

LANDFILL DEVELOPMENT PLAN
GUSTAVUS DISPOSAL AND RECYCLING CENTER

NOVEMBER 2021

PREPARED FOR

CITY OF GUSTAVUS

GUSTAVUS, ALASKA 99826



PREPARED BY

VISTA GEOENVIRONMENTAL
SERVICES

LAKE OSWEGO, OREGON 97034

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1 INTRODUCTION

Vista GeoEnvironmental Services (VISTA) has prepared this Landfill Development Plan (LDP) to guide the City of Gustavus (City) with future progressive development and closure of the municipal solid waste landfill (MSWLF) disposal area (Landfill) at the Gustavus Disposal and Recycling Center (DRC). The City approved the work by Purchase Order 21-323, dated June 2, 2021.

2 BACKGROUND

In conjunction with VISTA, Bell & Associates (BELL) prepared a report of waste management practices in Gustavus in 2015¹. This report represents the source for much of the background information presented below.

2.1 SITE SETTING

DRC is owned by and located in the City of Gustavus, Alaska, although the State of Alaska previously owned the land. DRC is located at a longitude W135.729 degrees and a latitude N58.404 degrees and is designated as Lot 6 in Section 18, Township 40 South, Range 59 East, Copper River Meridian.

DRC has an area of about 11.9 acres, which is trapezoidal (**Drawing C1**,² **Appendix A**). The property is bordered as follows:

- On the north, by Harbor Road,³ a City road that serves as public access to the small boat harbor and launch ramps into the south-flowing Salmon River, approximately 100 yards west of DRC.
- On the east, by State Dock Road, which serves low-density private residences, and the Alaska Marine Highway Ferry Dock at the road's end.
- On the south, by undeveloped land and a dirt road from State Dock Road to the Salmon River.
- On the west, by a public access easement, boat launches, uninhabited beach lands, and the Salmon River.

The DRC property is relatively flat, with typical ground surface elevations varying from 23 to 25 feet above mean sea level (amsl) and generally sloping from the north to south and west. About 4-feet deep, a ditch that provides stormwater discharge from the east side of State Dock Road to the Salmon River is in the south part of the property.

¹ Bell & Associates in Conjunction with Vista Consultants, August 2015. "[Analysis of Waste Management Practices in Gustavus, Alaska](#)".

² Overall Site Plan prepared as part of a topographic survey performed by VISTA in 2017.

³ Harbor Road, which has a 60 foot right of way easement, is located within DRC property limits. In addition, a 60-foot wide public easement, which connects to Harbor Road, is located within the west side of the property.

Shallow subsurface conditions consist of about an eight-foot thick stratum of well-sorted permeable river sand overlying less porous sandy marine silt, which impedes downward groundwater percolation. Consequently, due to the relatively high permeability of the upper sand stratum, standing stormwater is rarely present at DRC, but groundwater perches in the sand above the silt at shallow depth due to the relatively lower permeability of the silt stratum.

Five groundwater monitoring wells (MW-1 and MW-3 to MW-6) are present at DRC⁴ (**Drawing C1, Appendix A**). Two of these wells, MW1 & MW5, were installed by Alaska Village Safe Water as part of its 1991 Gustavus Solid Waste Engineering Study. The other wells were installed by local personnel in 1993. Four of the monitoring wells (down-gradient wells MW-1 and MW-6 and up-gradient wells MW-3 and MW-4) are used in DRC's environmental monitoring program⁵. Groundwater flows to the south and west, toward the Salmon River. The water table has been recorded within 4 to 5 feet of the ground surface during heavy rains; however, the normal groundwater surface is nearer the base of the sand layer. The Alaska Department of Environmental Conservation designates groundwater as part of an aquifer of resource value.

2.2 PERMITTING AND DEVELOPMENT

The Alaska Department of Environmental Conservation (ADEC) DRC has regulated the Landfill as a Class III landfill⁶ since 1994⁷ under Alaska Statute (AS) 46.03, Title 18, Chapter 15 of the Alaska Administrative Code (18 AAC 15), and the Solid Waste Management Regulations (18 AAC 60) (although waste operations predate ADEC's initial permit and may date back to World War II⁸). The Landfill's current Solid Waste Permit #SW3A017-15 (SWP) was issued on September 1, 2020, and will expire on September 1, 2025.⁹ However, as implied by the facility name, landfilling is just one of several solid waste-related functions performed at DRC.

⁴ A sixth well MW-2, installed with MW-3, MW-4, and MW-6 in 1993, has been decommissioned.

⁵ These monitoring wells were constructed by pushing slotted pipes directly into the ground; they were not constructed inside a boring with screens and filter media in accordance with modern monitoring well standards. Consequently, this may affect the quality of the groundwater samples (particularly unfiltered samples) collected for laboratory analysis, and the value of the data for detecting releases from the facility.

⁶ According to 18 AAC 60.300 (Purpose, scope, and applicability; classes of MSWLF) a Class III MSWLF *"is a landfill that is not connected by road to a Class I MSWLF or, if connected by road, is located more than 50 miles from a Class I MSWLF, and that accepts, for disposal, (A) ash from incinerated municipal waste in quantities less than one ton daily on an annual average, which ash must be free of food scraps that might attract animals; or (B) less than five tons daily of municipal solid waste, based on an annual average, and is not located in a place (i) where public access is restricted, including restrictions on the right to move to the place and reside there; or (ii) that is provided by an employer and that is populated totally by persons who are required to reside there as a condition of employment and who do not consider the place to be their permanent residence."*

⁷ This was before the incorporation of the City of Gustavus in 2004. Before incorporation the DRC, named the Gustavus Landfill, was operated as a working committee of the Gustavus Community Association.

⁸ Conversation with Mr. Taylor and Mr. Berry on April 21, 2015.

⁹ The SWP authorizes the Landfill to accept up to 5 tons per day of MSW, ash, and C&D debris.

Accordingly, development at DRC includes:

- The current operational landfill disposal area (Landfill), which covers approximately 0.8 acres (about 215-feet north-south and 165-feet east-west) and is fenced (for security and to prevent animal access).
- An administrative office building.
- A materials sorting, processing, and recycling building (Recycling Building).
- A compost structure.
- Various small structures to protect equipment and materials from the weather.
- A burn box near the DRC entrance.
- Buffers and other undeveloped land.

