ENVIRONMENTAL
MANAGEMENT
SYSTEMS, INC.

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4080 SE International Way
Suite B-112
Milwaukie, OR 97222

5 November 2020
Report # 19-0054-02

Mr. Ted Millar
c/o: Aron Faegre & Associates
520 SW Yamhill St., Roofgarden 1
Portland, OR 97204

REGARDING: Winter Evaluation for feasibility of onsite wastewater treatment, HDSE Sewer System Association, Aurora State Airport, adjacent to Keil Rd. NE and Hubbard Cuttoff Rd. NE, Aurora, OR 97002. T: 4S, R: 1W, Sec: 11, T.L: 800, 17.79 Acres

Dear Mr. Millar & Mr. Faegre,

As requested, Environmental Management Systems, Inc. (EMS) has performed the following services and provides this report for your use.

PROJECT DESCRIPTION:

The goal of this project is to expand the approved drainfield area for onsite wastewater treatment to serve future expansion of your existing HDSE Sewer System Association facilities located at the Aurora State Airport. The subject property is leased from the Oregon Department of Aviation by the HDSE Sewer System Association. The lease was recently renewed to accommodate expansion to include enough drainfield area to double the existing system's capacity in support of future development. The existing drainfields in this area were approved by DEQ in 2005 and have been functioning with no problems in the intervening 15 years since installation. There have been no documented drainfield problems in these soils. On September 25th, 2019, twelve test pits adjacent to the existing drainfields were evaluated by Marion County for feasibility for onsite wastewater treatment. EMS's analysis was that the soils are similar to the adjacent existing soils and will function acceptably. However, Marion County staff initially denied the application on October 8th, 2019 because they felt there was potential for seasonally high groundwater which could be a problem, and because they believed there was a presence of fill in this area. They recommended that for re-evaluation a tile dewatering system be installed to drain the area, and that a winter evaluation be conducted to determine the actual depth to seasonal water table. EMS designed a tile dewatering system which was installed in January of 2020. A winter evaluation was conducted through the winter of 2020. This report details our methods, findings, and recommendations for next steps and continues to recommend approval of the soils for the expansion use.

SUMMARY:

The average water depth across all twelve wells was 28 inches from the surface, after the tile dewatering system (TDS) was installed on January 23rd, 2020. The longest consecutive number of days that the water table rose above 12" below ground surface anywhere in the drainfield was about 3.8 days. On average, the water table rose above 12" for less than 1 day, with five out of the twelve wells having no shallow water table readings after the TDS was completed. Each well was dry when they were re-inspected in June following excessive rainfall during the previous six weeks. Based on success of the existing system and this study, we recommend approval of the drainfield areas for installation of a shallow pressure distribution drainfield, following Treatment Standard 1 or 2 similar to that currently in use. Permits require review and approval by DEQ.

METHODS: The following methods were used:

Observation x Measurement x Staking x Soil Evaluation x
Sampling x Inspection x Laser Elevations x Total Station x
Gov Records x Interview x Aerial Photo _x_ Soil Survey x
Geologic Maps _x_ Wetland Inventories x other (specify) Weather tracking x

LIMITATIONS: This investigation is limited by the precipitation frequency and duration.

LANDSCAPE SETTING:
The study area consists of Tax Lot 800 in Township 4S, Range 1W, Section 11, in Marion County Oregon, totaling 17.79 acres. The site is outside of the urban growth boundary for Aurora and is zoned P (public) by Marion County. The site is part of a complex of many lots all making up the Aurora State Airport. The onsite wastewater treatment system is owned and operated under a common entity known as the HDSE Sewer System Association. Lot 800 is owned by Oregon Department of Aviation, with part of the site leased by the Association as a private septic system easement. The proposed drainfield area is within the easement, south of the airport runway and on either side (east and west) of the runway flight path and instrument landing system (FAA localizer). An existing drainfield is located at the southeast corner of the easement, south and southeast of the new proposed drainfields. An approved reserve area is in the southwest corner of the easement. No signs of failure, such as surfacing or odors, have been observed in the existing system since its installation in 2005. Also, this state-owned property is fenced and monitored to protect it from unauthorized public access and or contact with sewage.

The site is situated in the lowlands of the Willamette Valley, northwest of the town of Aurora. The average elevation of the site is approximately 193 feet above sea level. The site is fairly flat, sloping 1-2% east and west, with a crown along the runway flight path. The soils in this area were established in 1993 when the runway was extended over existing farmland. There has been no disturbance of those soils in the intervening 27 years. Two drainage swales are located along the east and west property lines, draining surface runoff to the south. Concrete culverts at the southwest and southeast corners of the site convey drainage off site. The property is open and vegetated with grasses and other low-lying forbs. No wetlands are mapped on the property by the National Wetlands Inventory (US Fish & Wildlife), and none were observed during the site visit. According to Oregon Department of Geology and Mineral Industries (DOGAMI) geology of the site is mapped as Quaternary surficial deposits (fine grained sediments) of the Missoula Flood Deposits formation.

The soil on site is mapped by the Natural Resource Conservation Service (NRCS) as Amity silt loam. Amity is described as somewhat poorly drained with a depth to water table of 6 to 16 inches, and depth to restrictive layer over 80 inches. Conditions associated with saturation (redoximorphic features) were observed at 6-16 inches from the soil surface, indicating potential for a seasonally high-water table. Runway construction resulted in the deposition of fill soil along the sides. This soil has remained essentially undisturbed for 23 years.

The new drainfield lease area was surveyed prior to conducting the study. Enough area was included for two new drainfields and reserve areas to support a design flow of approximately 10,000 gpd, thereby doubling the existing system's capacity. Twelve test pits were dug across the site in the summer of 2019, with six on the eastern proposed drainfield area, and six in the western proposed drainfield area. Various depths of the (at least) 27 year old fill were observed over the native silt loam in the 6 eastern test pits dugs on the site (TP's 5-10).

TILE DEWATERING SYSTEMS

Tile dewatering systems (TDS) were installed on the site in mid-January 2020, with completion on January 23rd, 2020. In both the east and west drainfield areas, two adjacent 70' by 350' rectangular dewatering trenches were installed. The field collection tile was installed with a slope of 0.2-0.4 percent at the bottom of the trenches; trench depths vary between 15 and 52 inches from ground surface. The trenches are 1 foot wide and are filled with EZFlow synthetic drain media. Each drainage system is connected to a 4" tight line installed on a 1% slope, which discharges to either the east or west drainage swale. Sediment basins were installed at the inlet end of each outfall pipe.

WATER TABLE MONITORING

While DEQ does not provide guidance on how to evaluate data, research has demonstrated that 21 days per season of actual saturation is needed to create the Redoximorphic Features which form the basis for Oregon DEQ to judge depth to water table. Published guidance from several sources, primarily the Recommended Procedures and Standards for Conducting a Water Table Study from Virginia Tech University[1] (2008) was used for conducting the water table study. On December 4th, 2019, thirteen (13) monitoring wells (piezometers) were installed on the site by registered geologist and licensed well constructor, Roger N. Smith (RG, License #10225).

Within each 70' x 350' tile dewatering area, 3 piezometers wells were installed (12 total). One additional well was installed approximately 20 feet north of the eastern tile system to collect barometric pressure. Each monitoring well consists of a 5-foot long, 1-inch diameter plastic PVC pipe capped with a plastic lid. The wells were installed approximately 3 feet below the surface, with 22-29 inches of pipe above ground surface. Special Standards were requested from and approved by the Oregon Water Resources Department. Silica filter sand was placed in the hole around the piezometer at the lowest 26 inches, followed by a 12-inch bentonite seal to the soil surface. A slit was sawed in the top of each pipe to allow the lid to be easily removed, and to release air pressure inside the well from the rising and lowering water table. Each well was assigned a number (Pz1 – Pz13) which was noted on metal start card tags and written in permanent marker on the pipe itself. Start cards for the wells were registered with the Oregon Water Resources Department.

Table 1. Measured and calculated Barodiver cord lengths relative to grade

Piezometer	Cord length (in.)	Cord length above grade (in.)	Cord length below grade (in.)
Pz1	57	27	30
Pz2	56	25	31
Pz3	57	29	28
Pz4	57	27	30
Pz5	57	28	29
Pz6	58	29	29
Pz7	57.5	27	30.5
Pz8	58	27	31
Pz9	56	27	29
Pz10	57.5	25.5	32
Pz11	57.5	25	32.5
Pz12	57	22	35

[1] Cobb, PR, Conta, JF, Steverson, ED, and Stull RL. Recommended Procedures and Standards for Conducting a Water Table Study, Version 1.0. Crop and Soil Environmental Sciences Department, Virginia Tech, Blacksburg, VA

DATA COLLECTION.

Barodiver data loggers were placed inside Pz's 1-12, between 28 and 35 inches below grade to collect water column pressure. One additional Barodiver was placed in Pz13 above the soil surface to collect atmospheric pressure for the study area. Technical specifications for the Barodiver data loggers are enclosed at the end of this report. The total cord length (CL) and cord length above grade (COG) for each Barodiver was measured manually and recorded (see Table 1). Data was collected automatically every four hours (6 times per day) from January 9th, 2020 until approximately 9:00 am on May 1st, 2020. Data for the date of the installation (January 8th) was omitted to avoid false readings caused by system testing, and an artificially high-water table immediately after the wells were dug. Each piezometer was surrounded by wooden stakes and caution tape for protection (see Figure 1 below).

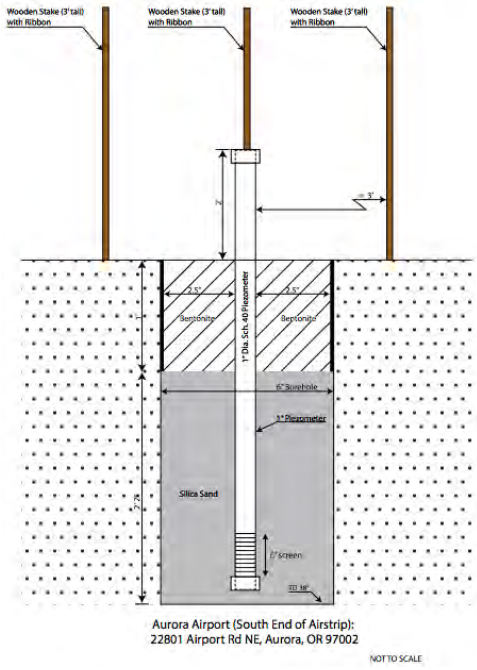

Figure 1. Piezometers were installed approximately 3 feet below grade and pressure sensors were hung from the top of the pipe. The well was sealed with bentonite clay.

The site was visited once each month during the study; a total of 5 times after setup. Each site visit consisted of the following:

1. Inspect each well to ensure they are still fully functioning and had not been tampered with
2. Download data from Barodiver data loggers onto laptop using USB data port
3. Visually inspect the tile dewatering system and assess flow

After all data was collected, the water level (WL) for each well was then determined using the following equation, where ρ is the density of water (1000 kg/m3) and g is the acceleration due to gravity (9.80665 m/s2s). :

$$WL = COG - CL + 9806.65 \frac{P_{diver} - P_{baro}}{\rho * g}$$

RAINFALL MONITORING

Precipitation data for January 2020 through April 2020 was collected from the Aurora State Airport weather station in Aurora, Oregon (45.2485, -122.7686). Normal precipitation levels were determined using the US Normal Data (1981-2010) from the National Oceanic and Atmospheric Administration (NOAA), obtained from the NRCS National Water and Climate

Center (https://www.wcc.nrcs.usda.gov/climate/navigate_wets.html). However, because the NOAA uses data from 1981-2010 to determine Climate Normals, this year's precipitation was also compared to the previous two years (2018 and 2019). Precipitation was found to be only 5% drier than last year (2019). Daily precipitation levels were monitored and compared to water table levels.

