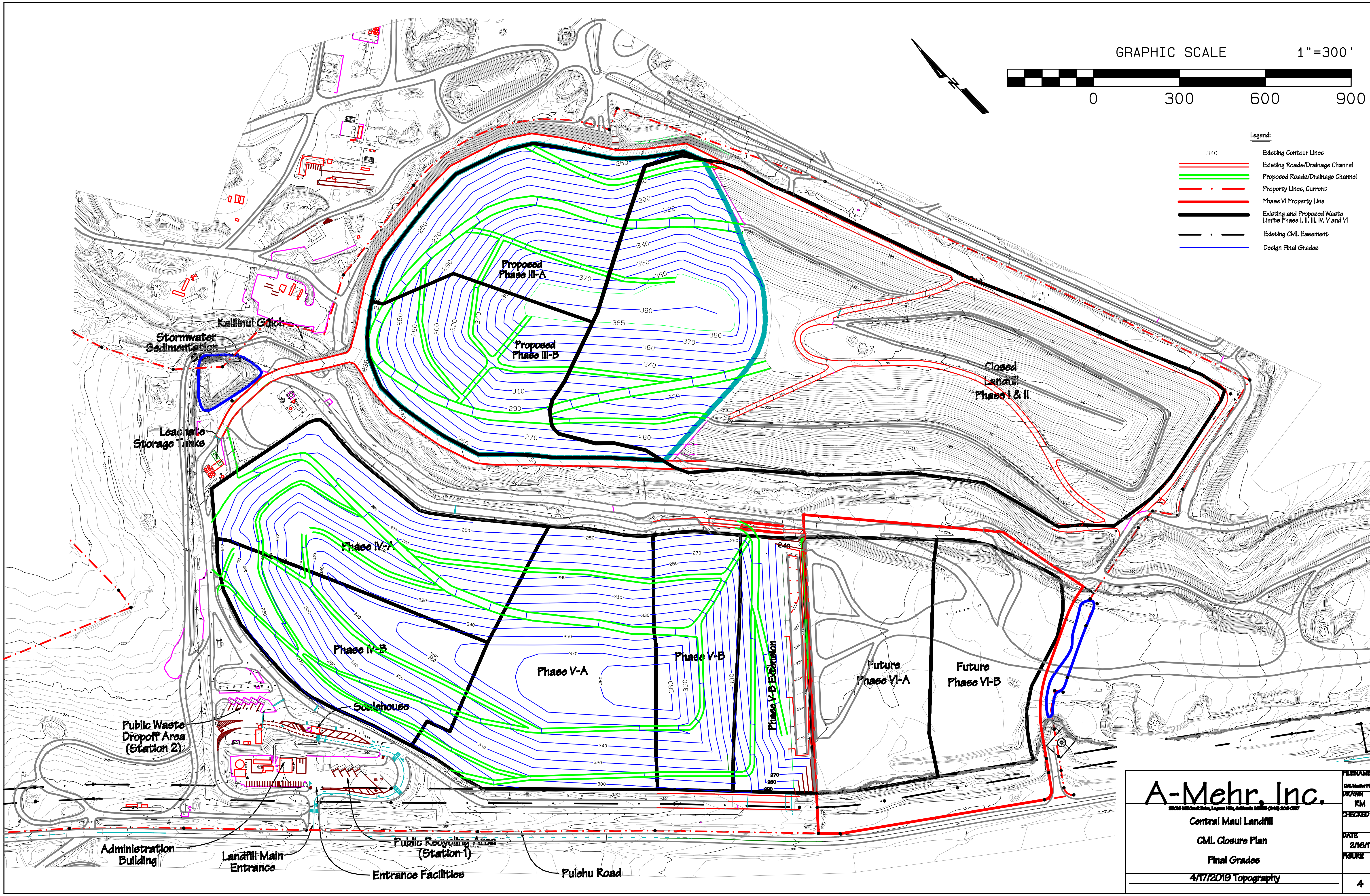
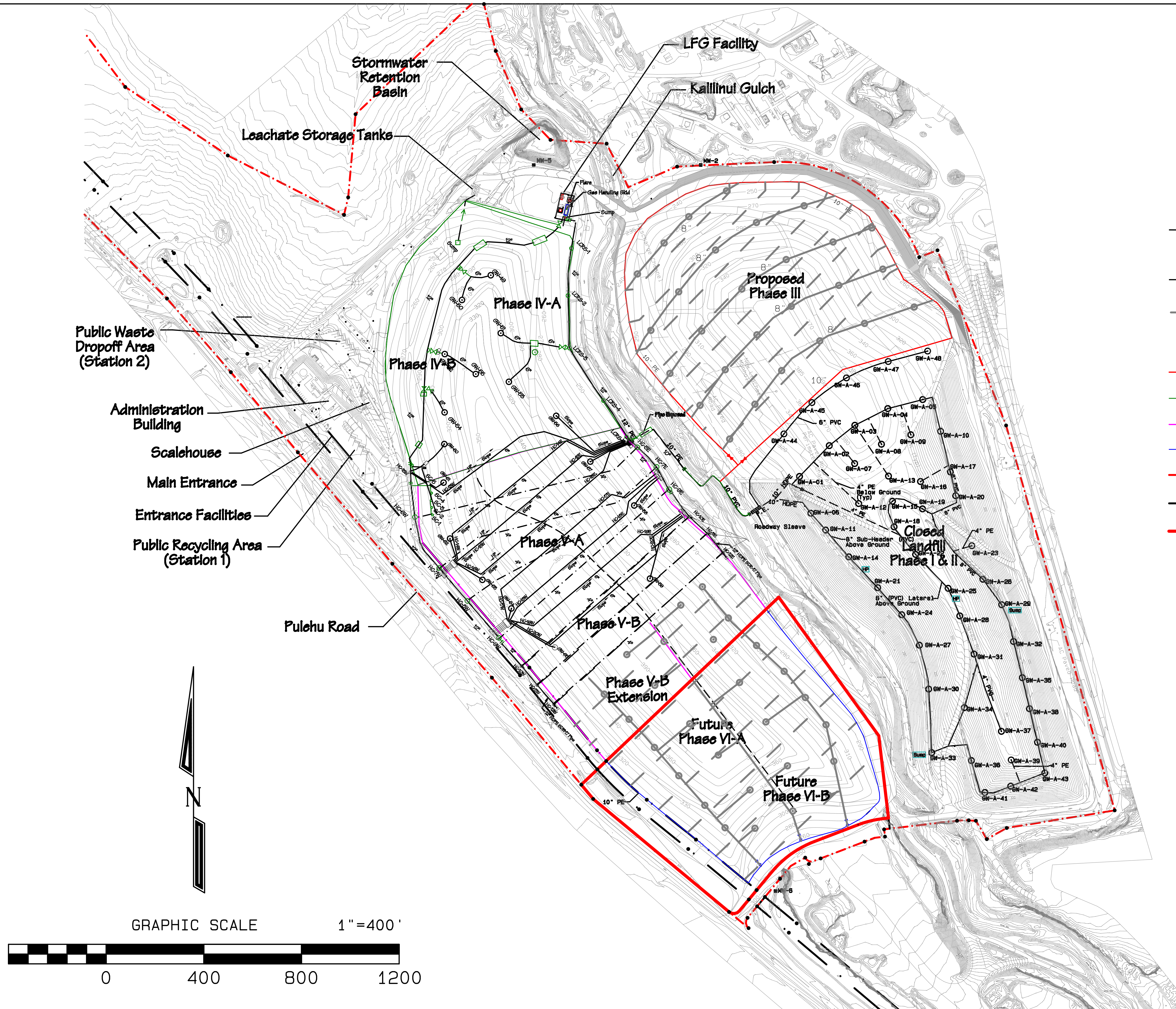

