

October 16, 2023

Mr. Patrick Lennberg
Division of Reclamation, Mining and Safety
1313 Sherman Street, Room 215
Denver, CO 80203

RE: M-1977-439 Corrective Action Required

Dear Mr. Patrick Lennberg:

In response to your letter dated August 17, 2023 please see the following by corrective action number.

3. Completion of the underdrain installation will be within 60-days of the date of this letter, October 16, 2023.

It was discovered just prior to installation that our property falls about 4 feet from west to east and we will not be able to install the underdrain as proposed because the east end would be above the surface. If installation were revised so the underdrain was below the surface, it would change the slope the opposite direction so groundwater would run to the east which would likely raise water elevations in HO-11. Based on our phone conversation and the attached Technical Memorandum from Deere & Ault, our consultant, we are requesting an extension for completing the underdrain until 12/31/2023 so we can install the amended design attached. Construction is planned to start October 19th and then we will need time to complete as-builts with a surveying company.

We also wanted to bring to your attention that based on ground water elevations in HO-11, we ran a profile between that well and Loveland Ready Mix MW-9. Copy is also attached. Loveland Ready Mix property sits lower than our property which was likely created with the installation of the Greeley pipeline in 2015. Installing an underdrain along the full length of our property will not likely resolve their surface water issue.

I can be reached at 970-407-3631 if any additional information is needed at this time.

Sincerely,



Julie Mikulas
Regional Land Manager

TECHNICAL MEMORANDUM

TO:	Julie Mikulas	DATE:	09/25/2023
COMPANY:	Martin Marietta	SUBJECT:	North Underdrain Extension Revisions
ADDRESS:	1800 North Taft Hill Road Fort Collins CO 80521	PROJECT NAME/NO.:	Home Office Underdrain DA494019.00
FROM:	Susan A. Rainey, PE	CC:	Britney Guggisberg, PE

This document is to request changes to the Home Office Underdrain. The property currently has a North and West Underdrain in place. This underdrain system was installed either after or during slope liner construction. The history of the slope liner and underdrain construction is expanded on in the following section, Project Background.

PROJECT BACKGROUND

The Home Office Mine is part of the Martin Marietta Taft Hill sand, gravel and asphalt facility located in Larimer County, Colorado in the northwest portion of the City of Fort Collins. The below grade water storage vessel was created after the mined gravel cell was lined with a compacted clay slope liner around the perimeters. The liner design consists of two cells created by a compacted clay bifurcation berm in the center of the site. Construction of the Phase I slope liner, which is the eastern portion of the property, began in August of 2020 and was complete in October of 2020. Construction of the Home Office Phase II slope liner, the western portion of the property, began in October of 2022 and was completed in November of 2022. The ground surface and bedrock on site slope from the northwest to the southeast.

GROUNDWATER MONITORING

Groundwater monitoring via the monitoring wells on site shows groundwater in the northwest corner of Phase I, near monitoring well HO-01 withing approximately two and a half to three feet of the ground surface from May through August of this year. This is based on the ground surface elevation of 5021.21 feet at HO-01 when the well was installed and surveyed in May of 2018. Groundwater monitoring at HO-11 in the northeast corner of Phase I shows that depth to groundwater has ranged from approximately five to six feet from surface since the installation of the underdrain.

UNDERDRAIN SUMMARY

Plans were provided to Martin Marietta for a North Underdrain Extension in May of 2023. These plans showed an underdrain running from east to west along the north border of Phase I. This North Underdrain Extension was designed to tie-in the existing North Underdrain. After further review it was discovered that the invert of the existing North Underdrain is the same elevation as the ground surface in the northeast corner of the site near monitoring well HO-11. The North Underdrain Extension as shown on the May 2023 plans has the potential to cause an increase in groundwater in the northeast corner of Phase I, potentially raising groundwater to near surface levels. This is because of the existing invert of the North Underdrain and the natural flow of groundwater from west to east.