FINDINGS:

Precipitation

The precipitation for the past three years in the Aurora area has been less than what previously has been considered "normal" based on long term records. Table 2 below shows the monthly precipitation for 2020, 2019, and 2018 from data from the airport weather station. It is unknown whether there is going to be a new normal, however we can say this study was performed under precipitation conditions that were only 5% different than the previous year.

Table 2 – Monthly precipitation totals in inches for 2018, 2019, 2020.

Month	2020	2019	2018
January	7.06	3.49	5.57
February	1.64	3.97	2.06
March	2.53	1.54	2.97
April	1.32	4.24	5.04
Total	**12.55**	**13.24**	**15.64**

Table 3 shows total precipitation for the months of January through April 2020. Although the month of January was above normal, February, March, and April were drier than normal. The expected normal and the measured precipitation for the months of the study were totaled, and overall, the precipitation was found to be 70% of historic normal. Daily precipitation levels are graphed in Figure 2, below.

Table 3 – Percent of NOAA Normal precipitation for January 2020 – April 2020

Month	Normal (inches)	Measured (inches)	Percent of Normal
January	5.87	7.06	120
February	4.75	1.64	35
March	4.23	2.53	60
April	3.13	1.32	42
Total	**17.98**	**12.55**	**70**

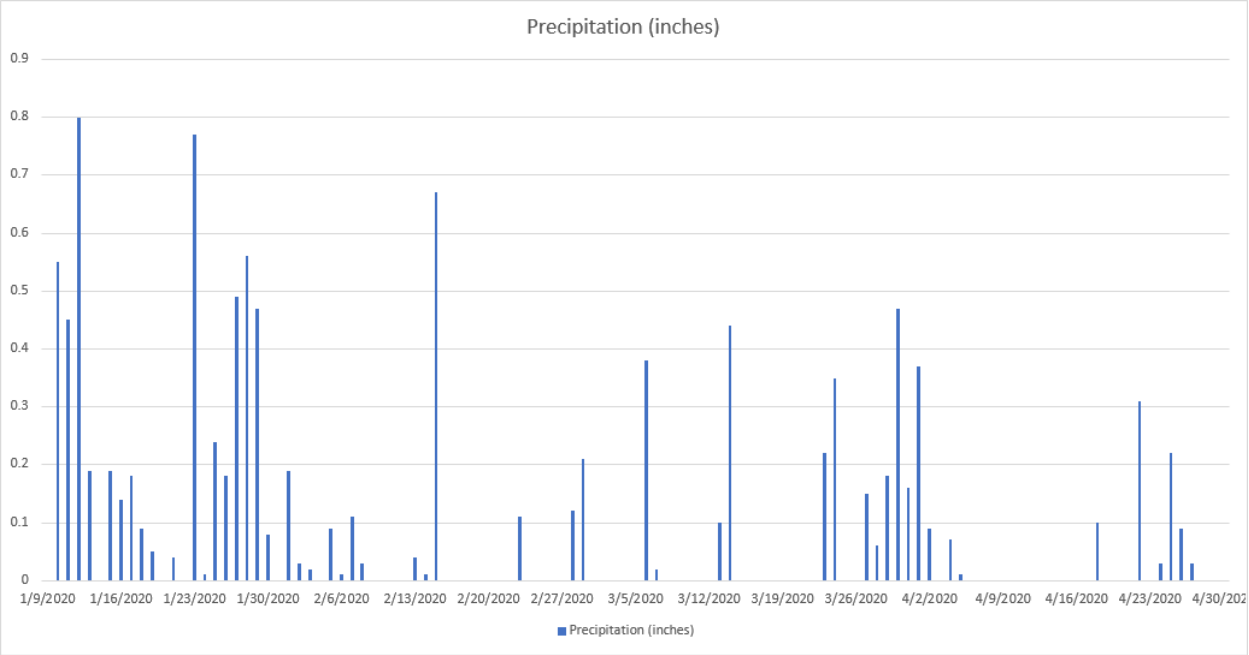

Figure 2 –Daily precipitation (inches) from the Aurora State Airport weather station (June 9th – May 1st).

Precipitation for May and June of 2020 was greater than normal, with 2.82 inches of rain in May (119% of normal), and 2.96 inches of rain in the first half of June (147% of monthly normal as of June 16th). EMS returned to the site on June 16th to manually measure the water table in each well. Each of the 12 piezometers was dry (no standing water in the well). 0.24 inches of rain fell on the day the measurements were taken. The ten days prior to the measurements each had precipitation, with the biggest rain event being on June 15th when 0.84 inches of rain fell. Daily climate data for each month is enclosed at the end of this report.

Well data and water table levels

A total of 681 readings were automatically collected every 4 hours from each piezometer during the study. The results were variable across all wells. Some of the wells exhibited periods of time where the water table was less than 12” from the ground surface (up to 37 readings a row in Pz9) whereas others had none at all. The average water table depth across all wells was 21” and 28” from ground surface, before and after the installation of the TDS respectively. Pz4 and Pz11 were always deeper than 12” throughout the study. The shallowest water table depth was in Pz12, at 3” on the dates of 01/16/2020 and 1/29/2020. Most shallow water table readings occurred in January, which had 120% of normal rainfall, and prior to the tile dewatering system being installed. Average and minimum water table depths before the tile dewater system was installed are summarized in Table 4, below. Piezometers are located on either the east or west side of the runway approach and departure areas.

Table 4. Average and highest water table levels, in inches, before the TDS installation (01/09/2020 – 01/22/2020.

Piezometer	Average water level	Highest water level	Location
Pz1	20	8	West
Pz2	19	6	West
Pz3	22	7	West
Pz4	26	13	West
Pz5	28	22	East
Pz6	20	9	East
Pz7	21	9	East
Pz8	17	6	East
Pz9	14	4	East
Pz10	23	12	East
Pz11	29	23	West
Pz12	17	3	West
Average	**21**	**12**	

After the tile dewatering system was completed, only seven of the twelve wells had occurrences of the water table being less than 12” from the surface (Table 5). These shallow water table events were brief periods that to correlate with significant rain events of 0.5 inches of rain or more over a 24-hour period. The average water table depth across all wells was 28” inches from the surface between 01/23/2020 and 05/01/2020.

Table 5. Average and highest water table levels, in inches, after TDS installation (01/23/2020 – 05/2020)

Piezometer	Average water level	Highest water level	Location
Pz1	24	5	West
Pz2	26	7	West
Pz3	27	5	West
Pz4	29	17	West
Pz5	28	10	East
Pz6	28	10	East
Pz7	31	30	East
Pz8	31	28	East
Pz9	28	17	East
Pz10	30	6	East
Pz11	30	17	West
Pz12	25	3	West
Average	**28**	**13**	

Daily precipitation is graphed along with water table levels in the enclosed hydrographs. All shallow water table readings occurred in January, which had 120% of normal rainfall, except for Pz1, which had one reading on 2/16/2020, and Pz12, which had three readings on 2/16/2020. 0.67 inches of rainfall occurred on the previous day (2/15/2020). The longest duration that any well had a shallow water table of 12” or less was 23 consecutive readings (about 3.8 days). See Table 6 below. In Pz1, Pz2, Pz5, Pz6, Pz10, and Pz12, the longest duration of shallow water table conditions occurred around the dates of 01/27/2020 - 01/29/2020, when approximately 1.5 inches of rain fell. On average, the water table was only above 12 inches for about 0.9 days after significant rain events. According to the standards recommended by Virginia Tech, less than 21 consecutive days of high-water table conditions is considered acceptable.

Table 6. Consecutive time of shallow water table conditions for each piezometer, after installation of TDS (01/23/2020 – 05/01/2020).

Piezometer	# of readings	Consecutive hrs.	Consecutive days	Dates
Pz1	13	5	2.2	1/28 - 1/30
Pz2	12	48	2.0	1/27 - 1/29
Pz3	0	0	0	--
Pz4	0	0	0	--
Pz5	4	16	0.7	1/28
Pz6	4	16	0.7	1/23, 1/28
Pz7	0	0	0	--
Pz8	0	0	0	--
Pz9	0	0	0	--
Pz10	10	40	1.7	1/27 - 1/29
Pz11	0	0	0	--
Pz12	23	92	3.8	01/27 - 01/31
Average	**6**	**22**	**0.9**	

Since May and June were wetter than normal, EMS returned to the site on June 16th to manually measure the water table in each well. Each well was dry, with no standing water at the bottom of the well.

Tile Dewatering System

The tile dewatering system was completed on January 23rd, 2020. During each site visit, water was observed flowing from the field collection tile into the outfall pipes. Water was also observed draining from the outlet of the pipe and discharging to the swales near the east and west property lines. Prior to the installation of the TDS, ten out of twelve wells had a high-water table of 12" or less from the surface. After the installation of the TDS, only seven out of twelve wells had a high-water table, and only for relatively short periods during significant rain events. The TDS is functioning as designed and has contributed to lowering the water table.

Figure 3 –Tile dewatering trenches were installed 15-52 inches below grade and filled with 12" EzFlow bundles. 4" pipes at the bottom of the trench sloped are at 0.2-0.4%.

Figure 4 –24" silt traps were installed at the inlet end of each tight line outfall, which discharged toward existing drainage swales on the site. Photo taken facing west toward the west property line (fence) with Hubbard Cuttoff Rd. NE in the background.

CONCLUSIONS:

1. Precipitation for the months of January through April 2020 was only 5% drier than 2019. When compared to the NOAA 1981-2010 Climate Normals, precipitation during the study was 70% of “normal”.

2. May and June were wetter than normal. May had 119% of normal precipitation. In June, 147% of the monthly normal precipitation had accumulated in the first half of the month. EMS returned to the site in mid-June to manually measure the water table levels.

3. Between January 9th and January 22nd, the average water table depth for each piezometer ranged between 14” (Pz9) and 29” (Pz10) from the ground surface and averaged 21” across all wells.

4. After installation of the tile dewatering system on January 23rd, the average water table depth across all wells increased to 28”. In half of the wells, the water table never rose above 12” from the surface after the TDS was installed.

5. Most shallow water table readings (less than 12” from the ground surface) occurred in January, which had 120% of normal precipitation. Spikes in the water table levels appear to correlate with significant rain events of 0.5 inches or more over 24 hours.

6. The most consecutive number of days that the water table was rose above 12” from the soil surface was about 3.8 days in Pz12. On average, the water table lingered above 12” for about 0.9 days, although five out of twelve wells had no shallow water table readings after the TDS was installed. Less than 21 consecutive days of shallow water table is considered acceptable for onsite wastewater treatment.

7. No water was observed in the bottom of the wells when manual measurements were taken on June 16th, 2020. This was following an unusually wet June, which had already accumulated 2.96 inches of the total normal 2.02 inches of monthly precipitation in the first half of the month. 0.84 inches of rain fell the previous day (June 15th). The first half of June's 2.96 inches amounts to 146% of the whole months normal or 293% of the first half's expected 1.01 inches.

8. Onsite wastewater treatment appears feasible. Effluent will be highly treated to Treatment Standard 2 and disinfected, using the existing Advantex AX100 textile filters, or similar technology with Ultra Violet Disinfection when these future repair drainfields are needed. High water table levels only occur after significant rain events and for relatively short durations (less than 21 consecutive days).