GRAPHIC SCALE 1"=300'
0
300
600
900
N
Legend:
Existing Contour Lines
Existing Roads/Drainage Channel
Proposed Roads/Drainage Channel
Property Lines, Current
Phase VI Property Line
Existing and Proposed Waste Limits Phase I, II, III, IV, V and VI
Existing CML Easement
Design Final Grades
Proposed Phase III-A
Proposed Phase III-B
Closed Landfill Phase I & II
Kalialinui Gulch
Stormwater Sedimentation Basin
Leachate Storage Tanks
Phase IV-A
Phase IV-B
Phase V-A
Phase V-B
Phase V-B Extension
Future Phase VI-A
Future Phase VI-B
Scalehouse
Public Waste Dropoff Area (Station 2)
Administration Building
Landfill Main Entrance
Public Recycling Area (Station 1)
Entrance Facilities
Pulehu Road
A-Mehr, Inc.
Central Maui Landfill
CML Closure Plan
Final Grades
4/17/2019 Topography
FILENAME
DRAWN
RM
CHECKED
DATE
2/16/17
FIGURE
4



Note:

(1) Existing Topography Based on Aerial Survey Dated 4/17/19

Legend

- Vertical Extraction Well
- Existing Horizontal Gas Collector (On Floor of Disposal Cell)
- Landfill Gas Pipeline
- Future Horizontal Gas Collector
- Future Extraction Well
- Phase III Limit
- Phase IV Limit
- Phase V Limit
- Phase VI Limit
- Property Boundary, Current
- Existing CML Easement
- Phase VI Property Line

A-Mehr, Inc.

