- 26) Only minimal amounts of bedrock removal and backfill will be required to construct liner subgrades.