Development of the current Landfill footprint included the incremental excavation of small areas (approximately 40 feet by 20 feet) of the native sandy soils to a depth of about 3 to 4 feet below the existing grade before placing waste. No additional site preparation was performed before beginning waste placement. This approach was consistent with the regulations in effect in 1994, which required a minimum of two feet of separation between the base of an unlined landfill and groundwater. Additionally, direct disposal without a liner system and leachate collection system is consistent with current 18 AAC 60.330 (Design standards), which exempts Class III MSWLFs from design standards unless ADEC "(1) has evidence that leachate from the site is polluting an aquifer of resource value; or (2) finds that a liner and leachate collection system of appropriate design is necessary to protect public health or the environment." ADEC has not made such a finding at DRC; therefore, DRC is not subject to the liner and leachate design standards that apply to Class I and Class II MSWLFs.

2.3 HISTORICAL WASTE PRACTICES

Waste operations at DRC predate ADEC's first solid waste permit in 1994. At this time, waste incineration was the primary method of achieving volume reduction, with below-grade disposal of ash and residuals and some direct below-grade disposal of intact wastes. There are no formal records of where burning and the associated waste disposal was performed, and no systematic exploration has been performed to identify the locations and limits of any such areas; however, the following are suspected or known:

- The Recycling Building is likely constructed over waste.
- Excavation for a water line on the west side of the Recycling Building encountered waste, including batteries.
- Historical burning, and ash burial, are suspected near the DRC entrance.
- Waste may be present under and to the north of Harbor Road.

None of these potential disposal areas have had a direct impact on current disposal operations. However, wastes could be encountered in future disposal areas and areas planned for operational facilities.

2.4 CURRENT WASTE PRACTICES

The primary operational goals of the DRC are to:

- Maximize the reuse and recycling potential of the waste.
- Recover as much value as possible from the waste received.
- Minimize the amount of material that must be landfilled.

DRC has achieved a diversion rate of approximately 70 percent.¹⁰ Only materials that cannot be recycled or repurposed are set aside for disposal.

The materials disposed of in the Landfill primarily include:

- Refuse baled¹¹ in the Recycling Building with a GPI Model M30HD baler, manufactured in about 1994. This baler is the principal machine used for baling disposed waste (it is also used to bale some recyclables). The device produces bales, which measure 30 inches by 24 inches by 30 inches and weigh approximately 250 to 350 pounds (i.e., a baled density of 28 to 36 pounds per cubic foot [pcf]). The refuse bales are placed in the Landfill as tightly as practicable.
- Other not baled wastes, such as diapers and materials containing rotten food waste, are placed in the gaps between bales.
- Construction and demolition (C & D) waste, including sheetrock and inert debris, is placed directly in the Landfill.
- Ashes, from a burn box near the entrance to DRC and used once a year¹² to burn clean, dry wood and paper, are placed directly in the Landfill.

Heavy-duty bird-proof and weather-proof tarpaulins are used to cover the waste in active areas temporarily. In addition, a 6-inch thick layer of soil is placed over inert waste when a significant quantity has accumulated. When waste placement is stopped in an incremental disposal area, the waste is covered with an intermediate cover consisting of a layer of plastic and an 18-inch thick layer of soil.¹³ No part of the Landfill has been filled to grades requiring final closure.

¹⁰ However, there can be a time lag between waste receipt, and shipping diverted materials from DRC, and the fenced Landfill area is used to store accumulated diverted materials.

¹¹ Waste is baled for operational reasons; it is not required by the SWP.

¹² Burning is permitted semi-annually (SWP Specific Condition 4)..

¹³ The intermediate cover used at DRC is consistent with 18 AAC 60.243 (Intermediate Cover), which states "(a) ... the owner or operator of a landfill shall apply an intermediate cover to any inactive portion of a landfill within seven days after the waste is last deposited in that area, using a soil material at least 12 inches thick, graded to prevent

As shown on the 2017 survey drawings (**Appendix A**):

- A 50-foot wide solid waste buffer exists along all property lines. Permitted Landfill development has respected this permit buffer. However, as noted above, waste, which predates the original SWP, may be present under Harbor Road in the northern 50-foot wide buffer.
- Elevations in the Landfill ranged from about 21 to 25 feet, representing waste heights about 1 to 5 feet above the surrounding ground surface. (Recent limited elevation information surveyed by Mr. Berry in October 2021 indicates a maximum Landfill elevation of about 25.5 feet, suggesting little change in the maximum waste height since 2017.)

BELL and VISTA (2015) estimated an annual disposal rate of about 250 cubic yards (cy) and at least 3,600 cy of available capacity, based on a minimal increase in the maximum Landfill height. If this disposal rate is representative of subsequent annual disposal rates, approximately 1,000 cy of waste has been disposed of in the four years since the 2017 survey. This volume would leave around 2,600 cy of capacity with minimal change to the maximum height and considerably more capacity if the height is increased.

3 RECOMMENDATIONS FOR FUTURE DEVELOPMENT AND CLOSURE

3.1 LANDFILL FOOTPRINT

During a site visit on April 22, 2015, Ms. Sandra Woods (ADEC) confirmed that the entire DRC 11.9-acre property is permitted for disposal (subject to easements, buffers, and other conditions), and landfill development within this area would not be regarded (under 18 AAC 60) as either a new landfill or a lateral expansion. Ms. Woods confirmed this determination by email dated January 2, 2018 (**Appendix C**). The DRC property has a considerable area available inside the perimeter buffer for development under this determination. Conceptual development areas are shown in **Drawing 1, Appendix B**, as follows:

- Area A (approximately 0.4 acres) – Extension of the existing Landfill footprint to the east to the buffer parallel to State Dock Road. Area A will provide about 1,300 cy of capacity per 2 feet of fill (the height of a bale).
- Area B (approximately 0.5 acres) – Extension of the existing Landfill footprint to the south without having to adjust the alignment of the stream. Area B will provide about 1,400 cy of capacity per 2 feet of fill.
- Area C (approximately 1.6 acres) - Continue development to the south following the realignment of the stream (to align all or most of the stream channel within the 50-foot wide buffer). Area C will provide about 5,200 cy of capacity per 2 feet of fill.

water from ponding. (b) For purposes of this section, "inactive portion" means an area of a landfill that does not receive waste for a period of 90 days or more."

- Developing Areas B and C before moving to Area D will leave most of the property available for other operational uses.
- Area D (approximately 3.0 acres) – Final sequence, with development from south to north for operational access. Area D will provide about 9,800 cy of capacity per 2 feet of fill.

Areas A to D collectively represent a total development area of about 5.5 acres and a corresponding disposal capacity of approximately 17,700 cy per 2 feet of fill. This footprint is sufficient for many decades of filling at current waste recovery and disposal rates. However, the concept only represents one possible sequence of development. Other options could include:

- Abandoning MW-3¹⁴ and developing the north side of the existing Landfill footprint towards Harbor Road. This approach would enable any buried waste in this area (**Section 2.3**) to be incorporated into the Landfill footprint.
- Relocating the Recycling Building, compost area, and office to Area D and extending the existing Landfill footprint to the west. This approach would enable any buried waste in this area (**Section 2.3**) to be incorporated into the Landfill footprint.