23016 Mill Creek Drive, Laguna Hills, California 92653 (949) 206-0157

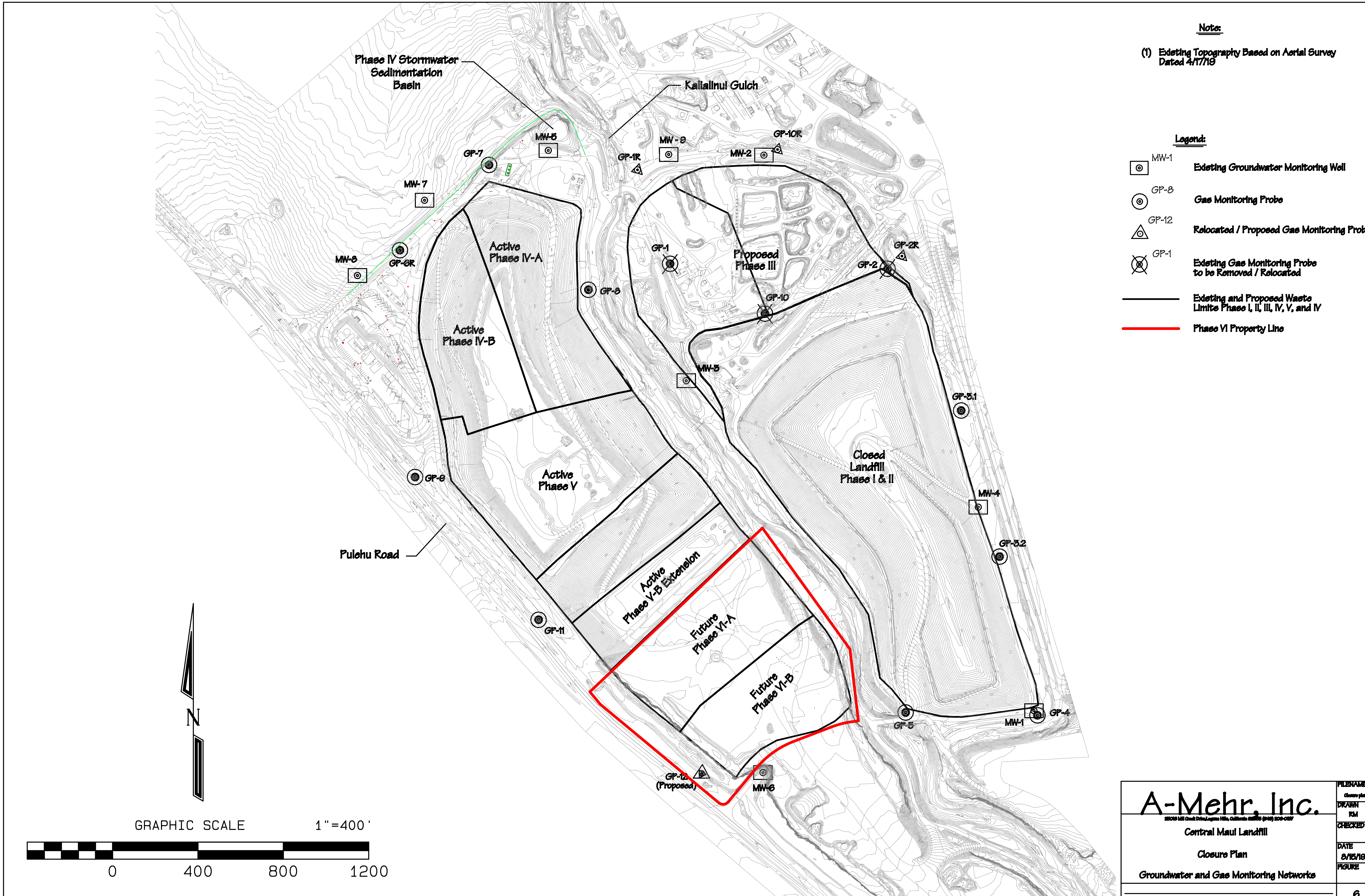
Central Maui Landfill

CML Closure Plan

Landfill Gas Management System

Existing Topography Grades as of 4/17/19

FILENAME	CP Plan 55016
DRAWN	RM
CHECKED	
DATE	8/29/19
FIGURE	5



Note:
(1) Existing Topography Based on Aerial Survey Dated 4/17/19
Legend:
MW-1 Existing Groundwater Monitoring Well
GP-8 Gas Monitoring Probe
GP-12 Relocated / Proposed Gas Monitoring Probe
GP-1 Existing Gas Monitoring Probe to be Removed / Relocated
Existing and Proposed Waste Limits Phase I, II, III, IV, V, and IV
Phase VI Property Line
Phase IV Stormwater Sedimentation Basin
Kailalinui Gulch
MW-5
GP-7
MW - 9
GP-1R
MW-2
GP-10R
MW- 7
MW-8
GP-6R
Active Phase IV-A
Active Phase IV-B
GP-8
GP-1
Proposed Phase III
GP-2R
GP-2
GP-10
MW-3
GP-3.1
Closed Landfill Phase I & II
Active Phase V
GP-9
MW-4
GP-3.2
Pulehu Road
Active Phase V-B Extension
Future Phase VI-A
Future Phase VI-B
GP-11
GP-5
GP-4
MW-1
GP-12 (Proposed)
MW-6
N
GRAPHIC SCALE 1"=400'
0
400
800
1200
A-Mehr, Inc.
Central Maui Landfill
Closure Plan
Groundwater and Gas Monitoring Networks
FILENAME
DRAWN
CHECKED
DATE
FIGURE
6