9. This site is protected from public access by fencing and constant observation, thereby further limiting the risk of human contact with sewage.

10. Further, the existing drainfield has been in use for fifteen years in similar soils and treatment with no signs of failure.

RECOMMENDATIONS: The following additional steps or services appear to be needed:

1. Feasibility review. The result of this study will need to be presented to and assessed by Marion County and/or Oregon Department of Environmental Quality (DEQ) to reevaluate feasibility of the site for on-site wastewater treatment.

2. On-site Wastewater Treatment System Design. A final design will need to be prepared that meets DEQ specifications for a Water Pollution Control Facility Permit.

DISCLOSURE: The information and statements in this report are true and accurate to the best of our knowledge. Neither Environmental Management Systems, Inc., nor the undersigned have any economic interests in the project.

Thank you for your business. We look forward to assisting you to achieve your development goals. If you have any questions, please contact Emma Eichhorn, REHS, or me at 503-353-9691.

Sincerely

Robert F. Sweeney, MS, REHS
President
ENVIRONMENTAL MANAGEMENT SYSTEMS, INC.

Enclosures:
1. Site Plan
2. Tile Dewatering System Details
3. Tax Lot Map
4. Hydrographs for piezometers Pz1 – Pz12
5. Barodiver data logger spec sheet
6. Precipitation data for the Aurora State Airport weather station

EMS 503-353-9691 360-735-1109 www.envmgtsys.com 4080 SE International Way Suite B112 Milwaukie, OR 97222 ENVIRONMENTAL MANAGEMENT SYSTEMS, INC.	CHECKED: DRAWN:	AABC-HD AVIATION T: 4S, R: 1W, Sec 2 & 11, TL: 200, 203, 400, 401, 800, 900 & 1600 AIRPORT SITE PLAN	19-0054 12/10/2019 1 OF 3

Aurora Airport
Located at Airport & Keil Roads NE
Aurora, OR 97002

52 LF 4" SCH40 PVC TIGHTLINE TO OUTFALL
186.16 ELEV.

EXISTING GROUNDWATER INTERCEPTOR

24" CONCRETE CULVERT
I.E. 186.08'

EXISTING DRAINFIELD
3,000 LF

KEIL RD NE

◆ = TEST PIT
⊗ = PIEZOMETER

FENCE
DRAINAGE SWALE
~70.7'

24" SILT TRAP

B A
70' MAX
140'
70' MAX
C D
350'

TILE DEWATERING SYSTEM
SEE PAGE 3 FOR DETAILS

PROPOSED RESERVE DRAINFIELDS FOR FUTURE USE

PROPOSED EXPANDED LEASE AREA
TOTAL 263.229.5 SQFT
SUBJECT TO CHANGE

RUNWAY

RUNWAY LIGHTS

KEIL RD NE

G F
350'
TILE DEWATERING SYSTEM
SEE PAGE 3 FOR DETAILS
70' MAX
140'
70' MAX
H E

EXISTING RESERVE DRAINFIELD AREA

24" SILT TRAP

GATE

UTILITY BUILDING

DRAINAGE SWALE
FENCE

24" CONCRETE CULVERT
I.E. 186.72'

45 LF 4" SCH40 PVC TIGHTLINE TO OUTFALL
188.0' ELEV.

HUBBARD CUTOFF RD NE

THIS DOCUMENT IS NOT A SURVEY. LOCATIONS OF SITE FEATURES ARE APPROXIMATE.

0 100
SCALE 1"= 100'

19-0054

12/10/2019

2 OF 3

AABC-HD AVIATION

T: 4S, R: 1W, Sec 2 & 11, TL: 200, 203, 400, 401, 800, 900 & 1600

SITE PLAN

CHECKED:

DRAWN:

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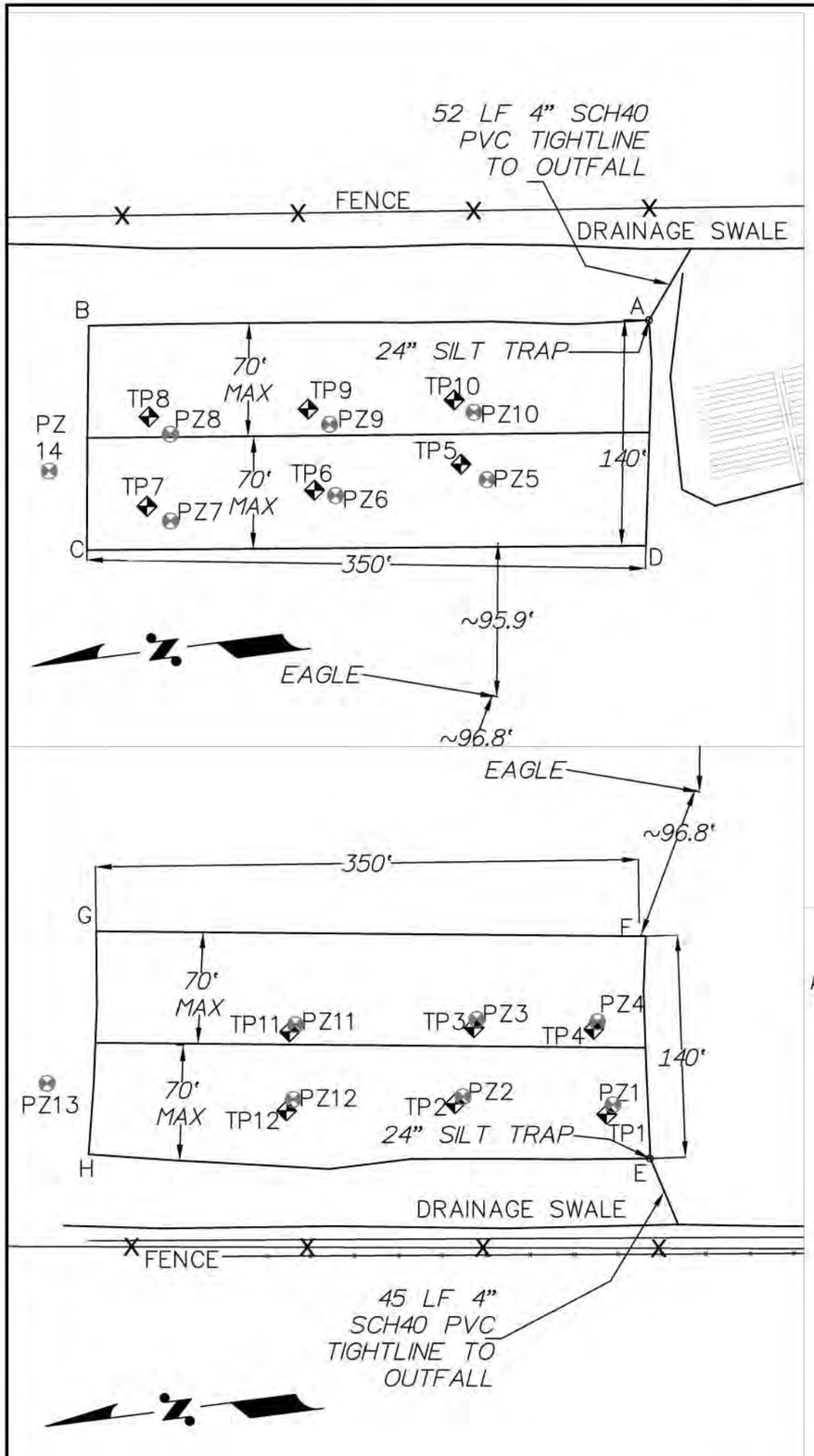
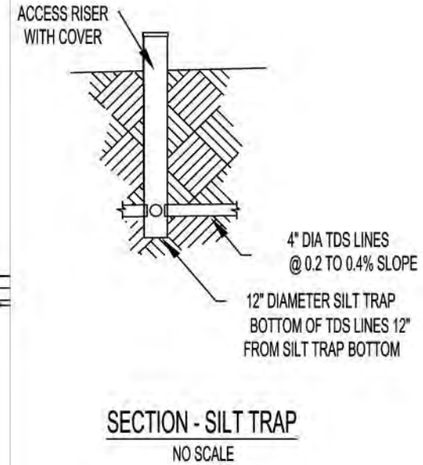


East TDS

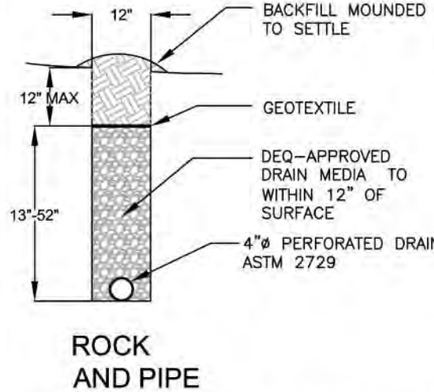
POINT	Trench Elevation (feet)	Surface Elevation (feet)	Trench Depth (feet)	Trench Depth (inches)
A	186.72	189.28	2.57	30.79
B	187.59	189.71	2.11	25.36
C	187.94	191.44	3.50	41.94
D	187.07	191.42	4.35	52.24

West TDS

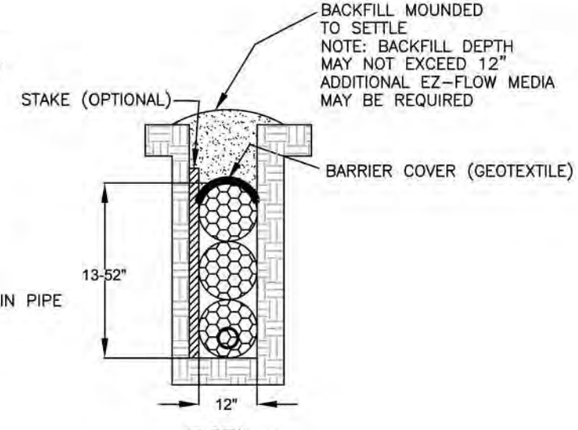
POINT	Trench Elevation (feet)	Surface Elevation (feet)	Trench Depth (feet)	Trench Depth (inches)
E	188.45	189.73	1.29	15.42
F	188.73	192.07	3.35	40.17
G	189.43	192.42	3.00	35.94
H	189.15	190.28	1.13	13.59



SECTION - SILT TRAP
NO SCALE



ROCK
AND PIPE



EZFlow
EZ1203V

DEWATERING TRENCH DETAIL

SCALE : NTS

REFER TO TABLE FOR TRENCH DEPTHS. SLOPE MUST BE 0.2-0.4% IN FIELD COLLECTION DRAINAGE TILE.

19-0054

12/10/2019

3 OF 3

AABC-HD AVIATION

T: 4S, R: 1W, Sec 2 & 11, TL: 200, 203, 400, 401, 800, 900 & 1600

TILE DEWATERING SYSTEM DETAIL

CHECKED:

DRAWN:

EMS
ENVIRONMENTAL MANAGEMENT SYSTEMS, INC.
4080 SE International Way
Suite B112
Milwaukie, OR 97222
503-353-9691
360-735-1109
www.envmgtsys.com

04 1W 11A

MARION COUNTY, OREGON

NE1/4 SEC11 T4S R1W W.M.

