UNDERSTANDING LITTLE TRAVERSE LAKE WATERSHED RESPONSES DURING RAIN EVENTS
MARCH - APRIL 2026

Little Traverse Lake flooding

CR 669 Bridge

Cleveland Township Boat Launch

April 2026 brought significant rain events that challenged watershed responses and resulted in elevations of water levels across the watershed. As a result, properties experienced historic flooding that created several negative consequences for property owners around Little Traverse Lake. Numerous areas in the lower peninsula of Michigan also experienced significant rain, flooding and damage to property and community infrastructure. A variety of conditions created, as Governor Witmer commented in a news conference, “a slow-motion, expensive disaster.”

This supplemental report is intended to provide a summary of watershed responses observed during April 2026 as well as historical documentation of watershed impacts that were experienced by property owners. This is summary is intended as a supplement to a previous report: “Understanding Little Traverse Lake Watershed Responses to Rain Events Fall 2024 – Spring 2025 & Fall 2025 – Winter 2026”, which provides additional data, background and relevant discussion related to watershed responses leading up to April 2026. That report is referenced as the “February 2026 report” and covered watershed responses Fall 2024-Spring 2025 with the inclusion of a supplemental “March 2026 report” covering Fall 2025-Winter 2026 watershed responses.

David Skjaerlund, PhD April 2026

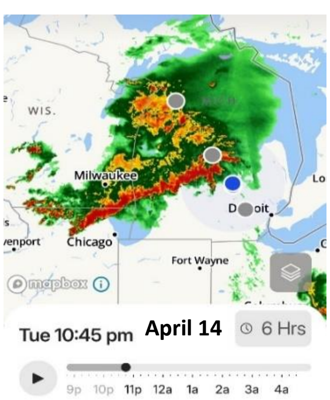
PRECIPTIATION EVENTS

March 15- April 15, 2026

Two dams (Tweener and Fish Camp dams) were constructed October 2025 and water levels in Shalda Creek and LTL increased during Winter. The two dams were pulled on the morning of March 14 (see the March 2026 supplemental report with data observations related to these beaver dams). Winter snows had melted the first part of March, saturating the ground above the frost line, combined with some rain events. On the evening of March 14, a two-day snowstorm began that brought more than 24” of snow (2.4” rain equivalent), increasing water levels at all four measurement points in the watershed (Lime Lake outlet, LTL at TLR Lake Inlet, Shalda Creek at TLR Stream Outlet and CR 669 Bridge). Approximately a week later, temperatures rose that led to a snow melt again mixed in with light rain and water levels remained elevated. Then two significant rain events happened within 2 weeks. Around April 2, approximately 1.5” rain brought LTL levels at TLR Lake Inlet to 594.9. Then a second back-to-back rain event happened. The first rain event brought more than 2” of rain on April 12. Then a second rain event brought more than 2” of rain on April 13-14. The additional 4.5” of rain over a few days raised water levels at all four measurement points in the watershed. The greatest water level increase was observed in LTL with levels rising from 594.9 to 595.45. Additional light rain (approximately 0.25”) was received both the evening of April 15 and April 17. Approximately 8.5” of water was received over the course of a month.

With the watershed already elevated, saturated, and remaining remnants of frostline, the precipitation had difficulty soaking in. Instead, the conditions added to water table and surface water runoff feeding lower elevations, streams and lakes. The weather remained cool, cloudy, and often foggy conditions that reduced evaporation ability. These April rain events took place all across the lower peninsula of Michigan, with some portions receiving even more rain, causing wide spread flooding and infrastructure damage in many communities. The rain events across the state broke many community records for the most rainfall received during April.