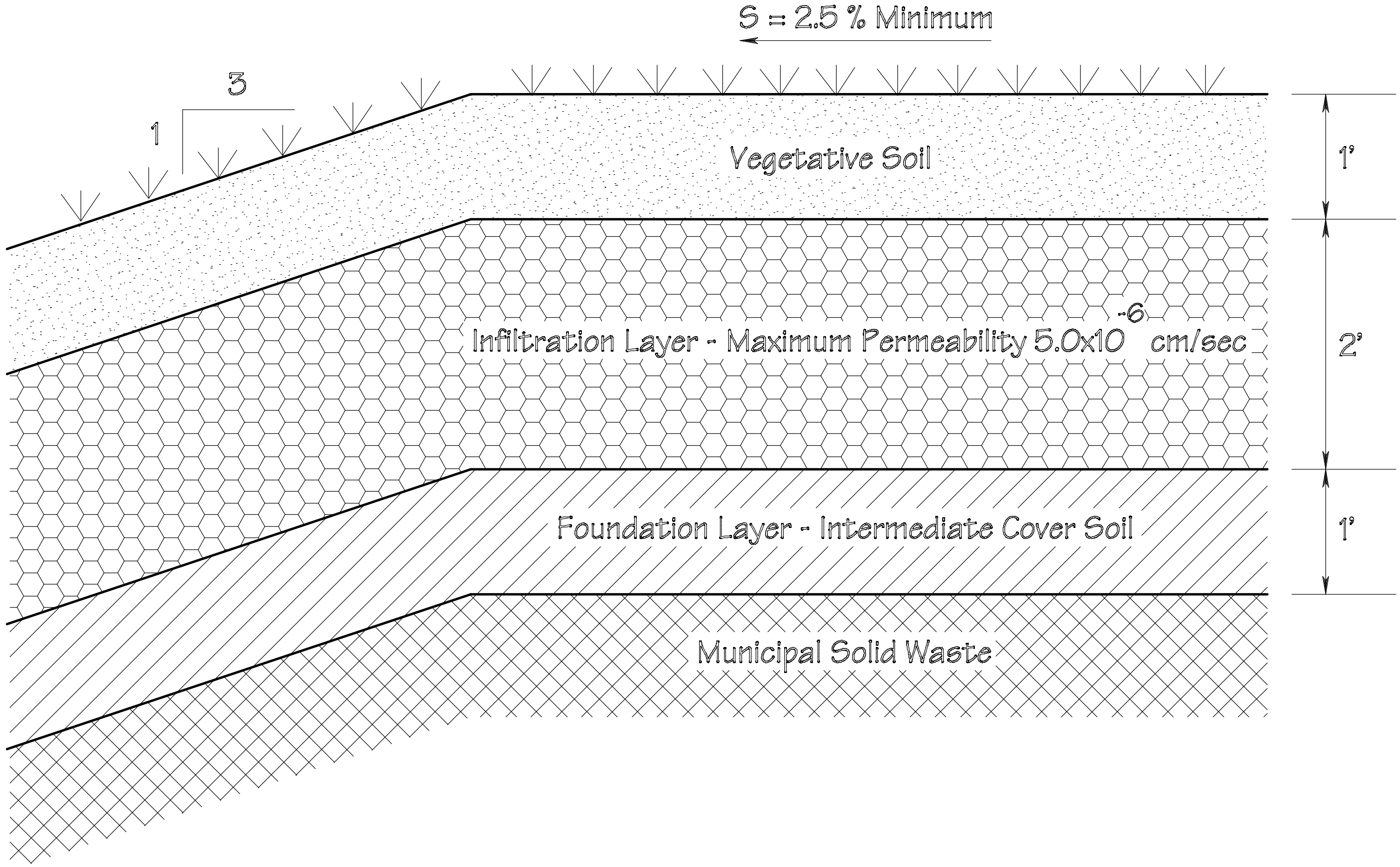


Figure 7 - Final Cover Cross-Section

APPENDIX A

ALTERNATIVE FINAL COVER DESIGN ANALYSIS

CENTRAL MAUI LANDFILL
ALTERNATIVE FINAL COVER ANALYSIS
SEPTEMBER 2019

1. INTRODUCTION AND SUMMARY

A-Mehr, Inc. evaluated the feasibility of using an evapotranspirative (ET) cover for final closure of the Phase III, and Phase IV through V-B Extension areas of Central Maui Landfill (CML). The proposed design consists of the following layers with a total depth of four (4) feet above the underlying solid waste, listed from top to bottom:

- One (1) foot vegetative layer consisting of compost and soil blended in approximately equal proportions;
- Two (2) feet infiltration layer consisting of imported soil compacted to a maximum permeability of 5.0 x 10-6 cm/sec; and
- One (1) foot foundation layer consisting of existing intermediate cover soil, scarified and compacted before placement of the infiltration layer above it.

This final cover section is proposed as an alternative final cover meeting the requirement of HAR 11-58.1-17(2) “an infiltration layer that achieves an equivalent reduction in infiltration as the infiltration layer specified in paragraphs (1)(A) and (1)(B).” Paragraph (1)(A) requires the infiltration layer to have “a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present, or a permeability no greater than 10^{-5} cm/sec, whichever is less.” Paragraph (1)(B) requires the infiltration layer to contain not less than 18 inches of earthen material.

ET covers have been developed and are widely used for closing Subtitle-D compliant landfills, as alternatives to final covers involving extremely low-permeability clay liners or geomembranes. The proven performance of the ET cover system is due to its ability to store infiltrated water within the cover system during wet seasons, and then discharge it during dry periods by processes of evaporation and transpiration by plants in the vegetative cover

The computer program UNSAT-H, which is generally recognized as a preferred method for evaluation of alternative final covers, was used to estimate annual percolation rates through the ET cover into the waste mass, using climate data from the on-site weather station at CML. The results of the analysis indicate that percolation through the ET cover into the underlying waste mass will be essentially zero, and is therefore equivalent to the permeability of the composite liner systems underlying the Phase III, and Phase IV through V-B Extension areas.

Based on the analysis, we recommend the composite lined areas of CML be closed with the proposed ET soil cover design that is similar to alternative final covers that have been approved and installed at numerous closed landfills other states.

The following sections summarize the methods and results of our evaluation of the ET final cover.

2. METHODOLOGY

The analysis of equivalency was performed using the computer model UNSAT-H, an open-source program developed by the U.S. Department of Energy (Thayer, 2000). Based on a similar program developed to predict the water dynamics of agricultural land, the model was developed as a means of calculating the net flow of surface water into waste containment facilities. It Is capable of modeling soil heat flow, vapor flow, evaporation and liquid flows, based on input variables describing climate, soil characteristics and plant cover. The UNSAT-H model is extremely useful in estimating infiltration through a landfill cover due to its ability to simulate the water balance in the upper layers of a soil/waste mass where evapotranspiration from a vegetative cover may be significant.

UNSAT-H calculates the water balance in a soil system defined by the user as a number of vertical nodes, with nodes separated by centimeters or fractions of centimeters apart. For example the two-feet thick infiltration layer was modeled as a system of 20 nodes in the current study. Each layer of the system (vegetative layer, infiltration layer, foundation layer, waste) is separately defined by its geotechnical and moisture retention parameters and as a series of calculating nodes.

The primary climate data inputs to UNSAT-H are daily rainfall and potential evapotranspiration (PET). Potential evapotranspiration may be obtained from direct measurements or it may be computed from other climate data. Beginning with user-defined initial conditions in the soil system, the model applies the daily rainfall and PET data to compute the changing moisture content at each node for each day. For evaluation of the proposed alternative final cover for CML, we simulated five consecutive years of data repeating the extreme case described in the following section in order to estimate the maximum infiltration of surface water into the upper layers of waste.

3. CLIMATE DATA

Evaluation of an ET cover requires data on evapotranspiration and rainfall. The first step in the analysis is to establish a design year database for the analysis. Because evaporation data is not widely gathered, it is often necessary, as in the present case, to combine data from different sources and locations into a composite data set that best represents the site-specific conditions.

A weather instrument has gathered daily data at CML since December 2006. Data for years 2007-2011 was reviewed and evaluated for suitability as the basis for the UNSAT-H weather database. The year 2007 was selected based on (1) its higher percentage (93%) of operational days and (2) it recorded the highest total annual rainfall of the 5-year period.

Total annual precipitation from the on-site weather station was compared with the record from Kahului Airport, with the following results:

Year	On-Site	Kahului Airport	Comment
2007	15.02	13.06	On-site record adjusted for missing February data and malfunctions
2008	6.07	9.55	On-site record missing 83 days in February, August & September
2009	9.90	14.09	On-site record missing 60 days in July, October and December
2010	2.02	9.44	On-site record missing 85 days during periods January-February and October-December
2011	--	10.59	On-site data missing 7 months

Adjustments to the 2007 on-site data were made as follows to produce the daily record for input to the model:

- Since the station was operational for only 3 days in February 2007, data for February 2009 was inserted into the 2007 record.
- The rain gauge for the instrument obviously malfunctioned during two days in December 2007, which was characterized by a violent storm throughout the region. To compensate for this, daily rainfall data from the Kahului Airport, located less than 2 miles from the landfill, was substituted into the database while keeping other parameters intact. Figure 1 shows the comparative monthly totals for the adjusted on-site rainfall and Kahului Airport.
- Once the on-site data for 2007 was completed as noted above, the rainfall amount was scaled up by a factor of 2.0, the ratio between the 12-year maximum rainfall at Kahului Airport (26.17 inches in 2004, as shown in Table 1) and the 2007 total of 13.06 inches. This results in a total for the synthetic CML 2007 record of 30.04 inches.

