

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

Weekly Construction Update Report



Date: 4/9/2020

3/30/2020 to 4/3/2020

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: Variable temperature and site conditions.

Small snow event on April 2nd/3rd

Update by: Obadiah Broughton, Boulder County

Work in Progress/Completed

1. Lake 4 Dam - finished remaining outlet pipe encasement formworks on the final section around the 24" DIP (ductile iron pipe) between outlet towers 1 and 2.
2. Lake 4 Dam – finished the formworks, rebar and piping at outlet towers 1 and 2.
3. 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.
4. West Lake Dam – finished installing, anchoring and backfilling the Foothills Outlet Ditch 60" ADS inverted siphon pipe within the dam embankment. Finished formworks, rebar and poured concrete aprons for siphon outlet structure and inlet wingwall. Began formworks and rebar for outlet wing walls. Installed initial section of 8" clean out drain-line and the tie-in to the Clough and True Ditch siphon.
5. West Lake Dam - finished installing and backfilling the Clough and True Ditch 18" inverted siphon. Poured concrete in the first course of the outlet structure wall. Finished formworks, rebar and poured concrete aprons for siphon inlet and outlet structures. Began formworks and rebar for inlet and outlet walls. Installed initial section of 8" clean out drain-line and the tie-in to the Foothills Outlet Ditch siphon.
6. West Lake Dam - continued zoned embankment reconstruction placing clay core, C33 fine aggregate, #8 coarse aggregate and 3" minus native embankment fill.
7. West Lake Dam – completed rebar and formworks and poured concrete for the South Branch Ditch crossing culvert apron and then the wing walls.



3/30: West Lake Dam – installation of Foothills Outlet Ditch 60" inverted siphon pipe within the dam embankment. Looking north towards siphon outlet into the ditch.

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Work in Progress/Completed *(cont.)*

8. A-Frame Pond – finished formworks and poured concrete in the four A-Frame Pond outlet cutoff walls.
9. Continued rip rap bedding blending operations with a three bin mixer in the main project staging to get material to meet project specifications. Hauled processed bedding material from Lake 4 to be blended.
10. Moved processed Class 5 road base stockpile from Lake 4 basin to Lake 3 staging area.
11. Ripping, crushing, and stockpiling of claystone to process it for embankment fill started in the Lake 4 sediment removal area.
12. Hauled the final 122 loads of stockpiled clay from Swede Lake to West Lake Dam.
13. 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.



3/30: West Lake Dam – looking south at the installation of the Foothills Outlet Ditch 60” inverted siphon pipe and the Clough and True Ditch 18” inverted siphon pipe.

Upcoming Work *(One week look ahead. Week of 4/6/2020 to 4/10/2020)*

1. Lake 4 Dam - pour 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. Pour the first section of concrete in the outlet towers 1 and 2 vertical structure.
2. 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.
3. West Lake Dam - finalize work on the Foothills Outlet Ditch inverted siphon pipe. Finish inlet structure wing wall formworks and pour concrete in the wall. Backfill around clean out drain pipe for siphon. Clean and grub ditch channel and begin placing riprap bedding and riprap downstream of the siphon outlet.
4. West Lake Dam - continue zoned embankment reconstruction and work on final grades for the embankment.
5. West Lake Dam - pour concrete in the South Branch Ditch crossing culvert wing walls and backfill.
6. West Lake Dam – Continue formwork and rebar in the Clough and True Ditch 18” inverted siphon pipe outlet and inlet structure. Continue to backfill around structures.

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Additional Notes

1. March 31th Weekly construction process meeting was canceled.
2. Kirkland and Lobato crews worked Saturday April 4th.
3. Continue dewatering operations to remove nuisance water from project site and work areas as needed.
4. Project website for updates and information:
<https://www.bouldercounty.org/open-space/management/lake-4-west-lake-a-frame-pond/>



4/3: West Lake Dam – Looking south at the zoned embankment reconstruction around the two inverted siphon pipes; left to right - #8 coarse aggregate pipe encasement, 3" minus native embankment fill, #8 coarse aggregate, C33 fine aggregate, clay core, 3" minus native embankment fill.



4/1: West Lake Dam – anchors around the Foothills Outlet Ditch 60" inverted siphon pipe.



4/1: West Lake Dam – Foothills Outlet Ditch 60" inverted siphon pipe and inlet structure. Subgrade preparation for wingwalls.



4/1: A-Frame – freshly poured concrete in the outlet cutoff walls



4/1: A-Frame - looking southwest; outlet box culvert and cutoff walls.



3/30: West Lake Dam - pouring concrete at the South Branch Ditch crossing.



3/27: West Lake Dam – fusion welding HDPE pipe for the siphon drains.



4/2: West Lake Dam – installing the Clough and True Ditch 18” inverted siphon.



4/3: West Lake Dam – pouring concrete in the Foothills Outlet Ditch 60” outlet structure apron.



4/3: West Lake Dam - placed concrete at the Clough and True Ditch 18” inverted siphon outlet structure apron.



4/3: West Lake Dam – HDPE pipe siphon drains set in a supportive bed of concrete.



4/2: Lake 4 – claystone/bedrock crushing operation to make ¾” minus embankment fill in the Lake 4 sediment removal area.