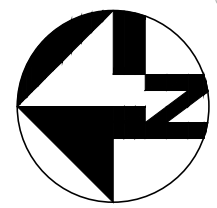
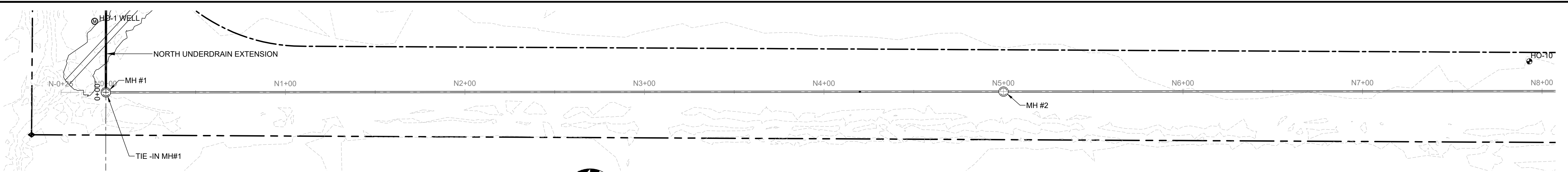
UNDERDRAIN MODIFICATION

By lowering the first 500 feet of the existing North Underdrain from the current invert elevation of 5018.37 to 5017.00 the potential for groundwater to rise will be reduced. This will change the slope of the first 500 feet of the North Underdrain from 0.49% to 0.2%. This slope is less than ideal and may reduce the capacity of the underdrain, but will serve to reduce the groundwater proximity to the surface in the northwest corner of Phase I. In addition to lowering this section of the North Underdrain we are also proposing that only the first 200 feet of the North Underdrain Extension be installed. This modification should allow for groundwater flowing in from the northwest to be intercepted without causing significant changes in groundwater elevation to the east.

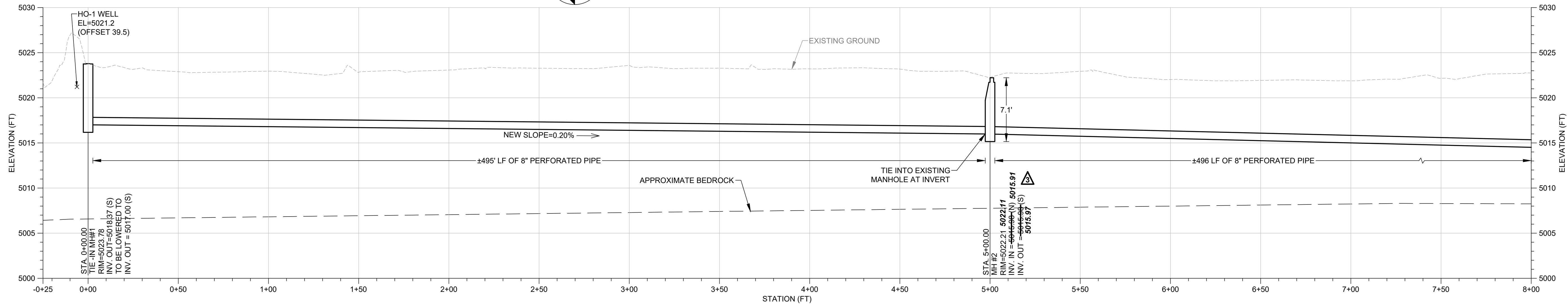
ADJOINING PROPERTY

The property owner to the north has notified Martin Marietta of marshy areas in the southeast corner of their field near HO-11. The groundwater monitoring data collected in the last year shows a maximum groundwater elevation in HO -11 of 5013.65, or 4.78 feet below ground surface. This suggests any wet or marshy areas in the field are related to surface water issues not groundwater.