As noted in **Section 2.2**, the Landfill is a Class III landfill, and the design requirements are limited.

- Liner system - No baseliner or leachate collection system is required.
- Groundwater separation - Since the initial 1994 SWP, the regulations have been revised, and 18 AAC 60.217 (Separation from groundwater) now requires that a "*new unlined landfill or a lateral expansion of a landfill may not be located closer than 10 feet above the highest measured level of an aquifer of resource value unless the landfill is constructed two feet or more above the natural ground surface.*"

Ms. Woods (ADEC) indicated during the April 22, 2015, site visit, and confirmed by email dated January 2, 2018 (**Appendix C**) that ADEC would subject the development of a new disposal area(s) to the original 1994 two-foot standard, provided the additional disposal area(s) are located within the original 11.9-acre limits, since development within these limits would not be regarded as an expansion or new facility (see above). However, Ms. Woods suggested in the same email, and VISTA also recommends that any new cells be developed from the ground surface (after any surficial vegetation and organic soil is removed) to maximize the naturally available separation distance from groundwater, rather than excavated below the existing grade, in the way the existing Landfill footprint was developed (**Section 2.2**).

¹⁴ As noted in Footnote 5, the monitoring wells were not constructed to current standards and Mr. Berry is aware that replacement monitoring wells will be required.

- Surface water control – Provisions for stormwater control will be required around the perimeter of the developed area. However, as noted (**Section 2.1**), the upper sandy soils are porous, and standing water is uncommon; therefore, simple ditches and controls should be sufficient.
- Security – Fencing will continue to be required to provide security and prevent animal access (particularly bears).

Development documents for any extension to the existing Landfill footprint will need to be submitted to ADEC for approval. However, as noted by Ms. Woods (**Appendix C**), ADEC does not require documents to be prepared by an engineer; relatively simple illustrative sketches would likely suffice.

Over time, the City will have to determine the maximum landfill height that is acceptable in the community and, in doing so, assess the benefits of adding disposal capacity by increasing the height on a given footprint versus increasing the footprint.

3.2 LANDFILL CLOSURE

The applicable requirements for the final cover per 18 AAC 60.390 (Closure Standards for a Class III MSWLF) are *"the final cover on a Class III MSWLF must be soil or another material approved by the Department. The final cover must be at least 24 inches thick, or another thickness approved by the Department, must be graded to promote drainage without erosion, and must be revegetated or otherwise treated in a manner appropriate to the anticipated, future long-term use of the facility."*

Relative to these requirements, VISTA recommends the following and provides illustrative sketches in **Drawing 2, Appendix B:**

- **Final outside slopes.** Final outside slopes should be developed at a maximum gradient of 3 horizontally to 1 vertically (3H:1V). This gradient means each lift of waste incorporating 24-inch high bales at the outside will have to be set back 72 inches from the outside edge of the previous lift. The resulting wedges between the bales could be filled with unbaled waste to provide a smooth surface for the final cover soil.

Interim slopes within disposal areas and slopes between disposal areas, which will not represent final outside slopes, can be filled at any pitch that DRC finds practical to place waste and deploy daily and intermediate cover materials.

Top slopes. Top slopes at landfills are generally developed at a minimum slope of 2 to 5 percent. However, at DRC, a 5 percent minimum slope (5 feet of vertical rise for every 100 feet horizontally) is suggested to promote surface water runoff and reduce infiltration through the final cover since (i) a geomembrane is not required in the final cover (earthen material alone is acceptable), (ii) the annual average precipitation in Gustavus is close to 100 inches, (iii) snow is expected between November and March, and (iv) temperatures rarely exceed 70 degrees Fahrenheit (limiting the potential for surface evaporation). In addition, a 5 percent minimum slope will allow for some post-closure settlement within the waste without developing adverse cover slopes.

To put the 5 percent slope in context, the slope will represent an elevation gain of about 10 feet from the top of side slopes in Area C's east side and Area D's west side to the mid-point of the combined area.

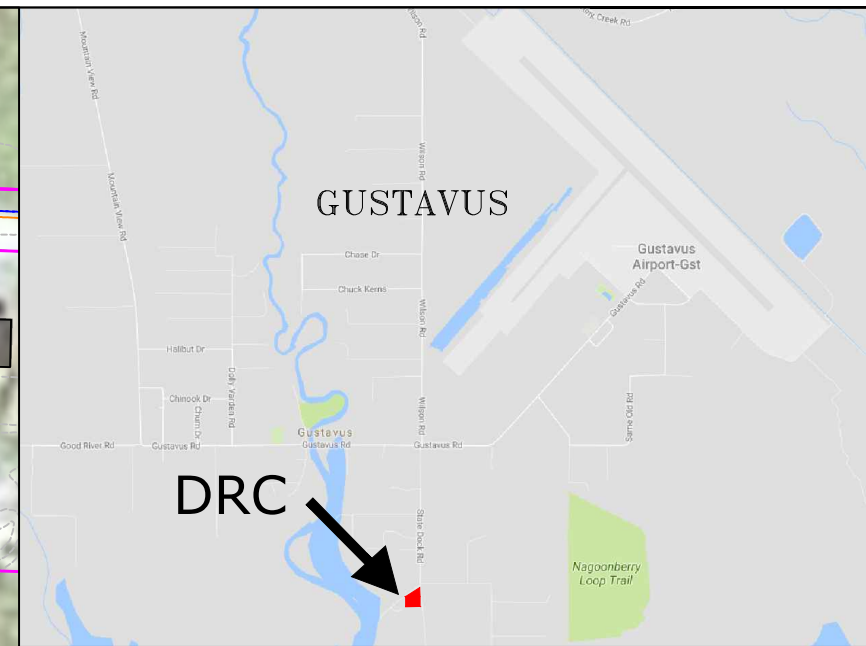
- **Final cover material.** VISTA recommends the final cover material have a hydraulic conductivity of less than 10^{-5} cm/sec; a lower permeability would be preferable given the climate in Gustavus. The cover material will likely need a fines content (silt and clay size material passing the #200 sieve) of at least 30 percent to achieve this performance. Additionally, the material should have low plasticity to bind the soil and avoid the potential for seasonal shrinkage and swelling (and cracking).

We understand that clayey soils are available in the Gustavus area and recommend that representative samples of potential soil sources be laboratory tested to confirm suitability before use. In addition, the final cover should be seeded with a grass species suitable for the area, which can provide year-round erosion resistance. If the selected cover soils cannot sustain vegetative growth, a layer of topsoil or other amendments that can support vegetative growth should be applied to the cover.