Captured weather channel radar images

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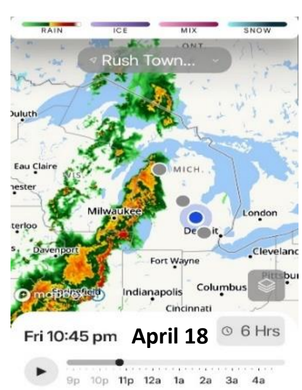
ENVIRONMENT

All of Michigan under Flood Watch as historic flooding slams the north

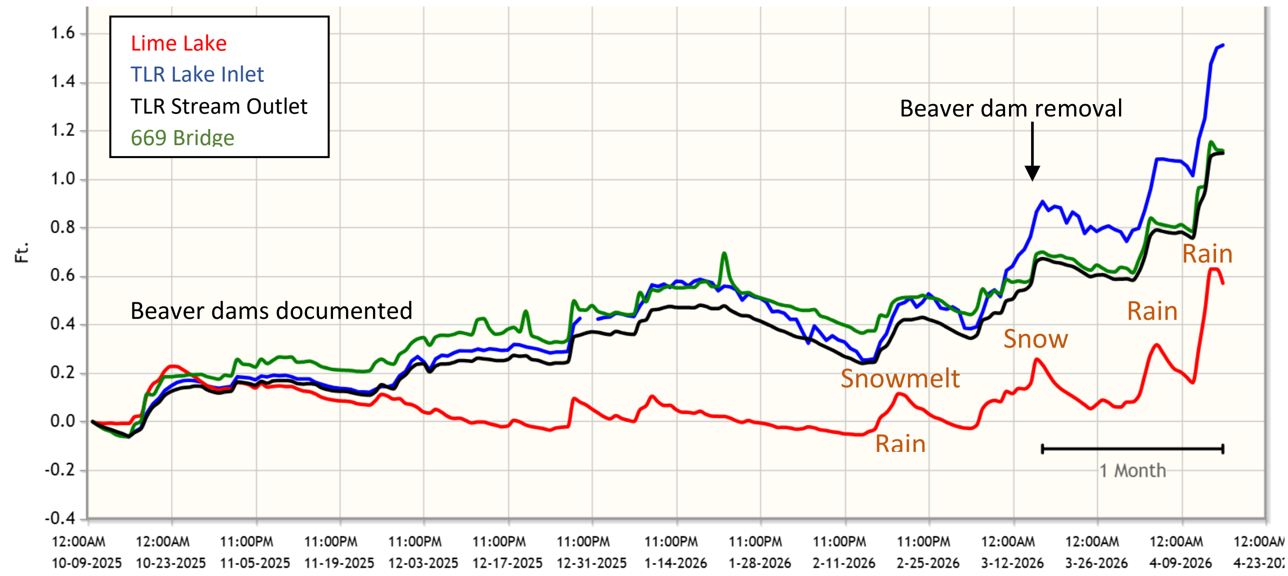
Updated: Apr. 16, 2026, 10:53 p.m. | Published: Apr. 15, 2026, 7:07 a.m.

Bucks Pond Dam near Barton City collapsed on April 13 after heavy rain and snowmelt. The collapsed private dam is seen here on Tuesday, April 14, 2026. (Sheri McWhirter | MLive.com)