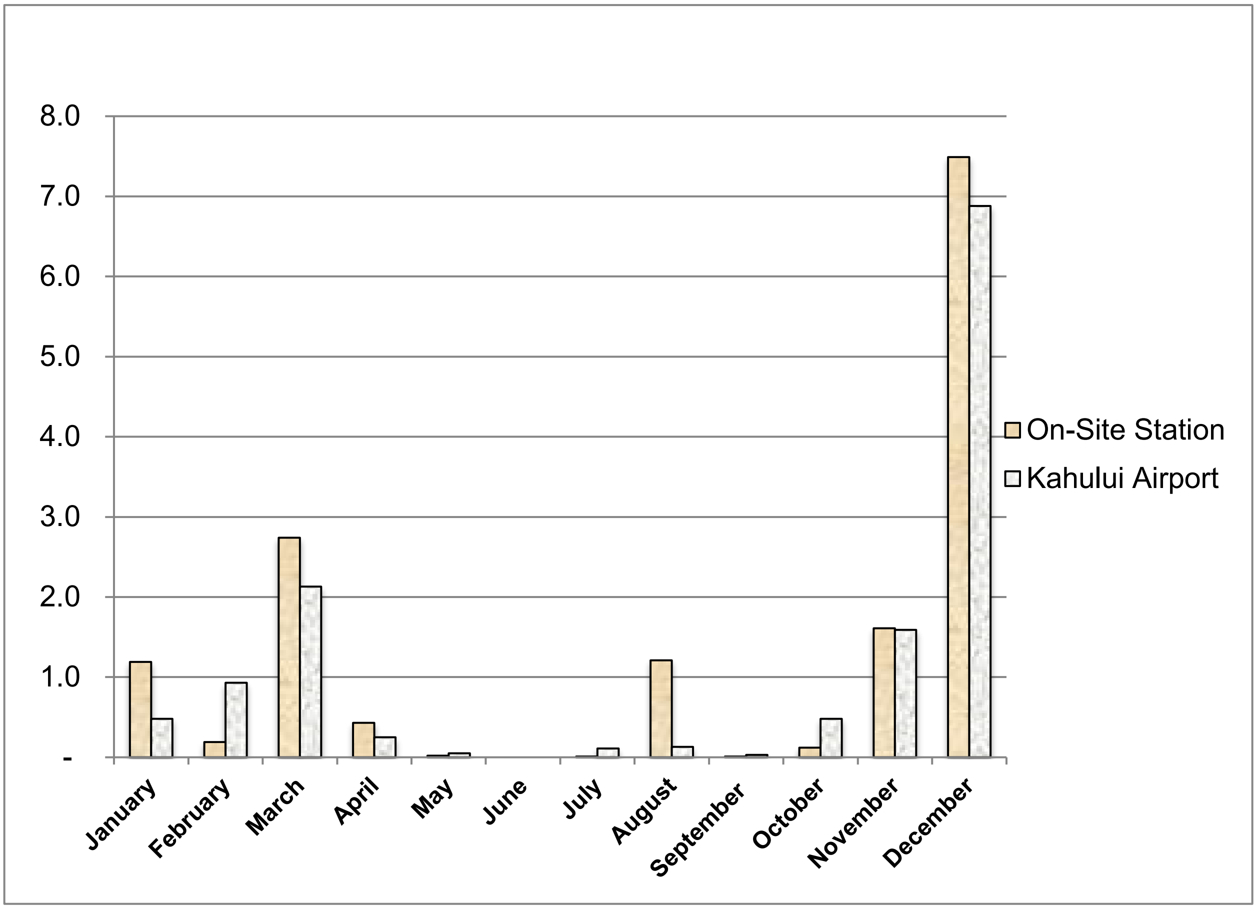


Figure 1 - CML (Adjusted) and Kahului Airport 2007 Monthly Rainfall (inches)

Two parameters from the adjusted and scaled-up 2007 record were extracted for input to the UNSAT-H model:

- Daily total precipitation (Figure 2)
- Daily total potential evapotranspiration as calculated by the weather instrument manufacturer's software using inputs from the instrument's temperature, humidity, wind speed and solar radiation sensors. Attachment 1 is a description of the calculation procedures, which are based on methods used by the California Department of Agriculture for its statewide database of potential evapotranspiration information using the Penman-Monteith equation.

TABLE 1
ANNUAL RAINFALL, KAHULUI AIRPORT

YEAR	AMOUNT (inches)
2000	9.72
2001	10.53
2002	15.07
2003	13.83
2004	26.17
2005	15.45
2006	18.65
2007	13.06
2008	9.55
2009	14.09
2010	9.44
2011	10.59

