

# Lake 4, West Lake and A-Frame Dam Rehabilitation Project

## Weekly Construction Update Report

4/6/2020 to 4/10/2020

**Date:** 4/16/2020

**Location:** Boulder County Open Space west of Hygiene, CO

**Project Owners:** Boulder County and St. Vrain & Left Hand Water Conservancy District

### Design Engineers:

Lake 4 - Engineering Analytics (EA)

West Lake and A-Frame - Applegate Group (AG);

Lake 4 Outlet Pipeline - Deere & Ault (DA)

### Construction Contractors:

Kirkland Construction (Prime Contractor)

Lobato Construction (Sub-contractor)

**Weather & Site Conditions:** Moderate temperature, dry site conditions

**Update by:** Obadiah Broughton, Boulder County



4/6: West Lake Dam – embankment reconstruction. Looking north from the south limits of the embankment repair.

### Work in Progress/Completed

1. Lake 4 Dam - placed concrete in the remaining outlet pipe encasement formworks on the final section around the 24" DIP (ductile iron pipe) between outlet towers 1 and 2. Placed the first section of concrete in the vertical walls of outlet tower 1 and 2 structures.
2. Lake 4 Dam - continued screening embankment fill to 3" minus from the flood deposited sediment in the Lake 4 sediment removal area. This processed fill was used in the West Lake Dam embankment reconstruction.
3. West Lake Dam - continued zoned embankment reconstruction placing clay core, C33 fine aggregate, #8 coarse aggregate and 3" minus native embankment fill. Majority of embankment is at final grade. Began upstream embankment riprap protection by placing some riprap bedding.
4. West Lake Dam - finalized work on the installing and backfilling the Foothills Outlet Ditch inverted siphon pipe. Finish inlet structure wing wall and outlet structure wingwalls formworks/rebar and placed concrete in the walls. Placed and compacted backfill around siphon drain pipe and lower portion of outlet wingwalls. Cleared and grubbed ditch channel downstream of the siphon outlet and begin lining the channel with riprap bedding and riprap.
5. West Lake Dam –finished installing and backfilling the Clough and True Ditch 18" inverted siphon pipe. Placed and compacted backfill around lower portion of inlet and outlet wingwalls. Finished formworks, rebar and placed concrete in inlet and outlet structure walls.
6. West Lake Dam – placed and compacted backfill around the South Branch Ditch crossing culvert wing walls and recreated ditch profile near culvert. More work needed to final ditch reconstruction.

# Lake 4, West Lake and A-Frame Dam Rehabilitation Project

## Weekly Construction Update Report

### Work in Progress/Completed *(cont.)*

7. Continued rip rap bedding blending operations with a three bin mixer in the main project staging to get material to meet project specifications.
8. Finished hauling processed bedding material from Lake 4 to be blended.
9. Imported riprap and staged near Lake 4.
10. Continued ripping, crushing, and stockpiling of claystone to process it for embankment fill in the Lake 4 sediment removal area.
11. As necessary to facilitate the work dewatering operations occurred to remove nuisance water in work areas, Lake 3, Lake 4, West Lake and A-Frame Pond.

### Upcoming Work *(One week look ahead. Week of 4/13/2020 to 4/17/2020)*

1. Lake 4 Dam – restart downstream embankment (Lake 3 embankment) reconstruction. Place clay core, C33 fine aggregate filter and backfill.
2. West Lake Dam - continue work on the Foothills Outlet Ditch and Clough and True Ditch inverted siphons. Strip forms works on siphon structures, backfill as possible, install the 8” drain line for the and install trash racks.
3. West Lake Dam - continue zoned embankment reconstruction and work on final grades for the embankment. Continue placement of downstream embankment protection; riprap bedding and riprap.
4. A-Frame Pond – strip the formworks on the four A-Frame Pond outlet cutoff walls and prep for backfill.
5. Continue ripping, crushing, and stockpiling of claystone to process it for embankment fill in the Lake 4 sediment removal area. Continue screening embankment fill to 3” minus from the flood deposited sediment in the Lake 4 sediment removal area.
6. As necessary to facilitate the work dewatering operations occurred to remove nuisance water in work areas, Lake 3, Lake 4, West Lake and A-Frame Pond.



4/6: West Lake Dam – looking north at the backfilling around the Foothills Outlet Ditch and Clough and True Ditch inverted siphon pipes.



4/6: West Lake Dam – looking south. Unloading 3” minus material on dam for siphon pipe backfill near Foothills Outlet Ditch outlet structure.

# Lake 4, West Lake and A-Frame Dam Rehabilitation Project

## Weekly Construction Update Report

### Additional Notes

1. April 7<sup>th</sup> Weekly construction process meeting was held remotely via a conference call.
2. Kirkland Construction removed all crew members from project on Wednesday April 8<sup>th</sup> due to a possible COVID- 19 Exposure by one of the crew. Kirkland did not work Wednesday through Friday. Lobato worked Wednesday and Thursday.
3. Continue dewatering operations to remove nuisance water from project site and work areas as needed.
4. Project website for additional updates and information:  
<https://www.bouldercounty.org/open-space/management/lake-4-west-lake-a-frame-pond/>



4/7: West Lake Dam – Installing formworks and rebar on the Foothills Outlet Ditch inlet structure wingwalls.