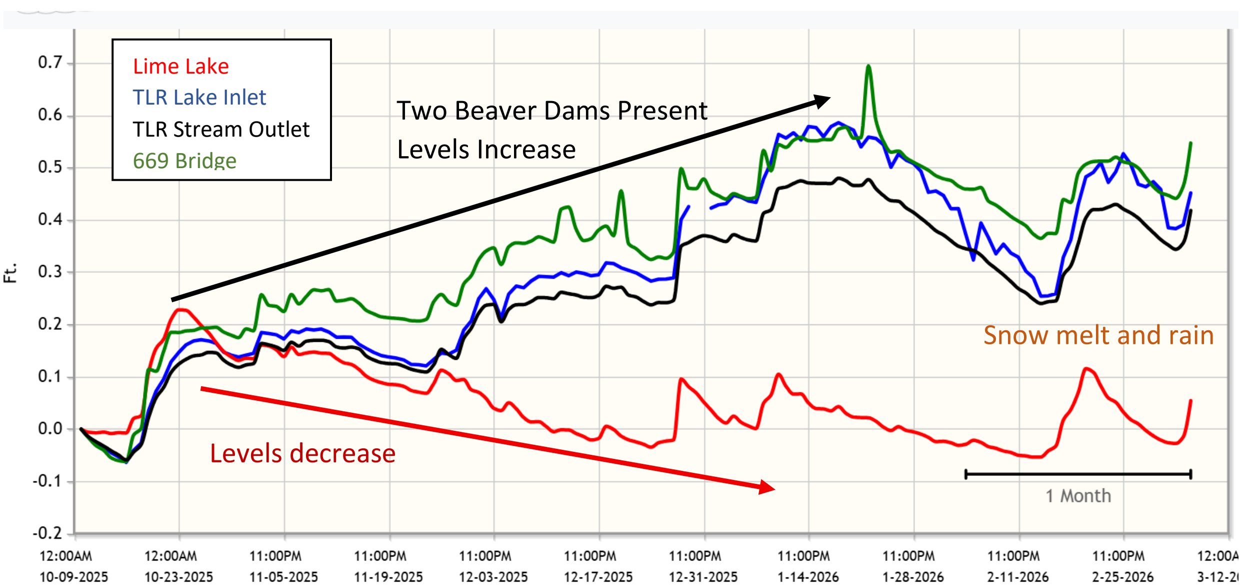


The combination of precipitation events raised the water level across all four measurement points in the watershed. Lime Lake rose and properties were impacted with high water levels. Shalda Creek levels elevated with water rising to the bottom of 669 Bridge. LTL levels reached one of the highest levels observed, approaching 595.45 at the TLR Lake Inlet. Extensive shoreline breaching was observed with extensive flooding that impacted properties, including accessory buildings, foundational crawl spaces and some basement spaces (see images towards the end). Septic systems of properties in lower areas have the potential for impacts as well. Levels were one inch lower in 2014 during the last extensive flooding with both beaver dams and significant rain events.