SCALE 1" = 200'

LEGEND

LINE TYPES

- Taxlot Boundary
- Historical Boundary
- Road Right-of-Way
- Easement
- Railroad Right-of-Way
- Railroad Centerline
- Private Road ROW
- Taxcode Line
- Subdivision/Plat Bndry
- Map Boundary
- Waterline - Taxlot Bndry
- Waterline - Non Bndry

CORNER TYPES

- 1/16TH Section Cor.
- 1/4 Section Cor.
- DLC Corner
- Section Corner (16 15 / 21 22)

NUMBERS

Tax Code Number

000 00 00 0

Acreage *0.25 AC*

All acres listed are Net Acres, excluding any portions of the taxlot within public ROWs

NOTES

Tick Marks: A tick mark in the road indicates that the labeled dimension extends into the public ROW

200.00 / 175.00

CANCELLED NUMBERS

101, 200A1, 200A2, 200A5, 201, 202, 203, 204, 207, 300, 401, 402, 405, 406

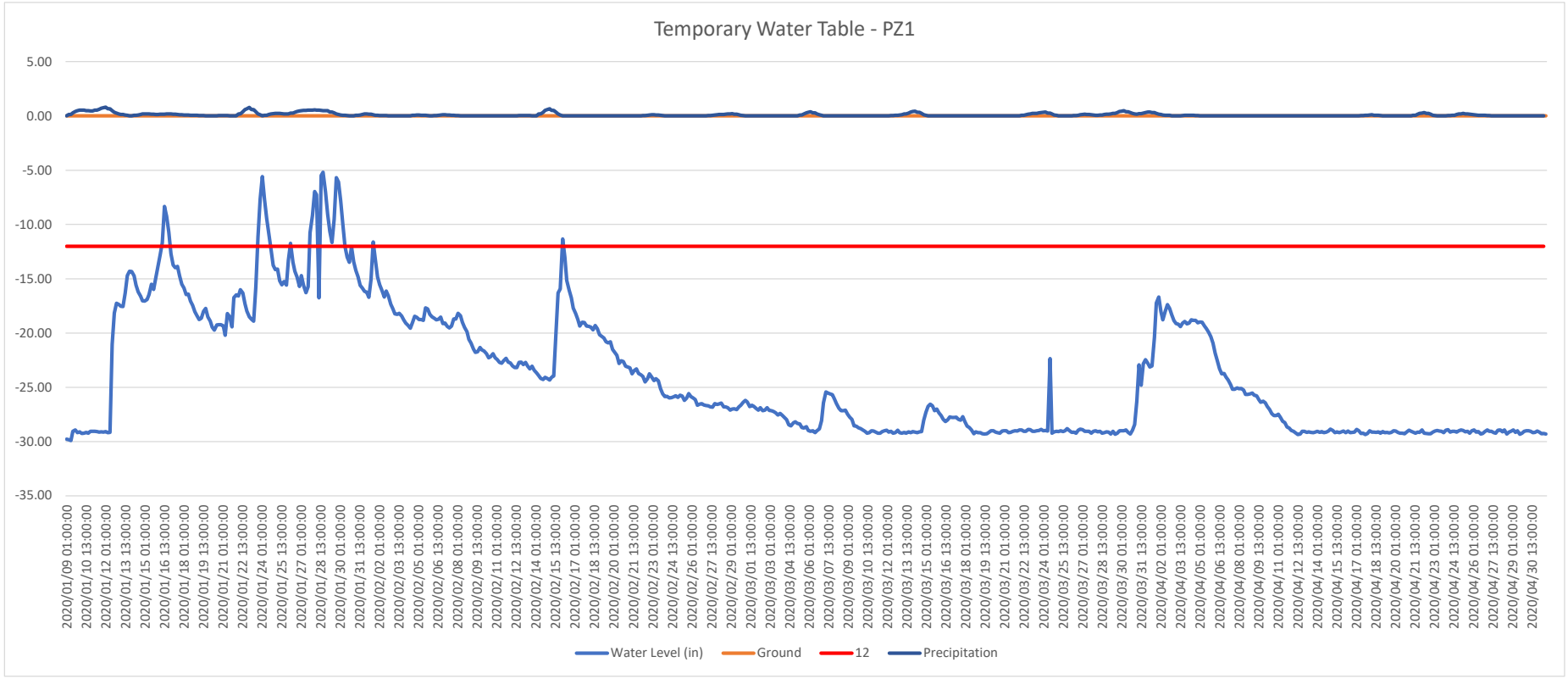
DISCLAIMER: THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSES ONLY

Marion County OREGON — Assessors Office Cartography Dept

FOR ADDITIONAL MAPS VISIT OUR WEBSITE AT www.co.marion.or.us

PLOT DATE: 2/13/2020

04 1W 11A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0.00
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-10.00
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-30.00
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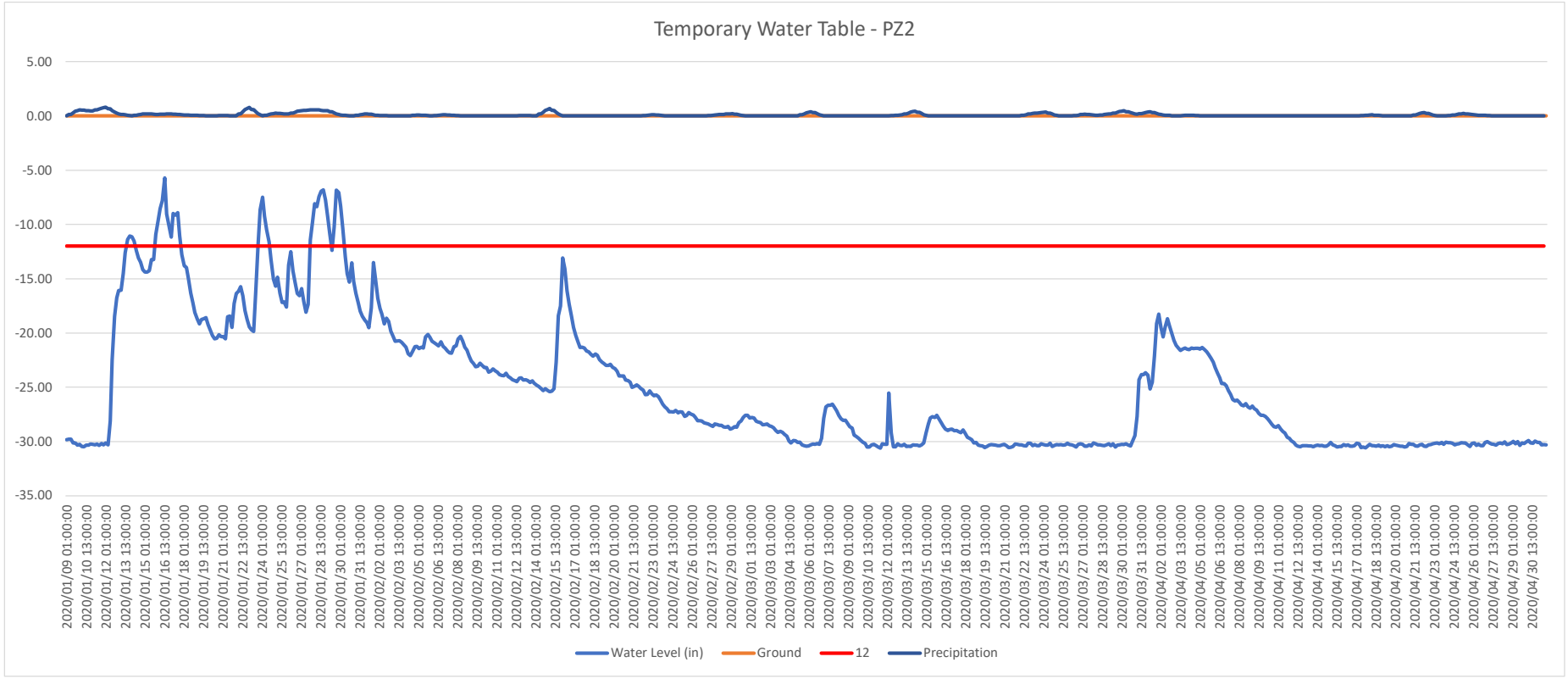
Water Level (in)
Ground
12
Precipitation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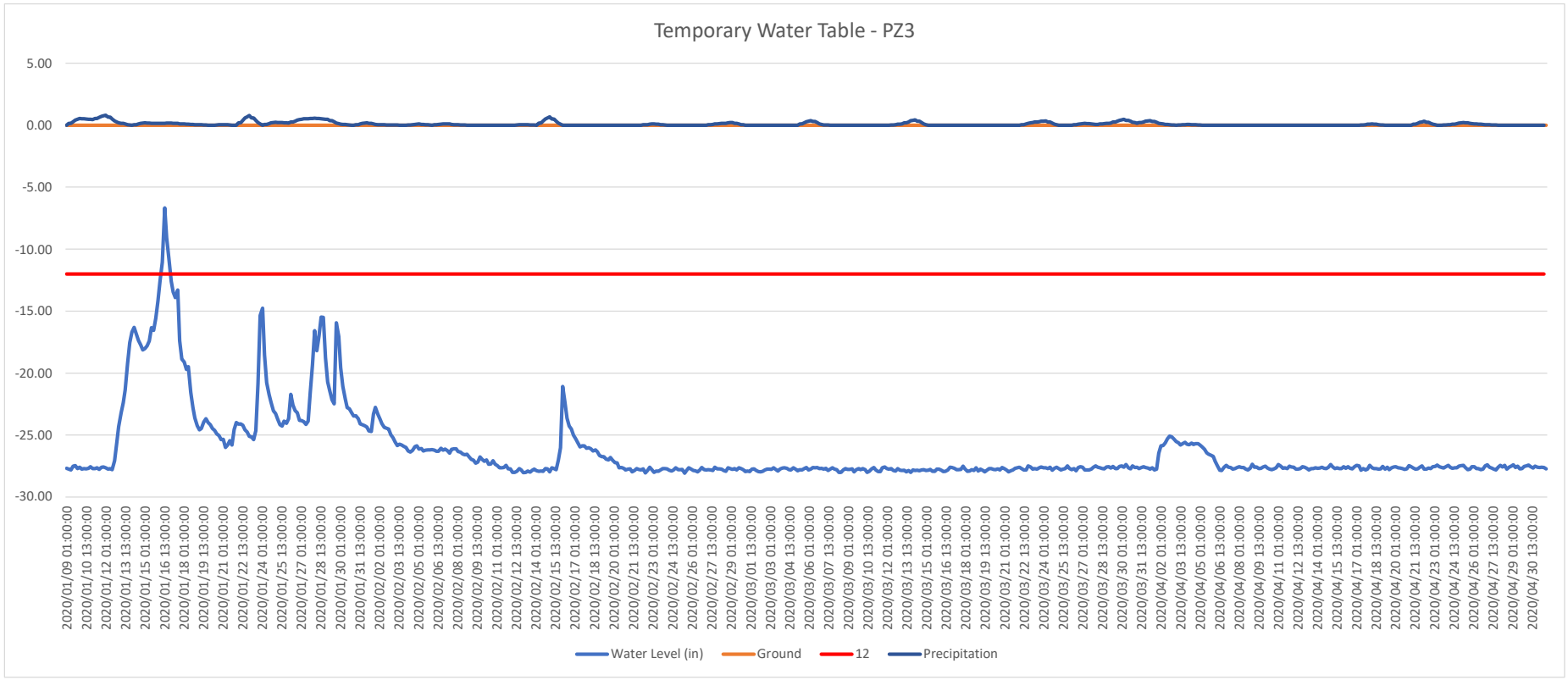
Water Level (in)
Ground
12
Precipitation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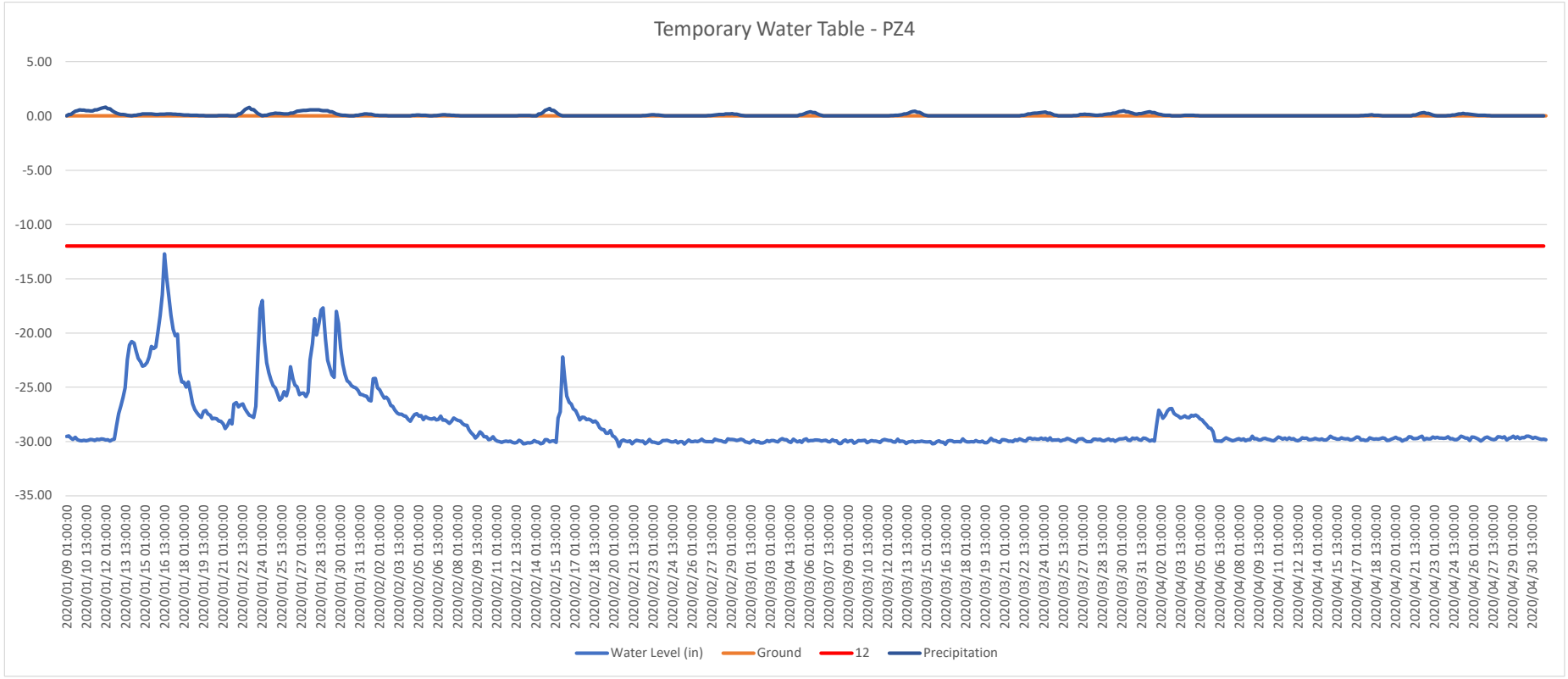
2020/04/30 13:00:00
Water Level (in)
Ground
12
Precipitation