APPENDIX A

2017 SITE SURVEY DRAWINGS

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VICINITY MAP
NOT TO SCALE

INDEX:

- C1 OVERALL SITE PLAN
- C2 OPERATIONS AREA
- C3 SECTIONS

LEGEND:

- PROPERTY LINE
- - - - - BUFFER AREA LINE
- INDEX CONTOUR LINE
- - - - - CONTOUR LINE
- - - - - DITCH
- PAVEMENT ROAD
- GRAVEL ROAD
- - - - - FENCE
- - - - - LIMIT OF JUNE 23, 2017 SURVEY

MONITORING WELLS:

MW	NORTHING	EASTING	TOP OF PIPE ELEVATION
MW-1	2290176.70	2405734.87	21.15
MW-2	2290471.31	2405954.41	19.96
MW-3	2290650.04	2406064.79	21.35
MW-4	2290718.56	2405667.89	19.41
MW-5	2290541.80	2405523.07	19.31
MW-6	2290214.40	2405443.01	17.37

NOTES:

- 1.- GUSTAVUS DISPOSAL AND RECYCLING CENTER IS LOCATED AT LOT 6 SECTION 18, T. 40 S., R. 59 E., C.R.M., ALASKA.
- 2.- BASIS FOR HORIZONTAL AND VERTICAL CONTROL IS A GPS TBM "BASE 1" USING NGS OPUS TO PROVIDE NAD 83, ASP ZONE 1 STATE COORDINATES. THE GEOID ELEVATION OF "BASE 1" IS 29.81 FT.
- 3.- TOPOGRAPHIC INFORMATION SHOWN REPRESENTS DATA FROM AN AERIAL TOPOGRAPHIC SURVEY PERFORMED ON MAY 2012 AND TERRESTRIAL SURVEY DATA COLLECTED WITHIN THE LIMITS SHOWN, BY VISTA GEOENVIRONMENTAL SERVICES ON JUNE 22 AND 23, 2017.

TOPOGRAPHIC SURVEY
GUSTAVUS DISPOSAL AND RECYCLING CENTER (DRC)
2 HARBOR ROAD
CITY OF GUSTAVUS, ALASKA

OVERALL SITE PLAN

DRAWING NO. C1

OF 1

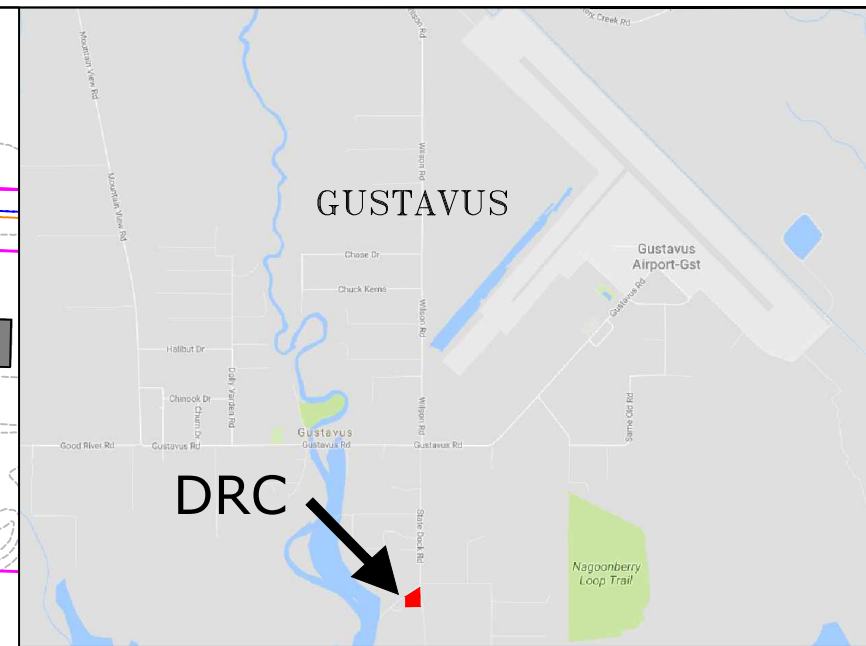
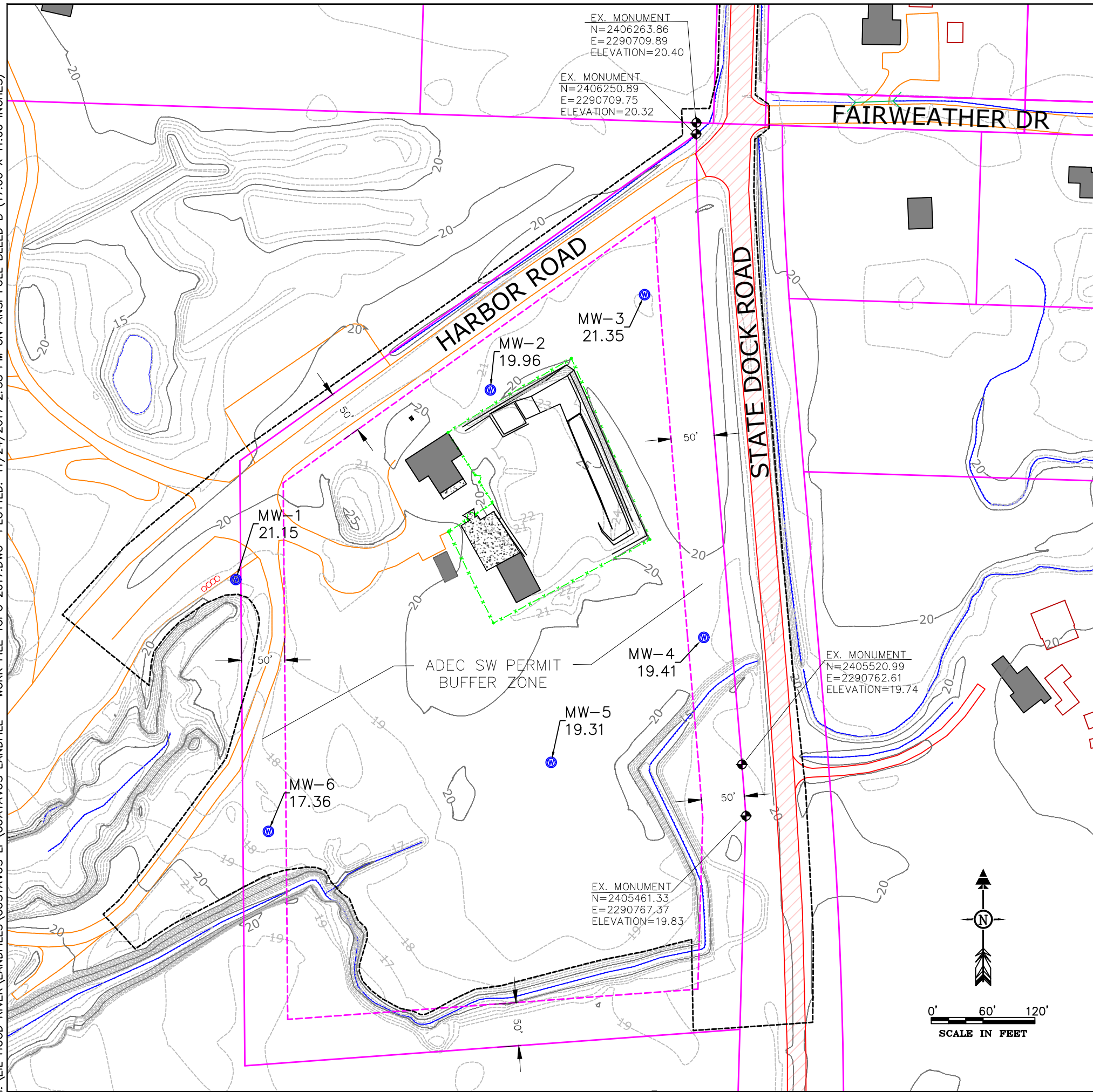
DATE: 11/24/2017