AN OVERVIEW OF WATERSHED RESPONSES FALL 2026 – SPRING 2026



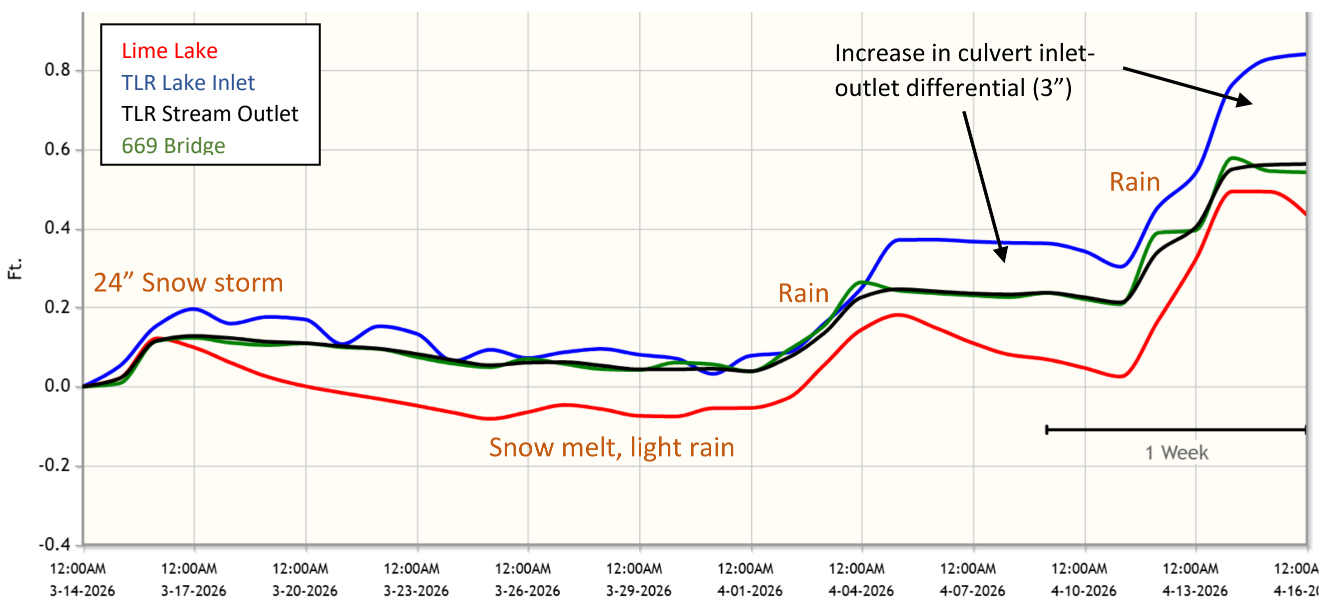
CLOSER LOOK AT WATERSHED CONDITIONS PRIOR TO SPRING PRECIPTATION EVENTS



As discussed in more detail in the previous March 2026 supplemental report, two beaver dams (Tweener Dam and Fish Camp Dam) were discovered in Fall 2025 and were pulled the morning of March 14, 2026. During the winter, Shalda Creek levels at CR 669 Bridge and at TLR Stream Outlet as well as LTL levels as measured at TLR Lake Inlet all continued to increase over winter while Lime Lake lowered back to lower pre-fall levels. On January 25, 2026, Shalda Creek level at 669 Bridge was 0.5' (6.6") higher, Shalda Creek level at TLR Stream Outlet was 0.5 (6.0") higher, and LTL level (TLR Lake Inlet) was 0.6' (7.2") higher – as compared to October 10, 2025 levels. Lime Lake had lowered back to the same level (0" difference).

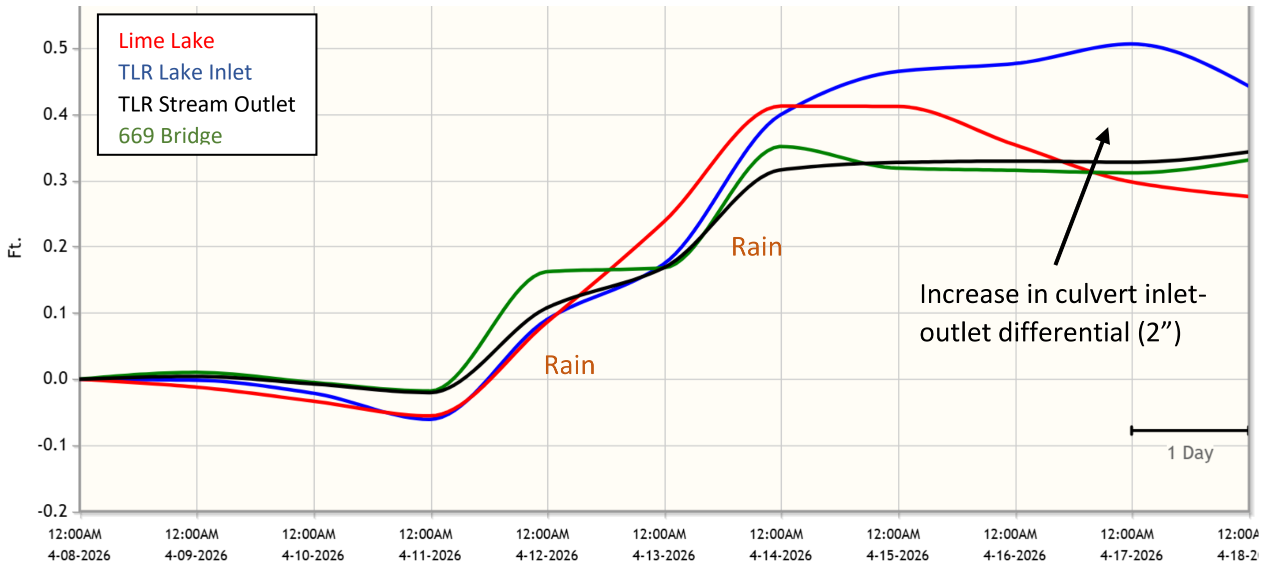
Prior to the start of the spring precipitation events (24" snow storm plus 6.0" rain events), watershed levels on March 6, in comparison to October 10, 2025, were the same (0" difference) for Lime Lake while LTL (TLR Lake Inlet), Shalda Creek at TLR Stream Outlet, and Shalda Creek at 669 Bridge were 0.5' (6.0"), 0.4' (4.8") and 0.5 (6") higher respectively. Shalda Creek and Little Traverse Lake was roughly 6" higher at the start of the rain events in comparison to Lime Lake, relative to the watershed's lower levels on October 10, 2025. The bathtub had increased and remained full over the winter instead of draining due to the presence of beaver dams. Thus, LTL and Shalda Creek levels were already elevated heading into spring rain events. Having additional bathtub capacity to absorb spring rain events minimizes the extent of high water levels and related flooding. Beaver dam maintenance in Shald Creek, especially with it's gradual slope, is essential for watershed management to ensure natural flow conditions without restrictions or elevating water levels unnecessairily. The previous February 2026 report provides additional documentation of a beaver dam downstream 669 Fall 2024-Spring 2025 creating the same watershed scenario – rising water levels through out winter that then were higher at time of significant spring rains. The Fall 2024-Spring 2025 scenario has been repeated again in Fall 2025-Spring 2026, and more.