Temporary Water Table - PZ4
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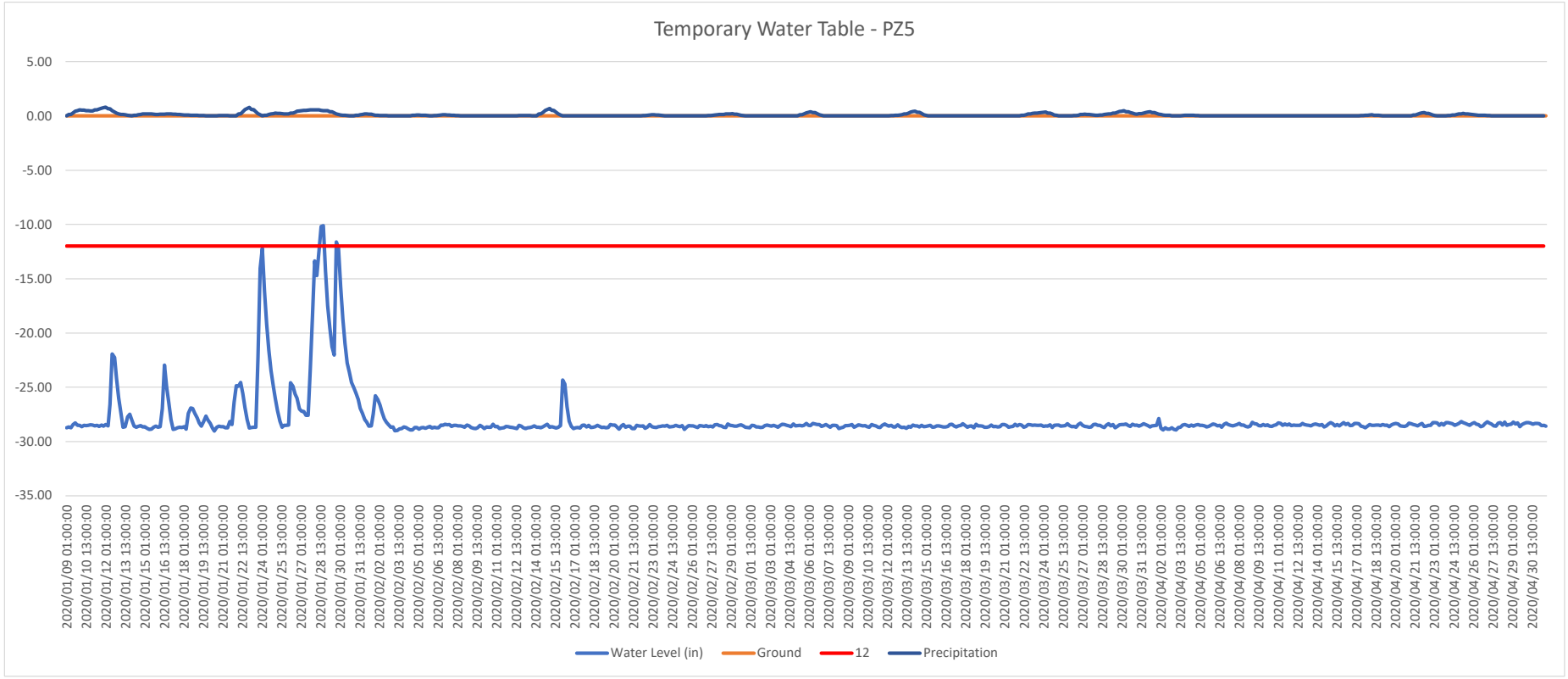
Water Level (in)
Ground
12
Precipitation