17-139

REV. DATE. REVISION DESCRIPTION DES. DRN/APP

VISTA GEOENVIRONMENTAL SERVICES
489 N 8TH STREET - SUITE 201
HOOD RIVER, OREGON 97031
(541) 386-6480

I:\LEIL HOOD RIVER\LANDFILLS\GUSTAVUS LF\GUSTAVUS LANDFILL - WORK FILE TOPO 2017.DWG PLOTTED: 11/24/2017 2:58 PM ON ANSI FULL BLEED B (17.00 X 11.00 INCHES)



INDEX:

- C1 OVERALL SITE PLAN
- C2 OPERATIONS AREA
- C3 SECTIONS

LEGEND:

- PROPERTY LINE
- - - - - BUFFER AREA LINE
- INDEX CONTOUR LINE
- - - - - CONTOUR LINE
- - - - - DITCH
- PAVEMENT ROAD
- GRAVEL ROAD
- - - - - FENCE
- - - - - LIMIT OF JUNE 23, 2017 SURVEY

MONITORING WELLS:

MW	NORTHING	EASTING	TOP OF PIPE ELEVATION
MW-1	2290176.70	2405734.87	21.15
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MW-3	2290650.04	2406064.79	21.35
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MW-5	2290541.80	2405523.07	19.31
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TOPOGRAPHIC SURVEY
GUSTAVUS DISPOSAL AND RECYCLING CENTER (DRC)
2 HARBOR ROAD
CITY OF GUSTAVUS, ALASKA

OVERALL SITE PLAN

DRAWING NO. C1

OF 3

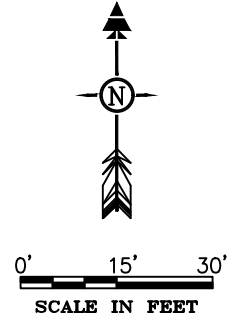
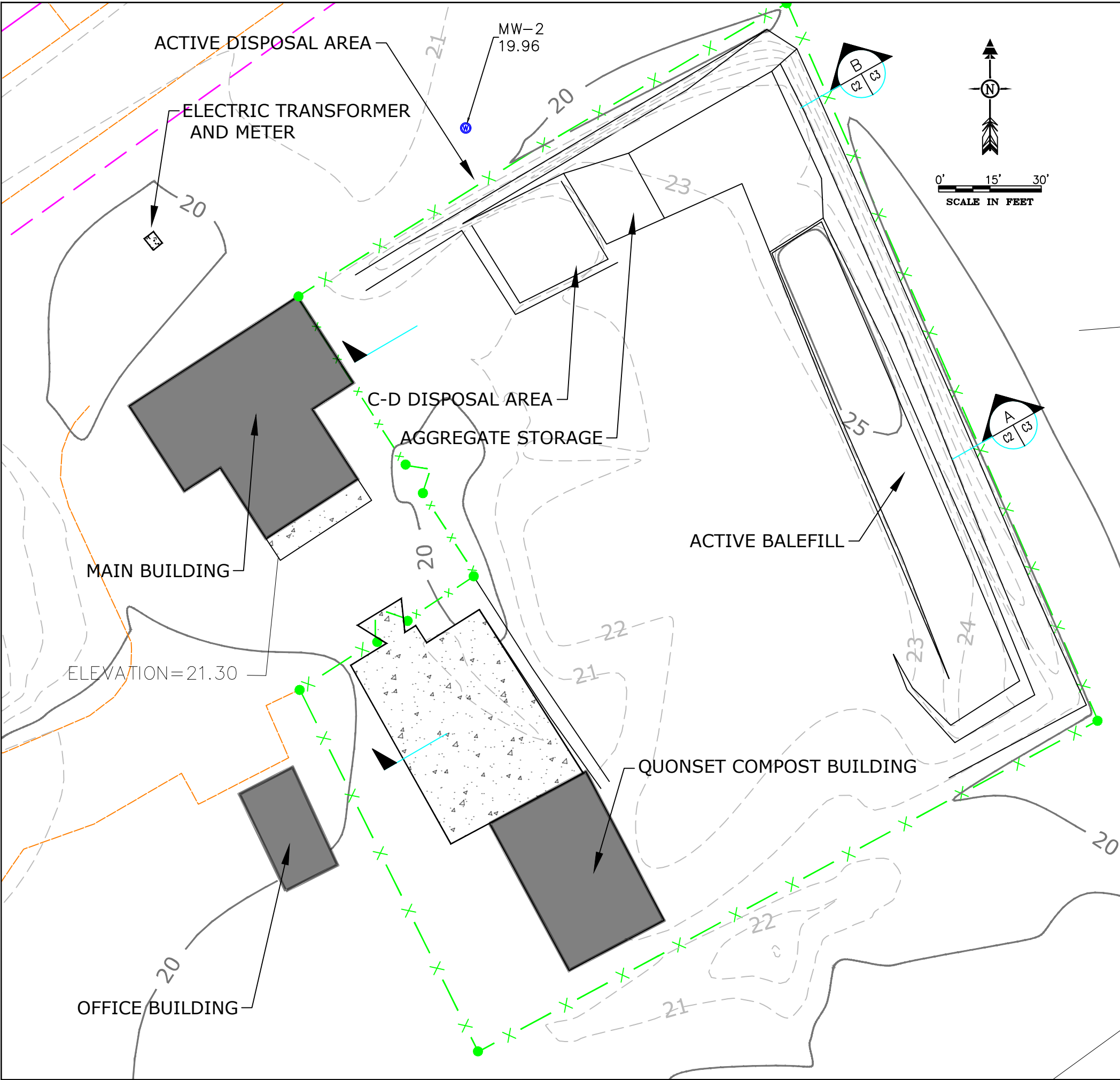
DATE: 11/24/2017