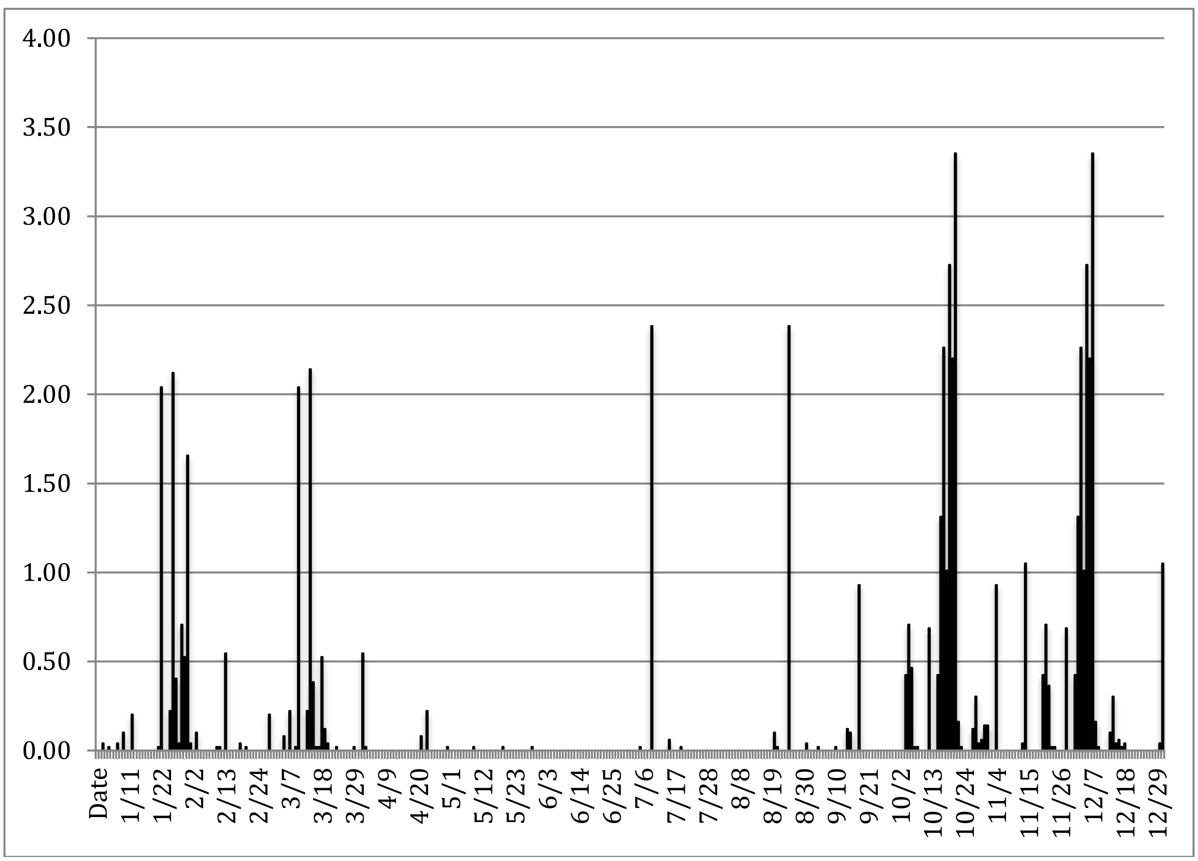


Figure 2 - Daily Synthetic Rainfall Record (inches) Scaled to 30.04 in/year

4. MATERIAL PROPERTIES

The UNSAT-H model requires two types of material properties to be input for each soil layer. One set describes the moisture retention properties of the soil, and the other establishes the hydraulic conductivity (permeability) of the soil. Since the source of material for the CML final closure infiltration layer is not known at this time, the moisture retention properties used for the two-feet thick infiltration layer were taken from laboratory analyses of silty sand material installed on a recent landfill closure in Ramona, California. To achieve a conservative result, saturated hydraulic conductivity for the final cover infiltration layer material was assumed to be 5.0×10^{-6} cm/sec, which is over four times more permeable than the local Maui soil material used in the closure of CML Phases I and II in 2007, which had a maximum measured laboratory hydraulic conductivity of 1.1×10^{-6} cm/sec. The intent will be to specify the same requirements for this project.

Moisture retention properties for the compost/soil mixture used as the vegetative layer were taken from published data for silt and loam soils (Schaap & van Genuchten, 2005). The saturated hydraulic conductivity of the vegetative layer was assumed to be 1.0×10^{-4} cm/sec, corresponding to typical silty sand. The foundation layer (compacted intermediate cover soil) was modeled with an assumed hydraulic conductivity of 1.0×10^{-4} cm/sec and water retention properties the same as the ET infiltration layer.

The upper waste layer below the final cover infiltration layer was modeled using published hydraulic properties of municipal solid waste including hydraulic conductivity of 1.0×10^{-4} cm/sec. (Benson & Wang 1998).

The material properties used in the analysis are summarized in Table 2

TABLE 2
MATERIAL PROPERTIES FOR UNSAT-H MODELING

Material	Compost/Soil (Veg. Layer)	Infiltration Layer	Foundation Layer	Solid Waste
Saturated Hydraulic Conductivity (cm/sec)	1.0×10^{-4}	5.0×10^{-6}	1.0×10^{-4}	1.0×10^{-4}
Moisture Retention Properties				
α, cm^{-1}	0.0299	0.0299	0.0299	0.26
N (dimensionless)	1.2403	1.2403	1.2403	2.216
Θ_s, saturated moisture content (% vol.)	47.0	34.64	34.64	53.0
Θ_r, residual moisture content (% vol.)	4.40	1.30	1.30	1.1

5. COVER PERCOLATION ANALYSIS

A-Mehr, Inc. performed a modeling analysis of an ET cover using the computer program UNSAT-H, which is acknowledged as a suitable method for evaluation of ET cover performance. The object of the analysis was to estimate the annual volume of percolation through the cover soil layers into the upper layer of refuse.

The cover was modeled assuming the following layers (from top to bottom):

- One (1) foot vegetative layer consisting of compost and soil blended in approximately equal proportions;
- Two (2) feet infiltration layer consisting of imported soil compacted to a maximum permeability of 5.0 x 10-6 cm/sec; and
- One (1) foot of existing intermediate cover soil, scarified and compacted before placement of the infiltration layer above it.

Plant cover was assumed to be grass covering 90% of the closed landfill surface, with roots penetrating to a maximum depth of 24 inches, or halfway into the infiltration layer of soil.

Cover performance was modeled using the synthetic PET and precipitation record described in Section 2 above. The weather record was used as an input to UNSAT-H for 5 consecutive years. The resulting final projected infiltration rate through the final cover and upper one foot of waste, after five years of the maximum rainfall year, is essentially zero.

Attachment 2 contains representative input and output listings from the UNSAT-H program.

6. REFERENCES

Benson, C.H., W. Albright, J. Smesrud (2005). Workshop on Alternative Final Covers. Sacramento, California. November 2005.

Benson, C.H. and Wang, X. (1998). Soil water characteristic curves for solid waste. Environmental Geotechnics Report 98-13. University of Wisconsin Department of Civil and Environmental Engineering. Madison, Wisconsin.

Fayer, M (2000). UNSAT-H Version 3.0: Unsaturated Soil Water and Heat Flow Model--Theory, User Manual and Examples. Report No. PNNL-13249 Pacific Northwest National Laboratory, Richland, Washington, USA.