Temporary Water Table - PZ5
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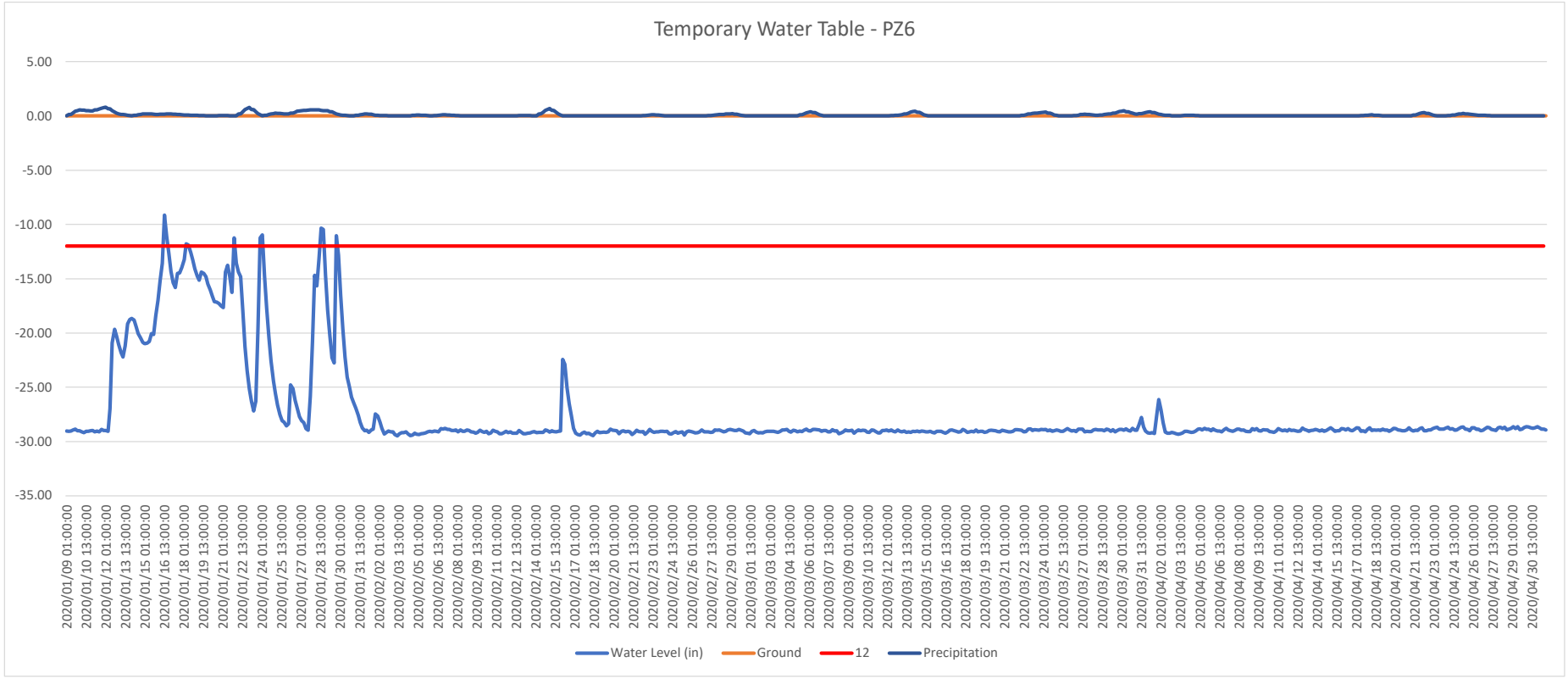
Water Level (in)
Ground
12
Precipitation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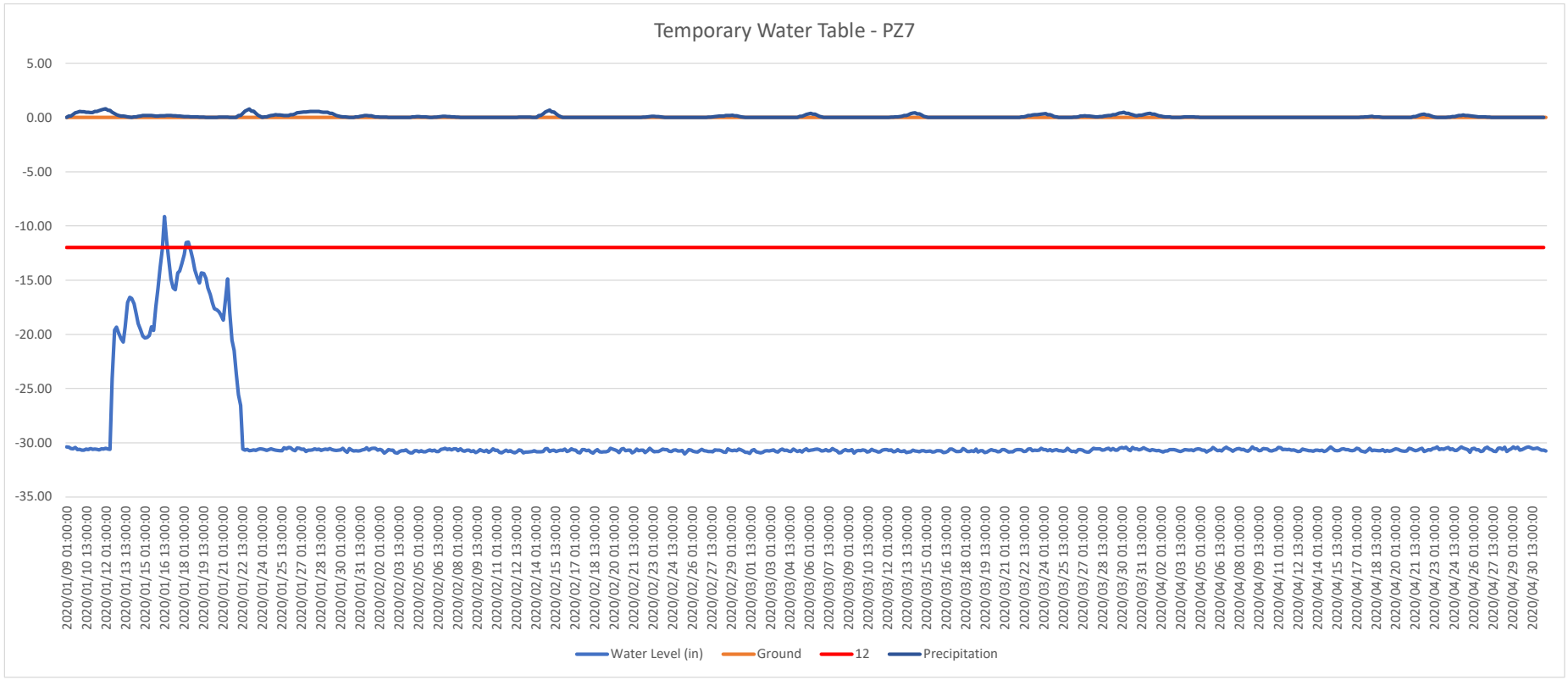
Water Level (in)
Ground
12
Precipitation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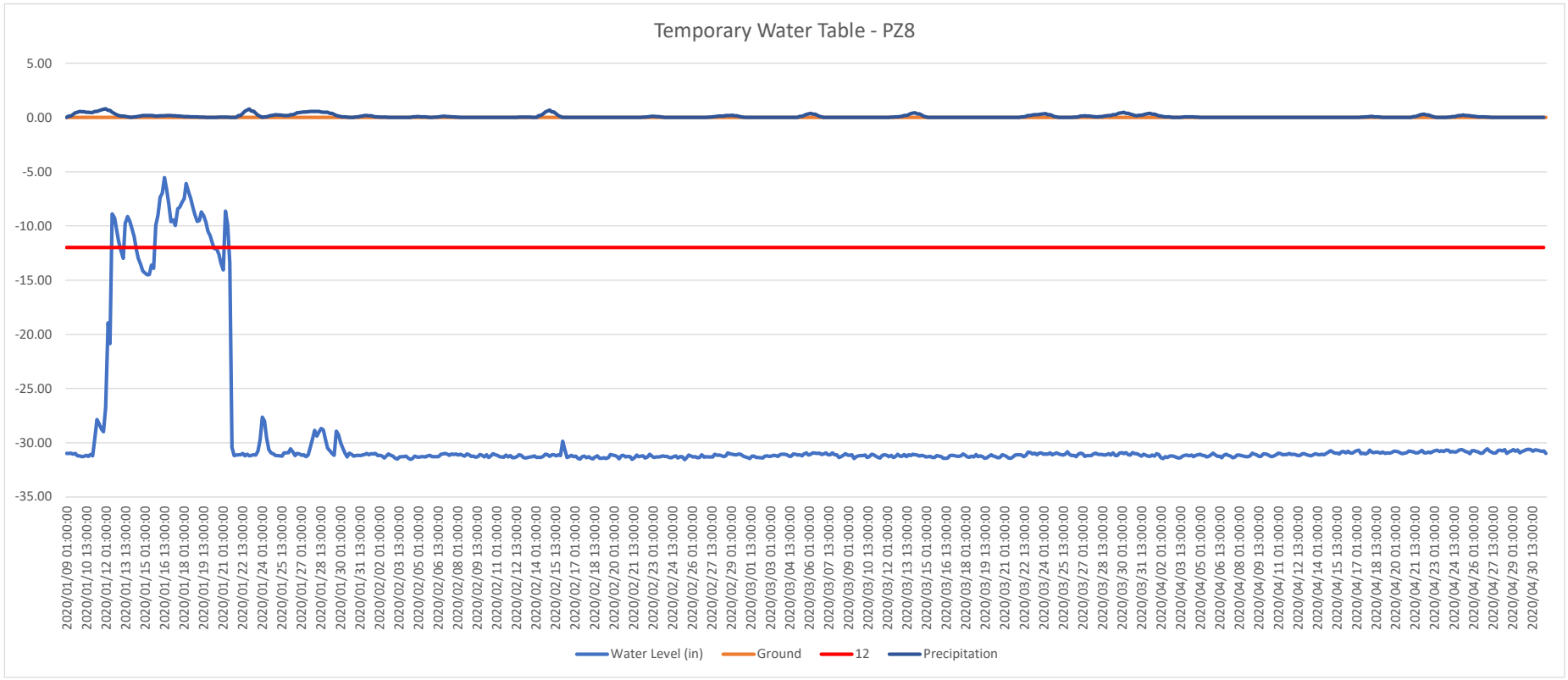
Water Level (in)
Ground
12
Precipitation