17-139

REV. DATE REVISION DESCRIPTION DES. DRN/APP

VISTA GEOENVIRONMENTAL SERVICES
489 N 8TH STREET - SUITE 201
HOOD RIVER, OREGON 97031
(541) 386-6480

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LEGEND:

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- - - - - BUFFER AREA LINE
- 100 INDEX CONTOUR LINE
- - - - - 100 CONTOUR LINE
- - - - - DITCH
- PAVEMENT ROAD
- GRAVEL ROAD
- x - x - x - FENCE
- - - - - LIMIT OF JUNE 23, 2017 SURVEY

HATCH LEGEND:

- BUILDINGS
- CONCRETE

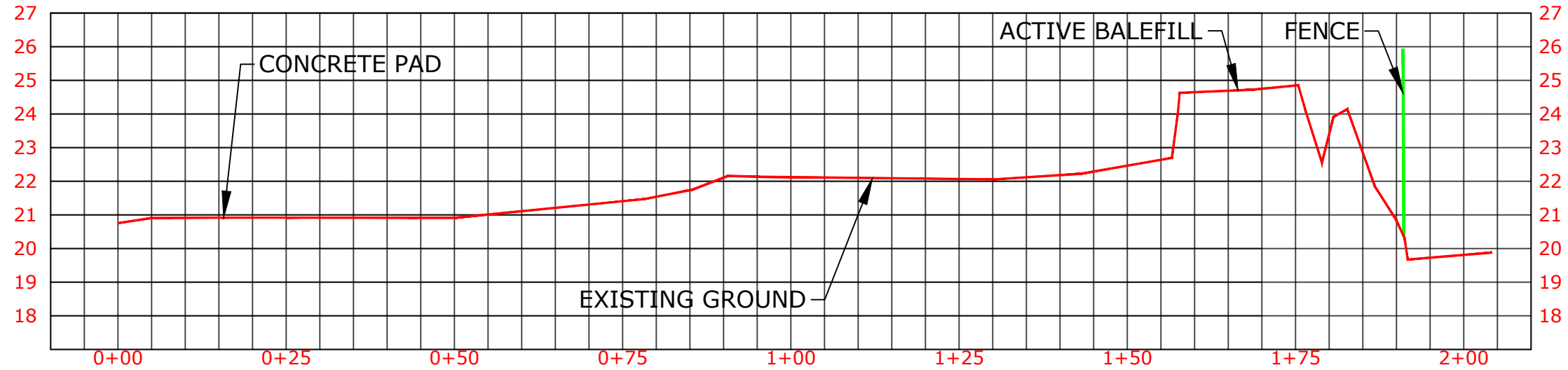
NOTE: ALL OTHERS AS NOTED ON PLAN

VISTA GEOENVIRONMENTAL SERVICES			
489 N 8TH STREET - SUITE 201 HOOD RIVER, OREGON 97031 (541) 386-6480			
REV	DATE	REVISION DESCRIPTION	DESIGN/APP
DATE: 11/24/2017			

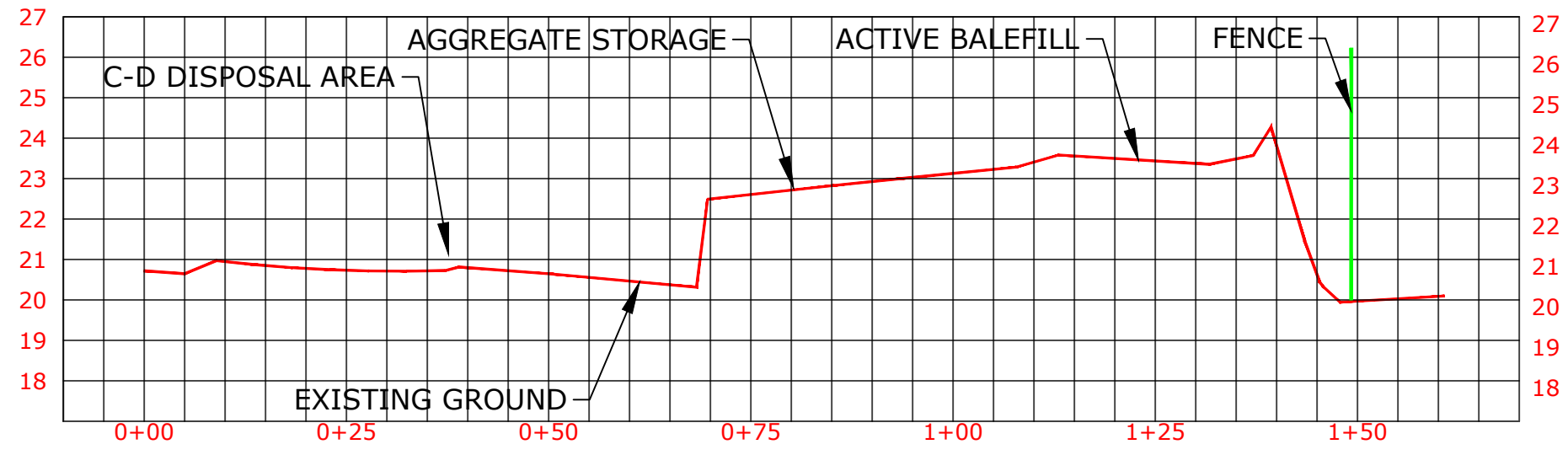
TOPOGRAPHIC SURVEY
GUSTAVUS DISPOSAL AND RECYCLING CENTER
2 HARBOR ROAD
CITY OF GUSTAVUS, ALASKA
OPERATIONS AREA

DRAWING NO. **C2** OF 3

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SECTION A - A



SECTION B - B

SCALE:
HORIZONTAL: 1" = 10'
VERTICAL: 1" = 2'