SPRING PRECIPITATION EVENTS



Over the course of a month (March 15 – April 15), the watershed experienced a 24" snow storm (equivalent to a 2.4" rain), snow melts and light rain, and then two significant rain events (amounting to an additional 6" of rain). During the course of this month, Lime Lake levels increased 6", Shalda Creek at TLR Stream Outlet and 669 increased 7" (water elevated to the bottom of 669 Bridge by April 15 with no air gap), and LTL at TLR Lake Inlet increased 10" (water had utilized almost all of the TLR culvert area). The additional 3" increase in LTL levels as compared to Shalda Creek can be partly attributed to the increase in inlet-outlet differential as will be discussed below. Little Traverse Lake levels were approaching levels of concern on March 14 (594.55) at the beginning of these precipitation events and had reached 595.45 a month later on April 15, 2025 with extensive historic flooding as a result.

APRIL 2026 RAIN EVENTS



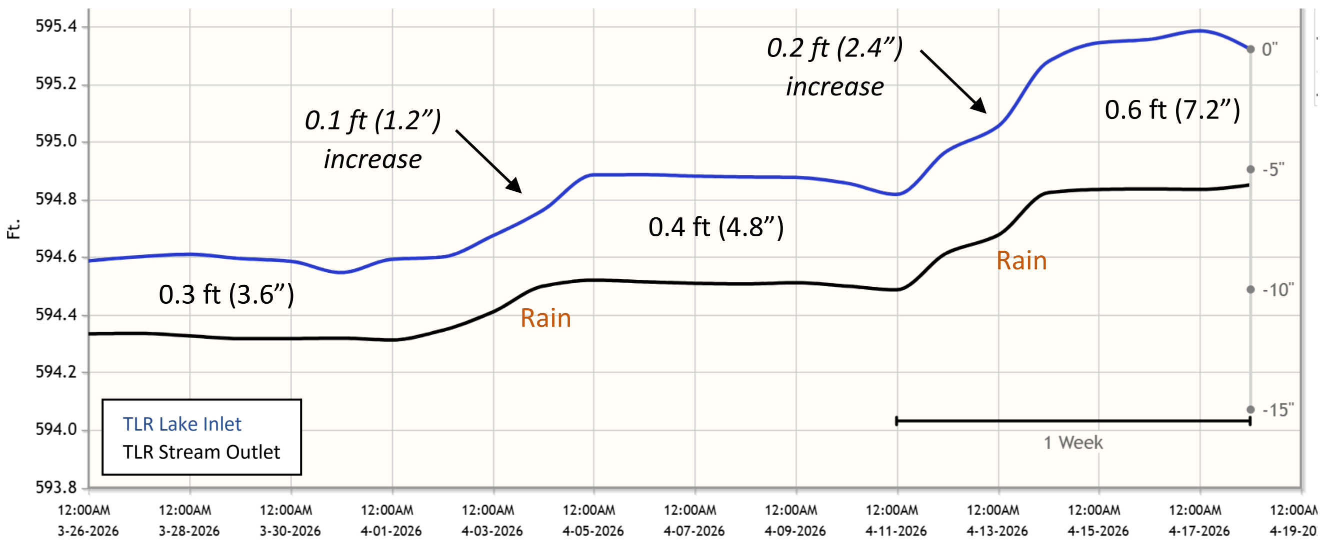
It is helpful to take a closer look at the watershed responses to the two large rain events during the middle of April 2026. Levels at TLR Lake Inlet had already reached 594.9, with water standing in low areas along LTL. For the most part, water levels at all four measurement points all increased in a similar fashion. In comparison to April 8, Lime Lake increased 0.47' (5.6"), Shalda Creek at TLR Stream Outlet and 669 Bridge had increased 0.35' (4.2"), and LTL at TLR Lake Inlet increased 0.55' (6.6"). Under normal conditions, water levels typically increase a similar degree across at all watershed measurement points regardless of beaver dams or no beaver dams, rock dam outlet (Lime Lake), culvert (LTL), no structure (Shalda Creek at TLR Stream Outlet) or a 30' span bridge (669). Precipitation events do raise the water levels in the watershed and cannot be prevented when rain events occur.