Temporary Water Table - PZ8
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0.00
-5.00
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-15.00
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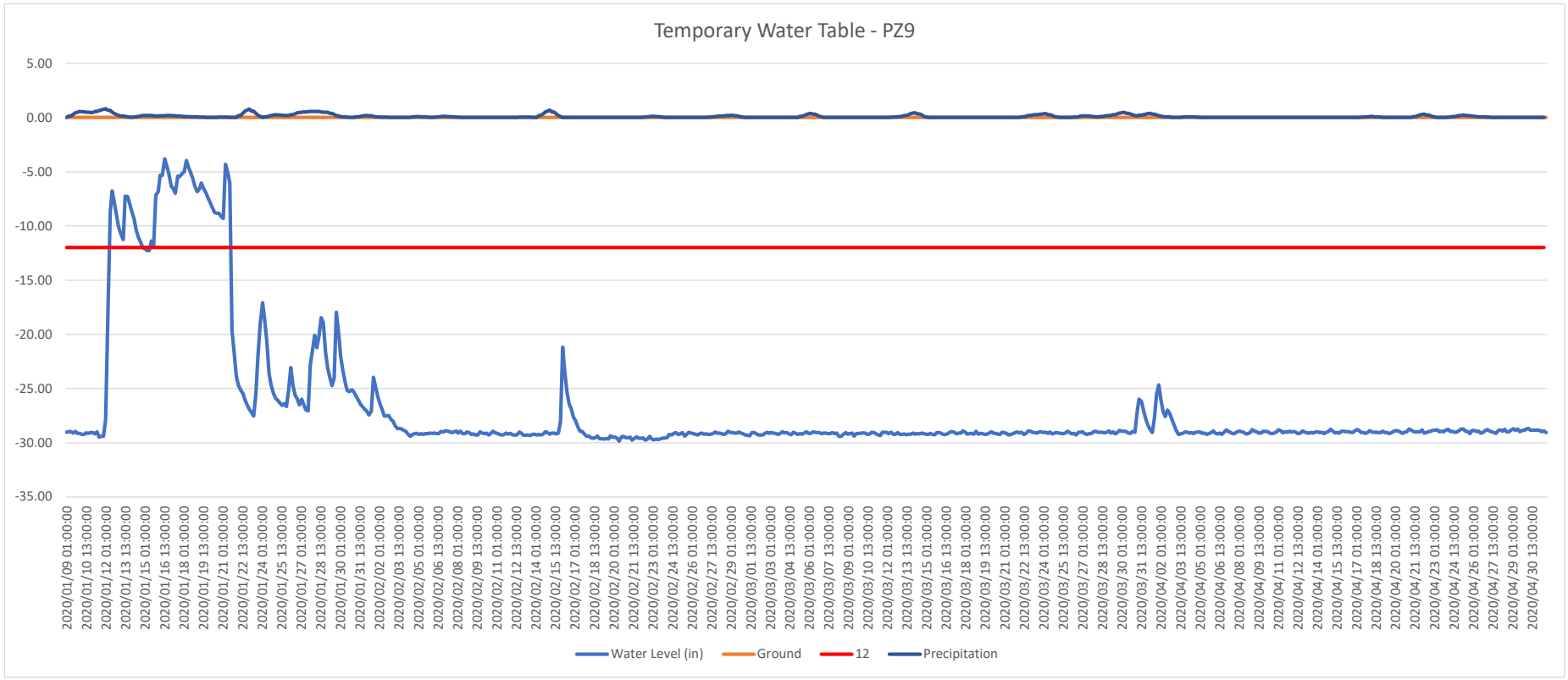
Water Level (in)
Ground
12
Precipitation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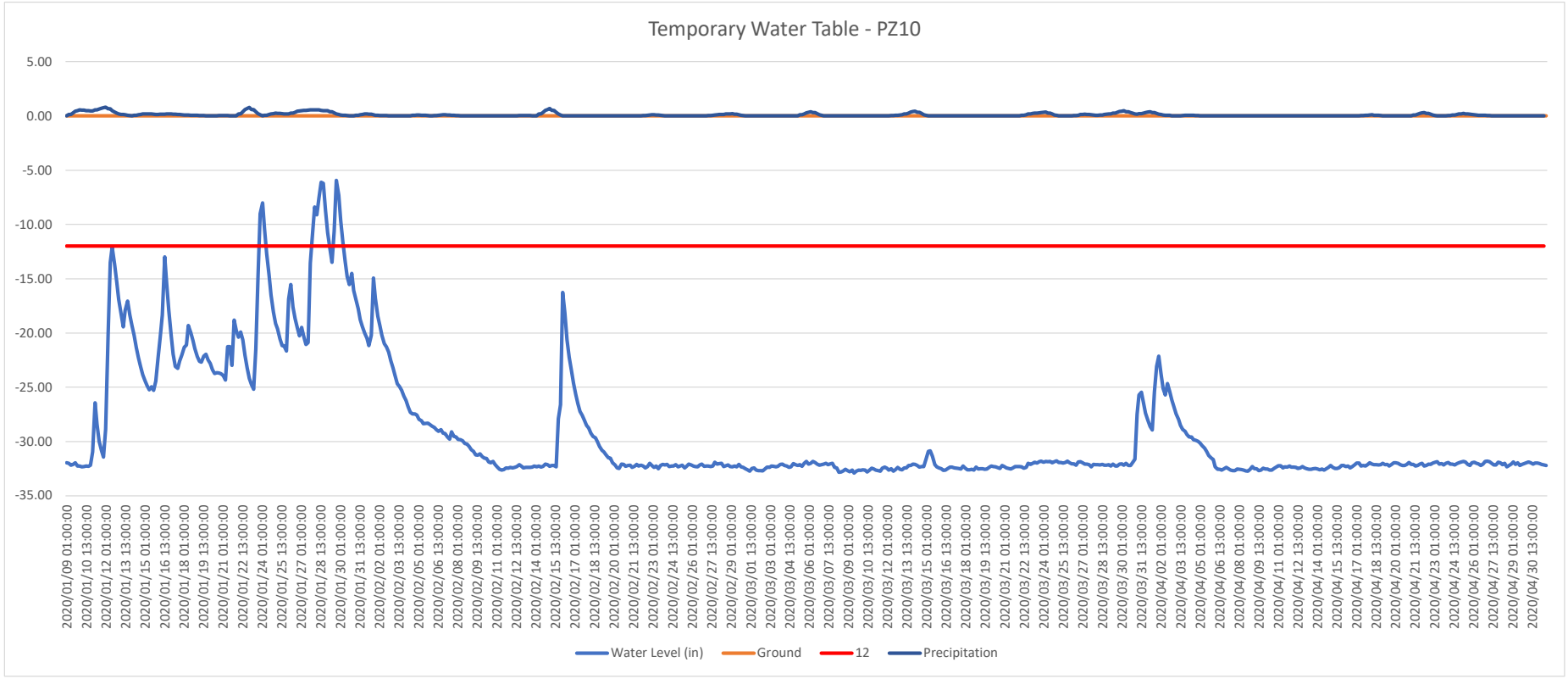
Water Level (in)
Ground
12
Precipitation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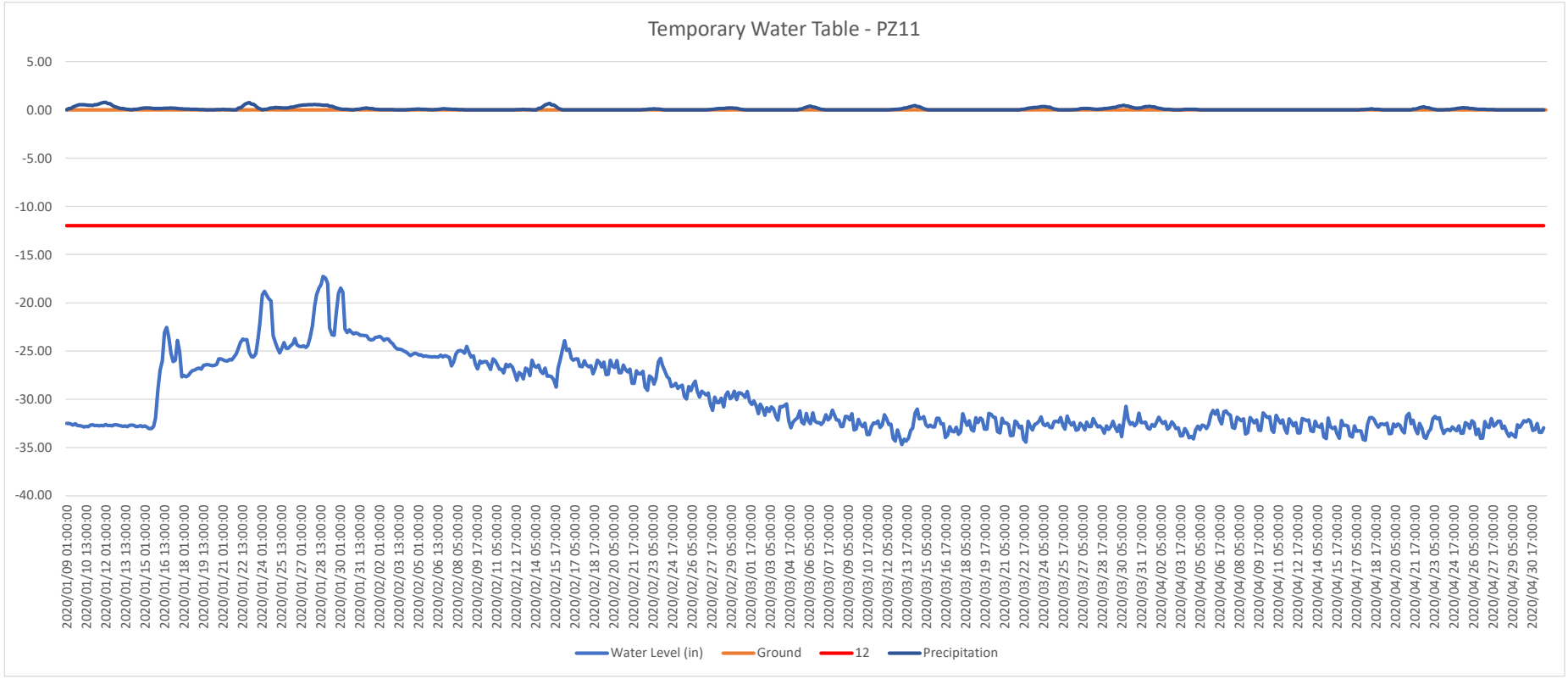
2020/04/30 13:00:00
Water Level (in)
Ground
12
Precipitation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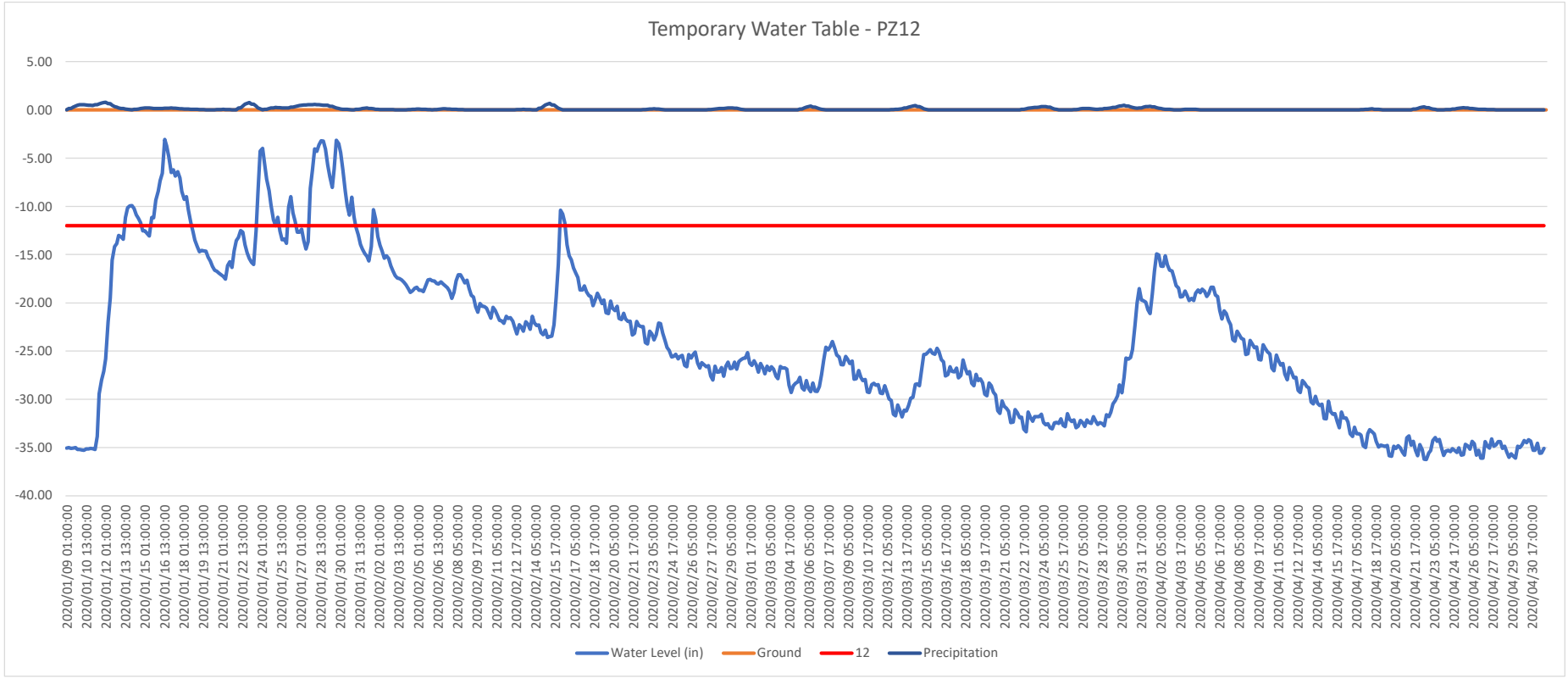
Water Level (in)
Ground
12
Precipitation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2020/01/12 01:00:00
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2020/01/15 01:00:00
2020/01/16 13:00:00
2020/01/18 01:00:00
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2020/04/29 05:00:00
2020/04/30 17:00:00
Water Level (in)
Ground
12
Precipitation

Technology Sheet

Baro-Diver – DI800

Actual size

Technical Specifications

Length	4.33 in
Diameter	0.87 in
Weight	3.67 oz
Memory	72,000 measurements with backup; continuous and fixed length memory
Wetted parts	
housing	stainless steel (316L)
o-rings	Viton ®
pressure sensor	piezo resistive ceramic (Al_2O_3) with thermal compensation
cap	Nylon PA6 30% glass fiber
nose cone	ABS
Battery life	up to 10 years (dependent on usage)
Sample interval	½ second to 99 hours
Sample method	fixed interval
Communication	RS232

Pressure

Part number	**DI 800**	
Range	4.9	ftH_2O
Accuracy⁺	± 0.2	inH_2O
Resolution	0.01	inH_2O

Temperature

Range	-4 to 176 °F
Calibrated	14 to 122 °F
Accuracy⁺	± 0.18 °F
Resolution	0.018 °F

⁺ typical

M = membrane
Dimensions in mm

Climatological Data for AURORA STATE AP, OR - January 2020

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2020-01-01	55	47	51.0	11	1	0.09	M	M
2020-01-02	51	43	47.0	7	0	0.00	M	M
2020-01-03	62	45	53.5	14	4	0.16	M	M
2020-01-04	50	40	45.0	5	0	0.29	M	M
2020-01-05	50	42	46.0	6	0	0.21	M	M
2020-01-06	52	45	48.5	9	0	0.44	M	M
2020-01-07	56	46	51.0	11	1	0.24	M	M
2020-01-08	47	38	42.5	3	0	0.15	M	M
2020-01-09	42	33	37.5	0	0	T	M	M
2020-01-10	47	37	42.0	2	0	0.55	M	M
2020-01-11	46	42	44.0	4	0	0.45	M	M
2020-01-12	46	38	42.0	2	0	0.80	M	M
2020-01-13	40	37	38.5	0	0	0.19	M	M
2020-01-14	42	32	37.0	0	0	T	M	M
2020-01-15	49	27	38.0	0	0	0.19	M	M
2020-01-16	43	29	36.0	0	0	0.14	M	M
2020-01-17	43	30	36.5	0	0	0.18	M	M
2020-01-18	51	40	45.5	6	0	0.09	M	M
2020-01-19	55	42	48.5	9	0	0.05	M	M
2020-01-20	48	39	43.5	4	0	0.00	M	M
2020-01-21	51	41	46.0	6	0	0.04	M	M
2020-01-22	M	M	M	M	M	M	M	M
2020-01-23	56	51	53.5	14	4	0.77	M	M
2020-01-24	57	48	52.5	13	3	0.01	M	M
2020-01-25	58	47	52.5	13	3	0.24	M	M
2020-01-26	55	46	50.5	11	1	0.18	M	M
2020-01-27	53	41	47.0	7	0	0.49	M	M
2020-01-28	53	46	49.5	10	0	0.56	M	M
2020-01-29	49	46	47.5	8	0	0.47	M	M
2020-01-30	55	41	48.0	8	0	0.08	M	M
2020-01-31	62	54	58.0	18	8	0.00	M	M
Average|Sum	50.8	41.1	46.0	201	25	7.06	M	M