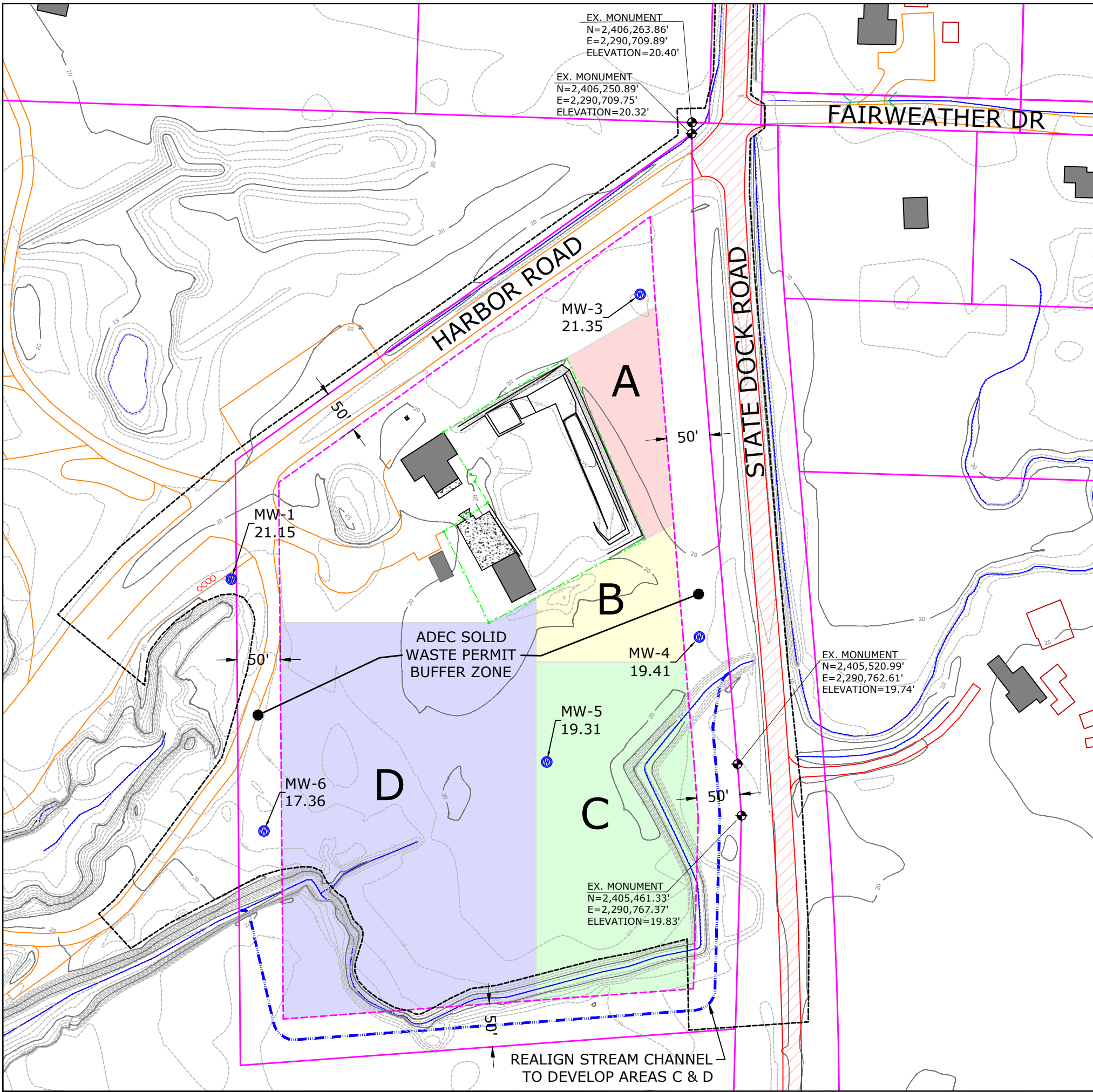
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DATE: 11/27/2017

APPENDIX B

CONCEPTUAL DEVELOPMENT AND CLOSURE DRAWINGS

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NOTES:

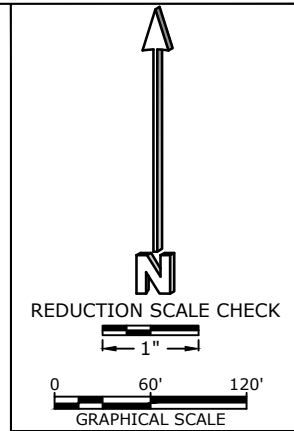
1. THIS DRAWING WAS ADAPTED FROM DRAWING NO. C1 OVERALL SITE PLAN DATED NOVEMBER 11, 2017.

INDEX:

- 1 CONCEPTUAL DEVELOPMENT PLAN
- 2 FINAL COVER DETAILS

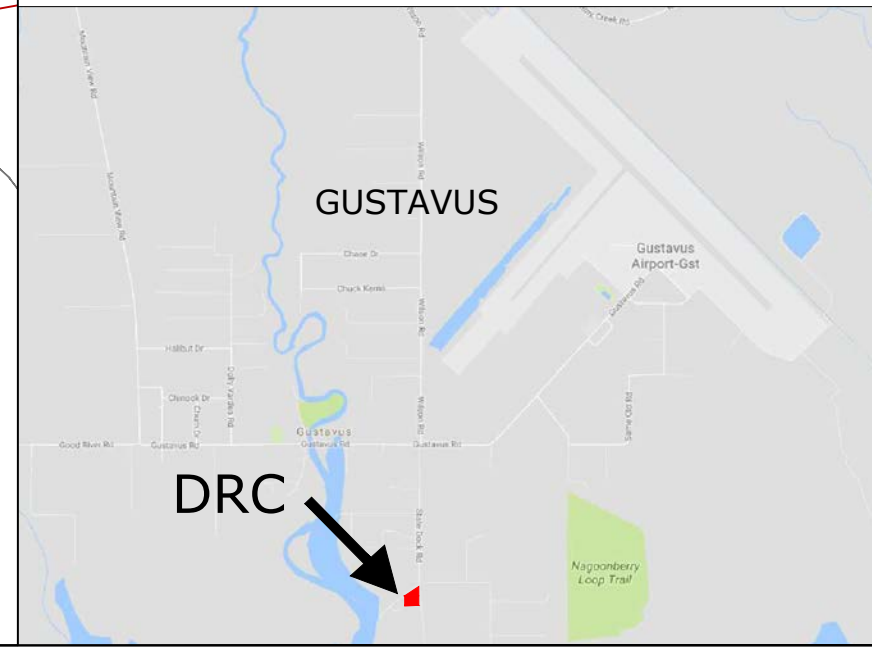
LEGEND:

- PROPERTY LINE
- BUFFER AREA LINE
- INDEX CONTOUR LINE
- CONTOUR LINE
- STREAM OR DITCH
- PAVEMENT ROAD
- GRAVEL ROAD
- FENCE
- LIMIT OF JUNE 23, 2017 SURVEY



CONCEPTUAL DEVELOPMENT AREAS		
AREA	2D AREA (AC)	~CAPACITY PER 2-FT LIFT (CY)
A	0.4	1,300
B	0.5	1,400
C	1.6	5,200
D	3.0	9,800
TOTAL	5.5	17,700

VICINITY MAP
(NOT TO SCALE)