4/7: West Lake Dam – riprap and bedding placement at Foothills Outlet Ditch outlet in the ditch channel.



4/7: West Lake Dam – backfilling around the South Branch Ditch crossing box culvert and wingwalls.



4/7: West Lake Dam - looking south at final embankment grading.



4/8: West Lake Dam - placing concrete in the Foothills Outlet Ditch inlet wingwall structure.



4/9: West Lake Dam - placing concrete in the Foothills Outlet Ditch outlet structure.



4/9: West Lake Dam – formworks and rebar in the Clough and True Ditch outlet structure.



4/6: Riprap bedding bleeding operation in Lake 4 staging area.



4/7: Lake 4 – claystone/bedrock crushing operation to make ¾" minus embankment fill in the Lake 4 sediment removal area.



3/30: Lake 4 – overview of claystone/bedrock crushing operation to make ¾" minus embankment fill in the Lake 4 sediment removal area.



4/6 – Lake 4 Dam – placing concrete outlet tower #1.



Longmont, CO  
42 °F Fair

Recent Cities

Revelstoke, British Columbia, Canada (weather/ca/revelstoke/50.99,-118.19) Crested Butte, CO (weather/us/co/crested-butte/38.91,-106.97)

40.17 °N, 105.16 °W

# Longmont, CO Weather History

**42° VANCE BRAND STATION** ([/WEATHER/US/CO/LONGMONT/KLMO?CM\\_VEN=LOCALWX\\_PWSDASH](/WEATHER/US/CO/LONGMONT/KLMO?CM_VEN=LOCALWX_PWSDASH)) | [CHANGE](#)

[HISTORY](/HISTORY/DAILY/US/CO/LONGMONT/KLMO) (</HISTORY/DAILY/US/CO/LONGMONT/KLMO>)

- [TODAY](/WEATHER/US/CO/LONGMONT/KLMO) (</WEATHER/US/CO/LONGMONT/KLMO>)
- [HOURLY](/HOURLY/US/CO/LONGMONT/KLMO) (</HOURLY/US/CO/LONGMONT/KLMO>)
- [10-DAY](/FORECAST/US/CO/LONGMONT/KLMO) (</FORECAST/US/CO/LONGMONT/KLMO>)
- [CALENDAR](/CALENDAR/US/CO/LONGMONT/KLMO) (</CALENDAR/US/CO/LONGMONT/KLMO>)
- [HISTORY](/HISTORY/DAILY/US/CO/LONGMONT/KLMO) (</HISTORY/DAILY/US/CO/LONGMONT/KLMO>)
- [WUNDERMAP](/WUNDERMAP?LAT=40.17&LON=-105.16) (</WUNDERMAP?LAT=40.17&LON=-105.16>)

Daily

**Weekly**

Monthly

[\(/history/daily/us/co/longmont/klmo/date/2020-04-06\)](/history/daily/us/co/longmont/klmo/date/2020-04-06) [\(/history/weekly/us/co/longmont/klmo/date/2020-04-06\)](/history/weekly/us/co/longmont/klmo/date/2020-04-06) [\(/history/monthly/us/co/longmont/klmo/date/2020-04-06\)](/history/monthly/us/co/longmont/klmo/date/2020-04-06)

4-6)

4-6)

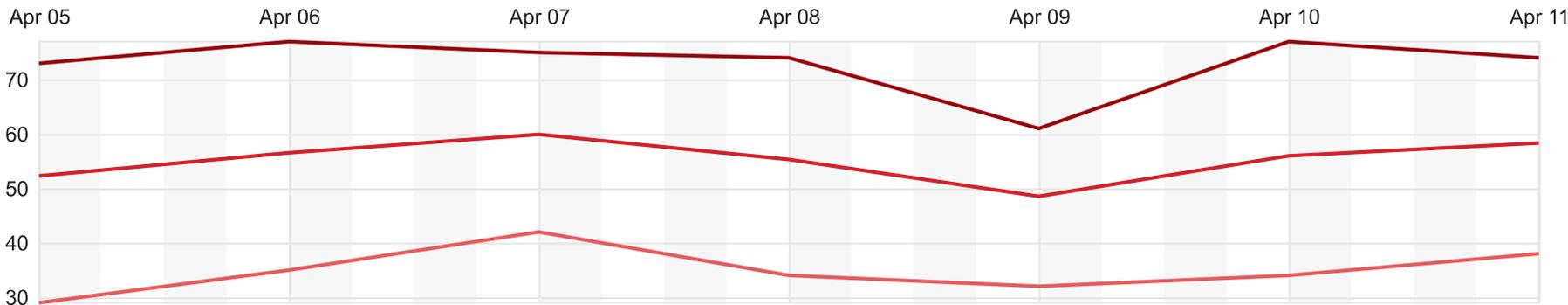
4)