Schaap, M. and van Genuchten, M. (2005). A Modified Mualem-van Genuchten formulation for Improved Description of the Hydraulic Conductivity Near Saturation. Vadose Zone Journal, Published by Soil Science Society of America. December 16.

ATTACHMENT 1

POTENTIAL EVAPOTRANSPIRATION CALCULATION PROCEDURES USED IN DAVIS INSTRUMENTS WEATHER STATION SOFTWARE

DERIVED VARIABLES IN DAVIS WEATHER PRODUCTS

Application Note **28**

The following parameters do not have any sensors or circuitry. They are calculated from measured variables. Any conditions that affect the functions of the measurements that are used to calculate these variables will affect the readings of these variables. This includes the Vantage Pro® and Vantage Pro2™ Setup Screen settings. In each case unless otherwise noted, the software uses the exact formula and the console uses a lookup table that closely approximates the formula.

WIND CHILL

Parameters Used: Outside Air Temperature and Wind Speed

What is it:
Wind chill takes into account how the speed of the wind affects our perception of the air temperature. Our bodies warm the surrounding air molecules by transferring heat from the skin. If there's no air movement, this insulating layer of warm air molecules stays next to the body and offers some protection from cooler air molecules. However, wind sweeps that comfy warm air surrounding the body away. The faster the wind blows, the faster heat is carried away and the colder the environment feels.

The new formula was adopted by both Environment Canada and the U.S. National Weather Service to ensure a uniform wind chill standard in North America. The formula is supposed to more closely emulate the response of the human body when exposed to conditions of wind and cold than the old formula did.

Formulas:
Older versions of software (Versions 5.0 and earlier) and firmware (Vantage firmware revisions before Sept. 7, 2001 and all non-VantagePro products including Echo) are based on the following formula (Siple and Passel, 1945):

$$0.0817 * (3.71V^{0.5} + 5.81 - 0.25V) * (T - 91.4) + 91.4$$

where V is the wind speed in mph and T is the outside air temperature in °F. Wind speeds above 55 mph are set to 55 mph. For wind speeds below 5 mph or temperatures above 91.4°F, the wind chill is set equal to the air temperature.

Newer product revisions (WeatherLink version 5.1 through 5.5.1 and Vantage Pro and Vantage Pro2 consoles with Sept 7, 2001 firmware or later and Vantage Pro2 consoles with firmware before May 2005) are based on the following formula:

$$35.74 + 0.6215T - 35.75 * (V^{0.16}) + 0.4275T * (V^{0.16})$$

As with the old formula, any place where the result yields a wind chill temperature greater than the air temperature, the wind chill is set equal to the air temperature. This always occurs at wind speeds of 0 mph or temperatures above 76°F. This also occurs at lower wind speeds with temperatures between 0°F and 76°F.

The new formula takes into account the fact that wind speeds are measured "officially" at 10 meters (33 feet) above the ground, but the human is typically only 5 to 6 feet (2 meters) above the ground. So, anemometers still need to be mounted as high as possible (e.g., rooftop mast) to register comparable wind speed readings and wind chill values.

An even newer version of this formula is available in WeatherLink version 5.6 or later and Vantage Pro2 console firmware version and later. This newer version of the formula addresses the fact that the latest National Weather Service (NWS) formula was not designed for use above 40°F. The result of the straight NWS implementation was little or no chilling effect at mild temperatures. This updated version provides for reasonable chilling effect at mild temperatures based on the effects determined by Steadman (1979) (see THSW Index section), but as with the new NWS formula, no upper limit where chilling has no additional effect. The later version for the console table only differs in that whole degrees and less resolution in the table are used for code and memory space conservation. As with previous versions of the wind chill formula, any place where the result yields a wind chill temperature greater than the air temperature, the wind chill is set equal to the air temperature. This always occurs at wind speeds of 0 mph or temperatures at or above 93.2°F (34°C). This also occurs at lower wind speeds with temperatures between 0°F (-18°C) and 93.2°F (34°C). As per Steadman (1979), 93.2 F (34°C) is the average temperature of skin at mild temperatures, thus temperatures above this value will actually create an apparent warming effect (see THSW Index section).

The Vantage Pro and Vantage Pro2 console uses the "10-minute average wind speed" to determine wind chill, which is updated once per minute. When 10-minute of wind speed data is unavailable, it uses a running average until 10-minutes worth of data is collected. The WeatherLink® software uses the 10-minute average wind speed also. If it is unavailable, it uses the current wind speed (which updates every 2.5 to 3 seconds). All other products use the current wind speed to determine wind chill.

The reason an average wind speed is employed in the Vantage Pro and Vantage Pro2 to calculate wind chill is as follows: The human body has a high heat capacity, thus high wind speeds have no effect on the body's thermal equilibrium. So, an average wind speed provides a more accurate representation of the body's response than an instantaneous reading. Also, "official" weather reports (from which wind chill is calculated) provide average wind speed, so using an average wind speed more closely matches the results that are seen in weather reports.

REFERENCES

"Media Guide to NWS Products and Services", National Weather Service Forecast Office, Monterey, CA, 1995.

"New Wind Chill Temperature Index", Office of Climate, Water and Weather Services, Washington, DC, 2001.

Siple, P. and C. Passel, 1945. Measurements of Dry Atmospheric Cooling in Subfreezing Temperatures. *Proc. Amer. Philos. Soc.*

Steadman, R.G., 1979: The Assessment of Sultriness, Part I: A Temperature-Humidity Index Based on Human Physiology and Clothing Science. *Journal of Applied Meteorology, July 1979*

HEAT INDEX

Parameters Used: Outside Air Temperature and Outside Humidity

What is it:
Heat Index uses temperature and relative humidity to determine how hot the air actually "feels." When humidity is low, the apparent temperature will be lower than the air temperature, since perspiration evaporates rapidly to cool the body. However, when humidity is high (i.e., the air is saturated with water vapor) the apparent temperature "feels" higher than the actual air temperature, because perspiration evaporates more slowly.