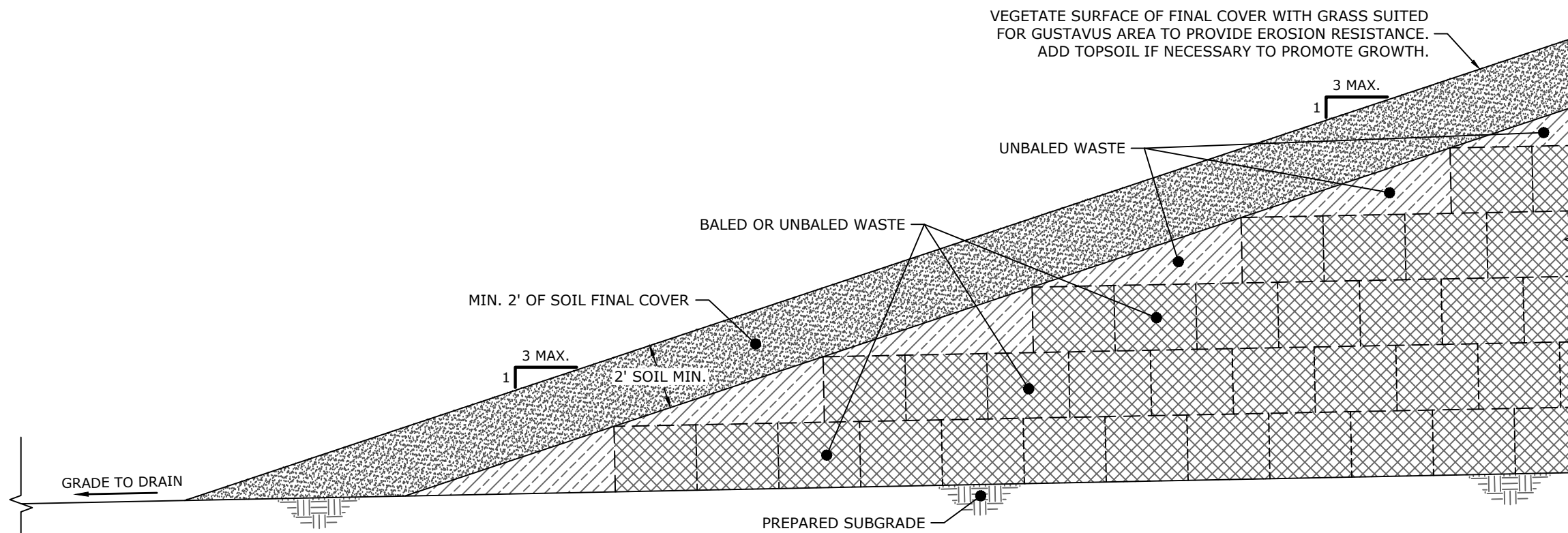


REV	DATE	REVISION DESCRIPTION	DES	DRN	APP
-	11/30/21	ADEC SUBMITTAL	RW/GH	GH	RN

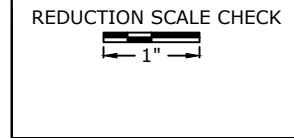
DATE: 11/30/2021



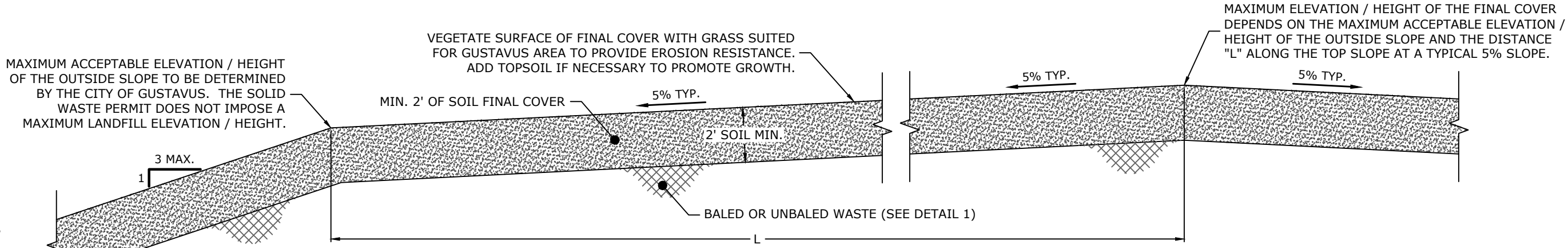
I:\CIVIL 3D PROJECTS\GUSTAVUS\2021 ENGINEERING SERVICES\PRODUCTION DRAWINGS\2 FINAL COVER DETAILS.DWG PLOTTED: 11/30/2021 6:46 PM ON ANSI FULL BLEED B (11.00 X 17.00 INCHES)



**DETAIL 1 - FINAL COVER OUTSIDE SLOPE
(NOT TO SCALE)**



**SEE
DETAIL 2**



**DETAIL 2 - FINAL COVER TOP SLOPE
(NOT TO SCALE)**

**SEE
DETAIL 1**

REV	DATE	REVISION DESCRIPTION	DES	DRN	APP
-	11/30/21	ADEC SUBMITTAL	RN/GH	GH	RN
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

DATE: 11/30/2021



APPENDIX C

ADEC CORRESPONDENCE

From: Woods, Sandra M (DEC) <sandra.woods@alaska.gov>

Sent: Tuesday, January 2, 2018 3:53 PM

To: Paul Berry <paul.berry@gustavus-ak.gov>

Subject: RE: Questions regarding 18 AAC 60.217. Separation from groundwater

Paul,

Back in 1994-1995, when the Gustavus landfill was first permitted, the permit included the current 11.9 acre parcel you have now. In that respect, the 10 foot distance between waste placement and groundwater in 18 AAC 60.217 doesn't apply to you finding a new area within that original 11.9 acre area. However, wherever you do decide to place your new waste cell, I'd like to suggest that you consider starting waste placement on ground level and work your way up from there. This would maximize the available separation distance above the groundwater aquifer giving it the most protection from the landfill waste.

If you still want even more distance between waste placement and the groundwater level, fill materials such as crushed glass and clean concrete are both acceptable but the other options you mentioned (shredded tires, or shredded plastics) would require further documentation (e.g. leaching studies) before ADEC could approve using them for this purpose.

I hope this helps you in making your decision where to start a new working disposal cell. If not, call me and we can discuss what I've covered here.

As to what Mr. North and I talked about in 2015:

What I was referring to when talking to Mr. North back in 2015 is that if Gustavus wanted to place another cell within the existing 12 acre property that was originally permitted for disposal, ADEC would want from you where you intend to place the new cell in the guise of a new site plan. The new site plan would not have to be drafted by an engineer but rather something that you draft up for us. Paul, I apologize if I made it seem more complicated than it really is.

Sandi Woods
Solid Waste Program