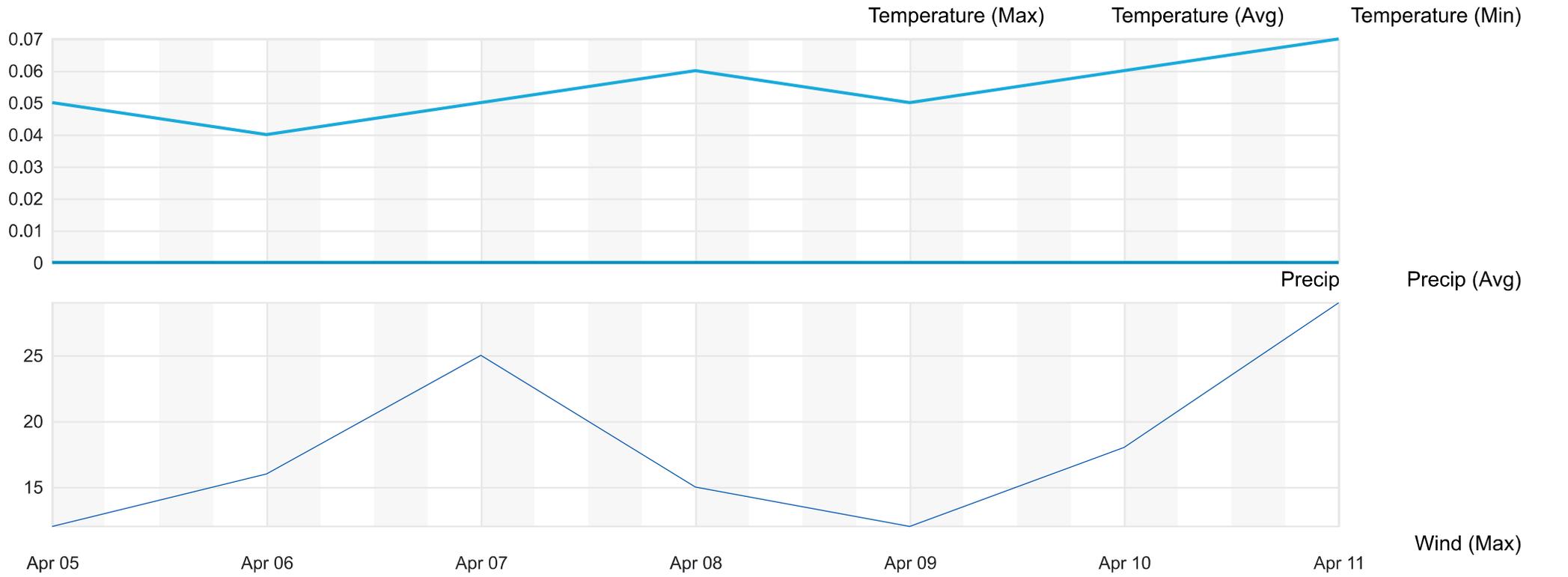
April

6

2020

View





# Summary

Temperature (° F)	Max	Average	Min	▲
Max Temperature	77	73	61	
Avg Temperature	59.93	55.28	48.54	
Min Temperature	42	34.86	29	
Dew Point (° F)	Max	Average	Min	▲
Dew Point	37	23.55	8	
Precipitation (Inches)	Max	Average	Min	Sum ▲

<b>Temperature (° F)</b>	Max	Average	Min	▲
Precipitation	0.00	0.00	0.00	0.00
Snowdepth	0.00	0.00	0.00	0.00
<b>Wind</b>	Max	Average	Min	▲
Wind	29	6.16	0	
Gust Wind	36	4.2	0	
<b>Sea Level Pressure</b>	Max	Average	Min	▲
Sea Level Pressure	25.09	24.78	0	

# Daily Observations

Time	Temperature (° F)			Dew Point (° F)			Humidity (%)			Wind Speed (mph)			Pressure (Hg)			Precipitation (in)
Apr	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Total
5	73	52.3	29	34	26.8	19	84	45.3	14	12	3.1	0	24.8	24.7	24.7	0.00
6	77	56.6	35	34	21.0	11	67	32.5	8	16	5.4	0	24.8	24.8	24.7	0.00
7	75	59.9	42	24	15.9	8	46	21.3	8	25	10.9	0	24.9	24.9	24.8	0.00
8	74	55.3	34	32	24.6	15	67	34.7	14	15	4.4	0	25.0	25.0	24.9	0.00
9	61	48.5	32	33	30.1	26	80	51.5	30	12	4.5	0	25.1	25.0	25.0	0.00
10	77	56.0	34	37	26.7	12	84	42.1	10	18	5.7	0	25.0	24.8	24.7	0.00
11	74	58.4	38	34	19.8	12	71	27.4	10	29	9.1	0	24.7	24.3	0.0	0.00