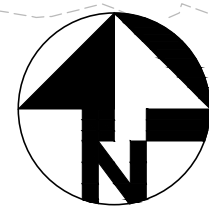
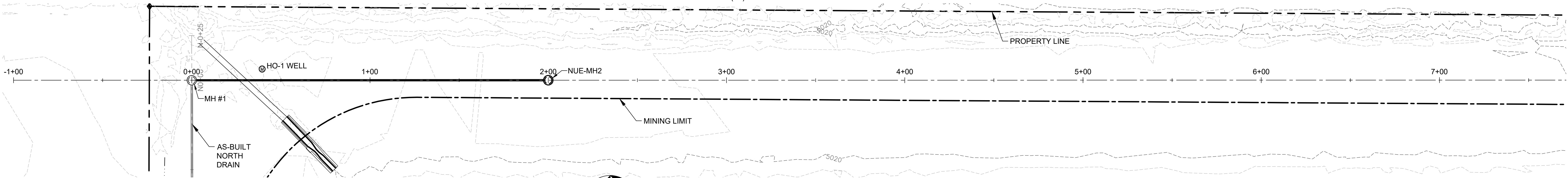
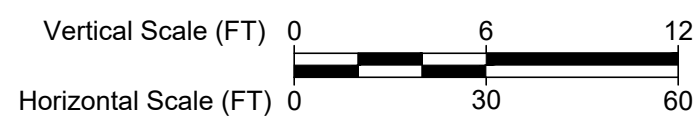
U:\0494 MARTIN MARIETTA\0494.019 HOME OFFICE MINE\CAD\WORKING\UNDERDRAIN_NORTH_EXTENSION\NUE_PIPE_PROFILES.DWG



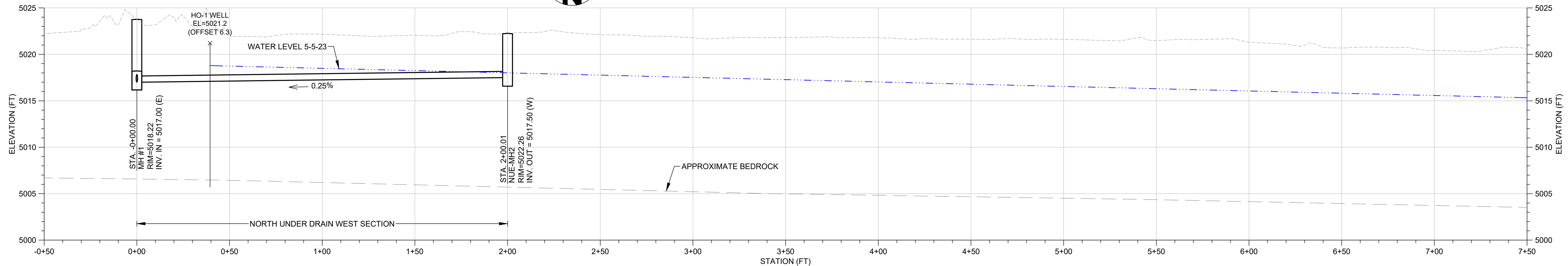
AS-BUILT NORTH DRAIN PLAN (STA 0+00 TO 8+00)



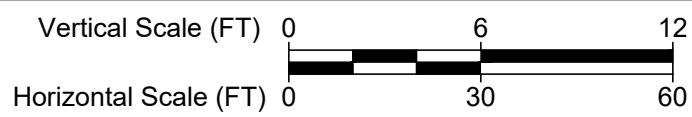
AS-BUILT NORTH DRAIN PROFILE (STA 0+00 TO 8+00)



NORTH UNDERDRAIN EXTENSION PLAN WEST SECTION



NORTH UNDERDRAIN EXTENSION PROFILE WEST SECTION



NOTE:

GROUND SURFACE IS JANUARY 2023 DRONE SURVEY FROM MARTIN MARIETTA

FOR REVIEW	FOR CONSTRUCTION	REVISED	DATE
1	2	3	
SAR	SAR	SAR	
5-31-23	8-24-23	10-6-23	

CHECKED BY:	DRAWN BY:	DESIGNED BY:	DATE
----	ITR	SAR	XXXX
SUSAN A. RAINEY			
STATE PROFESSIONAL ENGINEER NO. XXXX			



6445 Shiloh Road, Suite A / Alpharetta, GA 30005 /
Phone: 770-781-8008 / Fax: 770-781-8003 /
schnabel-eng.com

HOME OFFICE MINE

NORTH UNDERDRAIN EXTENSION

NORTH UNDERDRAIN
EXTENSION PLAN
AND PROFILE

PROJECT: DA494019.00

DATE: ----

SHEET
5 OF 6



City of Greeley Easement

HO-11

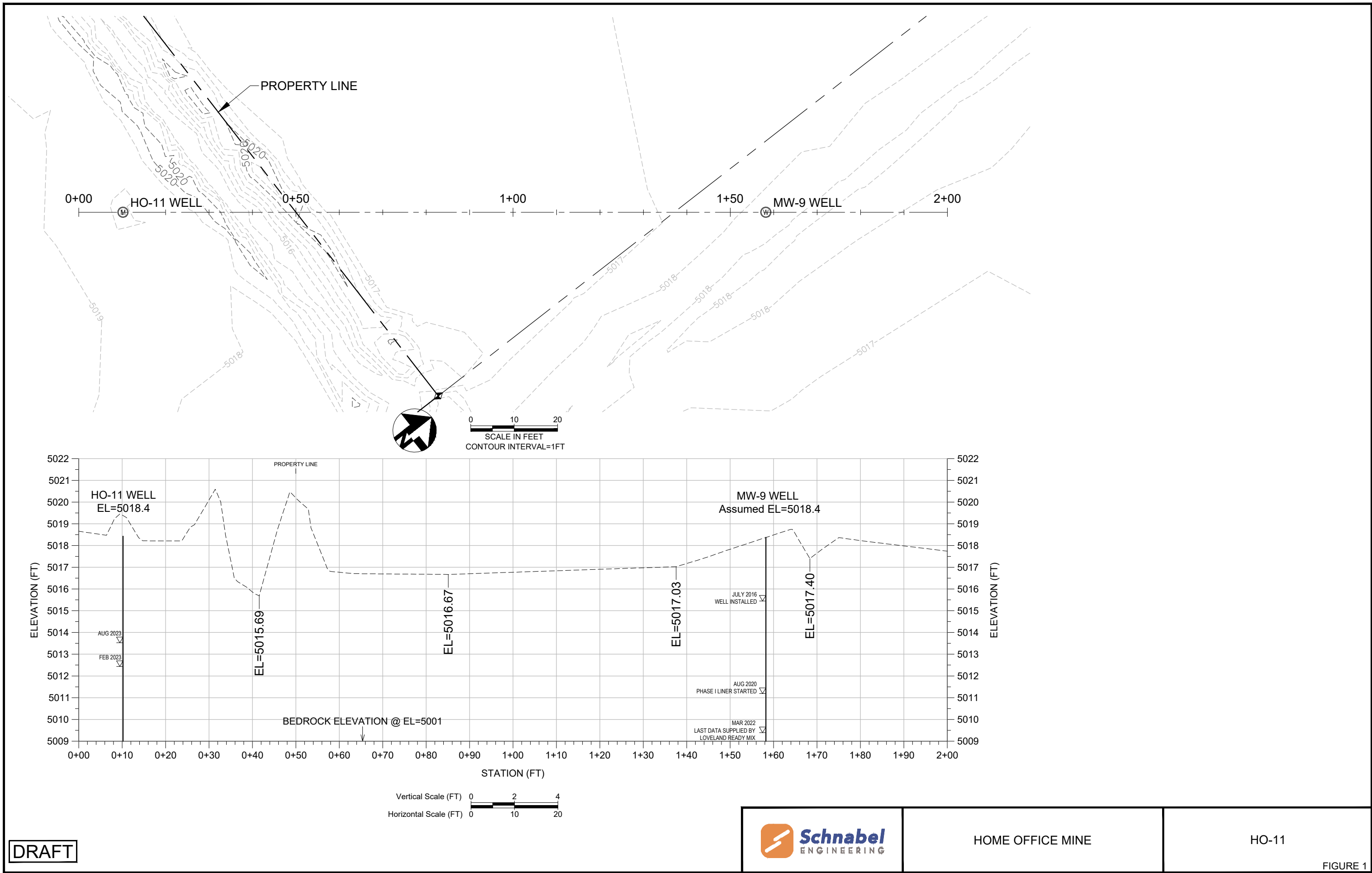
MW 9

Image © 2023 Airbus

Google Earth

Imagery Date: 5/22/2023 40°37'17.62" N 105°06'19.97" W elev 0 ft eye alt 331 ft

U:\0494 MARTIN MARIETTA\0494.019 HOME OFFICE MINE\CAD\WORKING\HOME OFFICE HO-11_XS.DWG



DRAFT



HOME OFFICE MINE

HO-11

FIGURE 1