Formulas:
Older versions of software and the display console using the following methodology. This formula is based upon the lookup table presented by Steadman (1979). The Davis implementation simply extends the range of use of this table to make it usable at temperatures beyond the scope of the table. Some of this extension is based on the table adapted by the US National Weather Service. The GroWeather and EnviroMonitor systems do not display a value beyond the scope of the Steadman table. All other products that display this value either:

- Set values at temperatures below the scope of the table to the air temperature
- Extend the readings using a best-curve fit above and below the air temperature scope of the table. The low temperature cutoff is when the heat index for the given combination of temperature and humidity is 14°C or 57.2°F or below. This corresponds to a vapor pressure of 16 hPa. Heat Indices are set equal to the air temperature or 57.2°F, whichever is less, below these values. (The 14°C cutoff corresponds to the equivalent dewpoint at average testing laboratory conditions.)

WeatherLink software versions 5.2 or later and Vantage Pro2 console firmware versions of May 2005 revision or later use the above methodology with the following exceptions for values below an air temperature of 68°F:

- The values use a variable baseline to which the Heat Index is either above or below the air temperature.
- The values are loosely derived from the methodology outlined by Steadman in his 1998 paper (referenced below). Thus, air temperatures below 50°F follow this 1998 procedure. Air temperatures above 68°F follow his procedure outlined in 1979 (since the US NWS continues to use this). Davis has made a smooth transition between the two methods between 50°F and 68°F.

The formula Davis uses is also used by the US National Weather Service. Heat Index can also be used to determine indoor comfort levels and as such is displayed in WeatherLink version 5.6.

The latest version for the console table only differs in that whole degrees and less resolution in the table are used for code and memory space conservation.

Note: Heat Index has also been referred to as "Temperature-Humidity Index" and "Thermal Index" in some Davis products.

REFERENCES

Steadman, R.G., 1979: The Assessment of Sultriness, Part I: A Temperature-Humidity Index Based on Human Physiology and Clothing Science. *Journal of Applied Meteorology, July 1979*

"Media Guide to NWS Products and Services", National Weather Service Forecast Office, Monterey, CA, 1995.

Quayle, R.G. and Steadman, R.G., 1998: The Steadman Wind Chill: An Improvement over Present Scales. *Weather and Forecasting, December 1998*

DEWPOINT

Parameters Used: Outside Air Temperature and Outside Humidity

What is it:
Dewpoint is the temperature to which air must be cooled for saturation (100% relative humidity) to occur, providing there is no change in water content. The dewpoint is an important measurement used to predict the formation of dew, frost, and fog. If dewpoint and temperature are close together in the late afternoon when the air begins to turn colder, fog is likely during the night. Dewpoint is also a good indicator of the air's actual water vapor content, unlike relative humidity, which is air temperature dependent. High dewpoint indicates high vapor content; low dewpoint indicates low vapor content. In addition a high dewpoint indicates a better chance of rain and severe thunderstorms. Dewpoint can be used to predict the minimum overnight temperature. Provided no new fronts are expected overnight and the afternoon Relative Humidity >=50%, the afternoon's dewpoint gives an idea of what minimum temperature to expect overnight. Since condensation occurs when the air temperature reaches the dewpoint, and condensation releases heat into the air, reaching the dewpoint halts the cooling process.

Formula:
The following method is used to calculate dewpoint:

$v = RH*0.01*6.112 * \exp[(17.62*T)/(T + 243.12)]$,

this equation will provide the vapor pressure value (in pressure units) where T is the air temperature in C and RH is the relative humidity.

Now dewpoint, Td, can be found:

Numerator = $243.12*(\ln v) - 440.1$

Denominator = $19.43 - \ln v$

Td = Numerator/Denominator

This equation is an approximation of the Goff & Gratch equation, which is extremely complex. This equation is one recommended by the World Meteorological Organization for saturation of air with respect to water.

The Vantage Pro and Vantage Pro2 console uses a lookup table and it only differs from the formula in that whole degrees and less resolution in the table are used for code and memory space conservation.

REFERENCES

"Guide to Meteorological Instruments and Methods of Observation". World Meteorological Organization, Geneva, Switzerland, 6th Ed. 1996.

"Smithsonian Meteorological Tables". Smithsonian Institution Press, Washington, DC, 4th Ed. 1968.

THSW INDEX

Parameters Used: Temperature, Humidity, Solar Radiation, Wind Speed, Latitude & Longitude, Time and Date

What is it:
Like Heat Index, the THSW Index uses humidity and temperature to calculate an apparent temperature. In addition, THSW incorporates the heating effects of solar radiation and the cooling effects of wind (like wind chill) on our perception of temperature.

Formula:
The formula was developed by Steadman (1979). The following describes the series of formulas used to determine the THSW or Temperature-Humidity-Sun-Wind Index. Thus, this index indicates the level of thermal comfort including the effects of all these values.

This Index is calculated by adding a series of successive terms. Each term represents one of the three parameters: (Humidity, Sun & Wind). The humidity term serves as the base from which increments for sun and wind effects are added.

The Vantage Pro and Vantage Pro2 calculation is an improvement over the THSW Index in the Health EnviroMonitor because the Health system:

- only calculates THSW Index when air temperature is at or above 68°F.
- assumes the sky is clear.
- assumes the elevation is sea level.

HUMIDITY FACTOR

The first term is humidity. This term is determined in the same manner as the Heat Index. This term serves as a base number to which increments of wind and sun are added to come up with the final THSW Index temperature.

Note: Heat Index has also been referred to as "Temperature-Humidity Index" and "Thermal Index" in some Davis products

WIND FACTOR

The second term is wind. Depending upon your version of firmware or software, this term is determined in part by a lookup table (for temperatures above 50°F) and in part by the wind chill calculation, or uses an integrated table that is used both for calculation of this term and for wind chill. With this in mind, the following criterion apply with later versions referring to Vantage Pro2 console firmware revision May 2005 or later or WeatherLink version 5.6 or later:

- At 0 mph, this term is equal to zero.
- For temperatures at or above 68°F and wind speeds above 40 mph, the wind speed is set to 40 mph. For later versions, there is no upper limit on wind speed.
- For temperatures at or above 130°F, this term is set equal to zero. For later versions of this algorithm: WeatherLink uses 144°F as the threshold; Vantage Pro2 console firmware 143°F. This is based on a best-fit regression of the Steadman 1979 wind table. The differences are reflective of the higher resolution used in the WeatherLink software.