3/27: Lake 4 - Screening embankment fill to 3” minus from the flood deposited sediment in the Lake 4 sediment removal area.



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



4/3 – Lake 4 Dam – installing outlet tower #1 piezometer.



Longmont, CO
76 °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

77° VANCE BRAND STATION (/WEATHER/US/CO/LONGMONT/KLMO?CM_VEN=LOCALWX_PWSDASH) | [CHANGE](#)

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

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[Daily](#) **[Weekly](#)** [Monthly](#)

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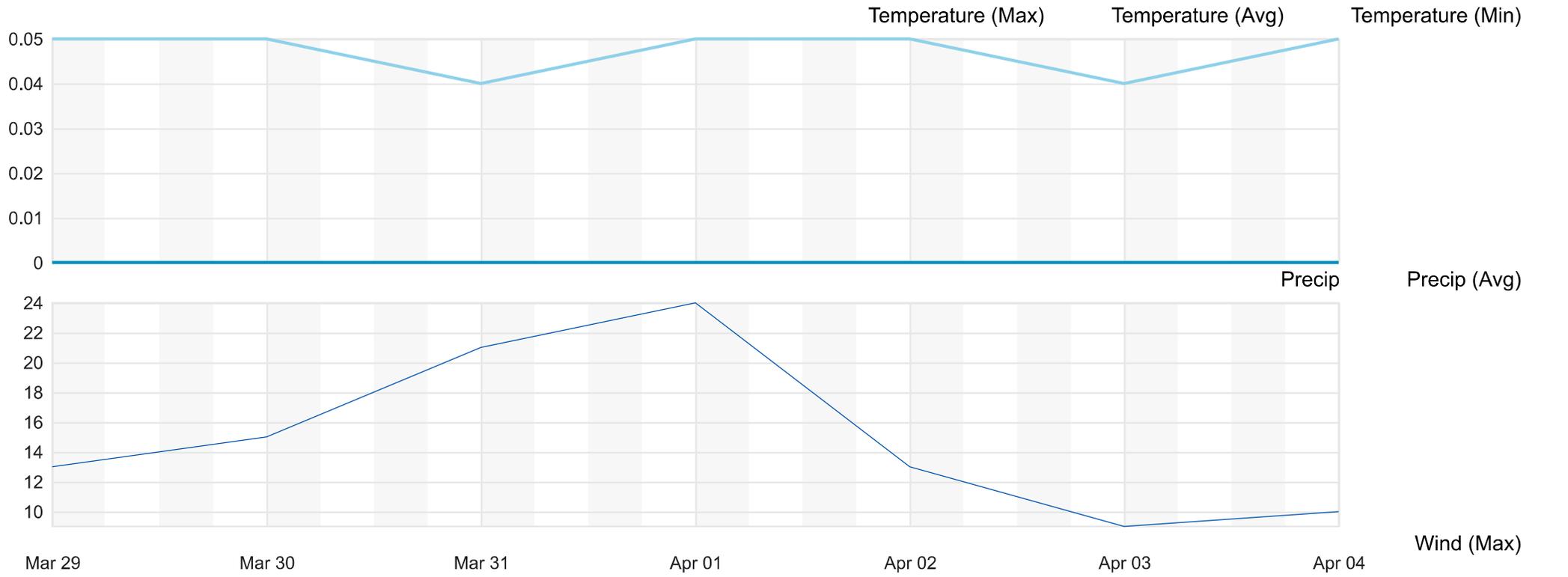
March

30

2020

[View](#)





Summary

Temperature (° F)	Max	Average	Min	▲
Max Temperature	73	60.14	45	
Avg Temperature	54.91	43.82	29.55	
Min Temperature	36	28.86	22	
Dew Point (° F)	Max	Average	Min	▲
Dew Point	37	23.65	12	
Precipitation (Inches)	Max	Average	Min	Sum ▲

Temperature (° F)	Max	Average	Min	▲
Precipitation	0.00	0.00	0.00	0.00
Snowdepth	0.00	0.00	0.00	0.00
Wind	Max	Average	Min	▲
Wind	24	5.14	0	
Gust Wind	36	1.92	0	
Sea Level Pressure	Max	Average	Min	▲
Sea Level Pressure	25.08	24.88	24.59	

Daily Observations

Time	Temperature (° F)			Dew Point (° F)			Humidity (%)			Wind Speed (mph)			Pressure (Hg)			Precipitation (in)
	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Total
Mar 29	58	44.4	28	28	18.3	12	68	39.5	16	13	3.6	0	25.0	24.9	24.9	0.00
30	64	46.6	31	31	25.7	22	77	47.3	22	15	3.9	0	25.0	24.9	24.9	0.00
31	69	54.7	36	26	22.0	17	61	31.9	15	21	9.4	0	25.0	24.9	24.8	0.00
1	73	54.9	35	37	26.5	18	71	39.3	14	24	5.8	0	24.8	24.7	24.6	0.00
2	45	29.6	22	37	25.7	18	94	86.0	73	13	6.3	0	25.1	24.9	24.8	0.00
3	48	32.4	22	28	22.1	17	85	68.7	32	9	3.2	0	25.1	25.0	24.9	0.00
4	64	44.1	28	31	25.2	20	83	52.9	20	10	3.8	0	24.9	24.8	24.7	0.00