Climatological Data for AURORA STATE AP, OR - February 2020

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2020-02-01	58	41	49.5	10	0	0.19	M	M
2020-02-02	46	31	38.5	0	0	0.03	M	M
2020-02-03	47	30	38.5	0	0	0.02	M	M
2020-02-04	42	27	34.5	0	0	0.00	M	M
2020-02-05	52	42	47.0	7	0	0.09	M	M
2020-02-06	57	49	53.0	13	3	0.01	M	M
2020-02-07	54	44	49.0	9	0	0.11	M	M
2020-02-08	51	38	44.5	5	0	0.03	M	M
2020-02-09	47	34	40.5	1	0	0.00	M	M
2020-02-10	51	34	42.5	3	0	0.00	M	M
2020-02-11	44	31	37.5	0	0	0.00	M	M
2020-02-12	53	33	43.0	3	0	0.00	M	M
2020-02-13	44	33	38.5	0	0	0.04	M	M
2020-02-14	50	39	44.5	5	0	0.01	M	M
2020-02-15	47	42	44.5	5	0	0.67	M	M
2020-02-16	51	37	44.0	4	0	T	M	M
2020-02-17	51	33	42.0	2	0	0.00	M	M
2020-02-18	54	33	43.5	4	0	0.00	M	M
2020-02-19	61	32	46.5	7	0	0.00	M	M
2020-02-20	56	28	42.0	2	0	0.00	M	M
2020-02-21	57	29	43.0	3	0	0.00	M	M
2020-02-22	58	31	44.5	5	0	0.00	M	M
2020-02-23	51	42	46.5	7	0	0.11	M	M
2020-02-24	49	34	41.5	2	0	0.00	M	M
2020-02-25	55	32	43.5	4	0	0.00	M	M
2020-02-26	58	40	49.0	9	0	0.00	M	M
2020-02-27	64	33	48.5	9	0	0.00	M	M
2020-02-28	56	32	44.0	4	0	0.12	M	M
2020-02-29	47	31	39.0	0	0	0.21	M	M
Average|Sum	52.1	35.0	43.6	123	3	1.64	M	M

Climatological Data for AURORA STATE AP, OR - March 2020

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2020-03-01	49	32	40.5	1	0	T	M	M
2020-03-02	50	39	44.5	5	0	T	M	M
2020-03-03	60	47	53.5	14	4	T	M	M
2020-03-04	57	40	48.5	9	0	0.00	M	M
2020-03-05	59	34	46.5	7	0	0.00	M	M
2020-03-06	48	41	44.5	5	0	0.38	M	M
2020-03-07	49	36	42.5	3	0	0.02	M	M
2020-03-08	52	32	42.0	2	0	0.00	M	M
2020-03-09	57	29	43.0	3	0	0.00	M	M
2020-03-10	61	29	45.0	5	0	0.00	M	M
2020-03-11	57	36	46.5	7	0	0.00	M	M
2020-03-12	56	31	43.5	4	0	0.00	M	M
2020-03-13	41	34	37.5	0	0	0.10	M	M
2020-03-14	44	33	38.5	0	0	0.44	M	M
2020-03-15	48	33	40.5	1	0	0.00	M	M
2020-03-16	61	34	47.5	8	0	0.00	M	M
2020-03-17	59	36	47.5	8	0	0.00	M	M
2020-03-18	59	36	47.5	8	0	0.00	M	M
2020-03-19	63	34	48.5	9	0	0.00	M	M
2020-03-20	68	37	52.5	13	3	0.00	M	M
2020-03-21	60	37	48.5	9	0	0.00	M	M
2020-03-22	63	32	47.5	8	0	0.00	M	M
2020-03-23	51	43	47.0	7	0	0.22	M	M
2020-03-24	50	38	44.0	4	0	0.35	M	M
2020-03-25	53	37	45.0	5	0	T	M	M
2020-03-26	51	35	43.0	3	0	0.00	M	M
2020-03-27	51	38	44.5	5	0	0.15	M	M
2020-03-28	53	46	49.5	10	0	0.06	M	M
2020-03-29	59	48	53.5	14	4	0.18	M	M
2020-03-30	51	43	47.0	7	0	0.47	M	M
2020-03-31	52	40	46.0	6	0	0.16	M	M
Average|Sum	54.6	36.8	45.7	190	11	2.53	M	M

Climatological Data for AURORA STATE AP, OR - April 2020

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2020-04-01	48	39	43.5	4	0	0.37	M	M
2020-04-02	52	36	44.0	4	0	0.09	M	M
2020-04-03	50	34	42.0	2	0	T	M	M
2020-04-04	52	37	44.5	5	0	0.07	M	M
2020-04-05	64	42	53.0	13	3	0.01	M	M
2020-04-06	62	41	51.5	12	2	0.00	M	M
2020-04-07	62	40	51.0	11	1	0.00	M	M
2020-04-08	74	36	55.0	15	5	0.00	M	M
2020-04-09	79	48	63.5	24	14	0.00	M	M
2020-04-10	71	41	56.0	16	6	0.00	M	M
2020-04-11	64	43	53.5	14	4	0.00	M	M
2020-04-12	66	36	51.0	11	1	0.00	M	M
2020-04-13	68	36	52.0	12	2	0.00	M	M
2020-04-14	69	37	53.0	13	3	0.00	M	M
2020-04-15	64	43	53.5	14	4	0.00	M	M
2020-04-16	71	43	57.0	17	7	0.00	M	M
2020-04-17	76	43	59.5	20	10	0.00	M	M
2020-04-18	53	45	49.0	9	0	0.10	M	M
2020-04-19	63	42	52.5	13	3	0.00	M	M
2020-04-20	72	40	56.0	16	6	0.00	M	M
2020-04-21	62	45	53.5	14	4	0.00	M	M
2020-04-22	60	47	53.5	14	4	0.31	M	M
2020-04-23	62	49	55.5	16	6	0.00	M	M
2020-04-24	63	50	56.5	17	7	0.03	M	M
2020-04-25	67	44	55.5	16	6	0.22	M	M
2020-04-26	68	39	53.5	14	4	0.09	M	M
2020-04-27	68	49	58.5	19	9	0.03	M	M
2020-04-28	72	50	61.0	21	11	0.00	M	M
2020-04-29	71	52	61.5	22	12	T	M	M
2020-04-30	65	46	55.5	16	6	0.00	M	M
Average|Sum	64.6	42.4	53.5	414	140	1.32	M	M

Climatological Data for AURORA STATE AP, OR - May 2020

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2020-05-01	62	41	51.5	12	2	0.07	M	M
2020-05-02	57	43	50.0	10	0	0.49	M	M
2020-05-03	60	43	51.5	12	2	0.06	M	M
2020-05-04	70	39	54.5	15	5	0.01	M	M
2020-05-05	73	49	61.0	21	11	0.01	M	M
2020-05-06	64	46	55.0	15	5	0.13	M	M
2020-05-07	75	41	58.0	18	8	0.00	M	M
2020-05-08	85	57	71.0	31	21	0.00	M	M
2020-05-09	87	62	74.5	35	25	0.00	M	M
2020-05-10	88	54	71.0	31	21	0.00	M	M
2020-05-11	70	50	60.0	20	10	0.13	M	M
2020-05-12	63	49	56.0	16	6	0.25	M	M
2020-05-13	63	49	56.0	16	6	0.04	M	M
2020-05-14	57	50	53.5	14	4	0.68	M	M
2020-05-15	69	51	60.0	20	10	0.01	M	M
2020-05-16	69	54	61.5	22	12	0.16	M	M
2020-05-17	69	50	59.5	20	10	T	M	M
2020-05-18	60	52	56.0	16	6	0.39	M	M
2020-05-19	63	49	56.0	16	6	T	M	M
2020-05-20	61	51	56.0	16	6	0.02	M	M
2020-05-21	60	48	54.0	14	4	0.02	M	M
2020-05-22	62	45	53.5	14	4	0.03	M	M
2020-05-23	64	47	55.5	16	6	0.00	M	M
2020-05-24	74	48	61.0	21	11	0.00	M	M
2020-05-25	69	53	61.0	21	11	0.02	M	M
2020-05-26	75	56	65.5	26	16	0.00	M	M
2020-05-27	85	49	67.0	27	17	0.00	M	M
2020-05-28	92	55	73.5	34	24	0.00	M	M
2020-05-29	86	55	70.5	31	21	0.00	M	M
2020-05-30	62	53	57.5	18	8	0.30	M	M
2020-05-31	66	51	58.5	19	9	0.00	M	M
Average|Sum	69.7	49.7	59.7	617	307	2.82	M	M

Climatological Data for AURORA STATE AP, OR - June 2020

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2020-06-01	73	44	58.5	19	9	0.00	M	M
2020-06-02	79	49	64.0	24	14	0.00	M	M
2020-06-03	76	51	63.5	24	14	0.00	M	M
2020-06-04	74	50	62.0	22	12	0.00	M	M
2020-06-05	70	52	61.0	21	11	0.00	M	M
2020-06-06	61	49	55.0	15	5	0.26	M	M
2020-06-07	62	48	55.0	15	5	0.21	M	M
2020-06-08	65	52	58.5	19	9	0.20	M	M
2020-06-09	66	51	58.5	19	9	0.42	M	M
2020-06-10	78	59	68.5	29	19	T	M	M
2020-06-11	76	58	67.0	27	17	0.04	M	M
2020-06-12	59	54	56.5	17	7	0.13	M	M
2020-06-13	60	51	55.5	16	6	0.58	M	M
2020-06-14	68	49	58.5	19	9	0.04	M	M
2020-06-15	64	52	58.0	18	8	0.84	M	M
2020-06-16	64	52	58.0	18	8	0.24	M	M
2020-06-17	M	M	M	M	M	M	M	M
2020-06-18	M	M	M	M	M	M	M	M
2020-06-19	M	M	M	M	M	M	M	M
2020-06-20	M	M	M	M	M	M	M	M
2020-06-21	M	M	M	M	M	M	M	M
2020-06-22	M	M	M	M	M	M	M	M
2020-06-23	M	M	M	M	M	M	M	M
2020-06-24	M	M	M	M	M	M	M	M
2020-06-25	M	M	M	M	M	M	M	M
2020-06-26	M	M	M	M	M	M	M	M
2020-06-27	M	M	M	M	M	M	M	M
2020-06-28	M	M	M	M	M	M	M	M
2020-06-29	M	M	M	M	M	M	M	M
2020-06-30	M	M	M	M	M	M	M	M
Average|Sum	68.4	51.3	59.9	322	162	2.96	M	M

AgACIS

Month	Total Precipitation Normal (inches)
January	5.87
February	4.75
March	4.23
April	3.13
May	2.36
June	2.02
July	0.68
August	0.66
September	1.73
October	3.23
November	6.63
December	6.58
Annual	41.87

Station Information

Station name:	AURORA STATE AP
State:	OR
County:	(FIPS 41047)
Station ids:	94281 (WBAN)UAO (FAA)3S2 (FAA)KUAO (ICAO)USW00094281 (GHCN)
Latitude:	45.2486 degrees
Longitude:	-122.7686 degrees
Elevation:	196 feet
Available date ranges:	Max Temperature 1997-06-01 - 2020-05-12 Min Temperature 1997-06-01 - 2020-05-12 Precipitation 1998-04-01 - 2020-05-12 Snowfall 2009-08-01 - 2018-12-12 Snow Depth 1998-07-16 - 2018-10-10