As LTL levels increased above 595.0, a disproportionate and greater increase in LTL water levels were observed as compared to Shalda Creek. LTL levels increased roughly 2" more than Shalda Creek. This can be attributed to an increase in the culvert inlet-outlet differential which increases through a rain event as the water levels increase. This is discussed further below.

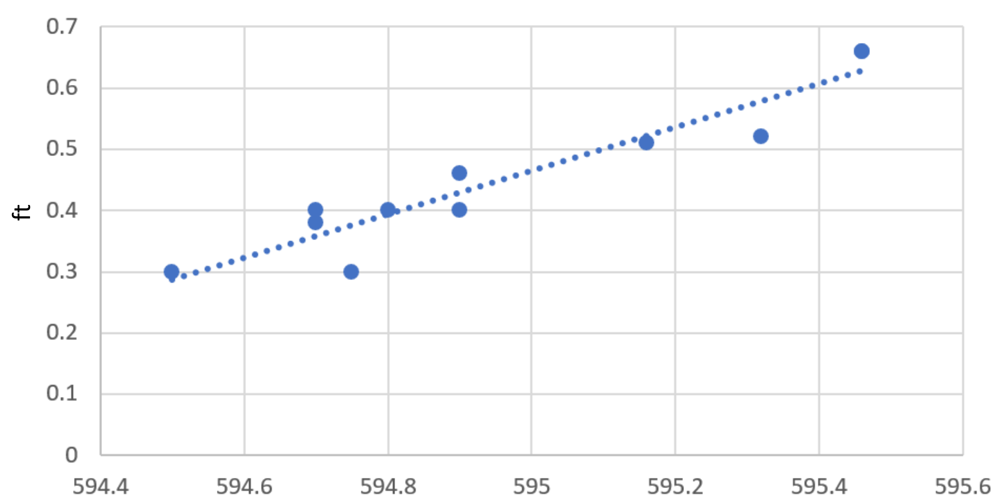
It is important to note that once the rain event ends, levels do not continue to rise across the watershed, including for LTL. Even at very high levels of 595.5 at TLR Lake Inlet, the amount of water entering LTL from Shetland Creek / Lime Lake, tributary streams, higher elevations, water table, and springs does not exceed the amount of water being cleared from LTL through the TLR culvert, water table absorption (very little), and evaporation (virtually non-existent with clouds, fog and temperatures below 45F). Outflow equals inflow.

Date	**10/10/25**	**1/25/26**	**3/6/26**	**3/15/26**	**4/1/26**	**4 /11/26**	**4/15/26**
Lime Lake	**617.7**	**617.7**	**617.7**	**617.83**	**617.8**	**617.9**	**618.37**
Difference from previous		*0*	*0*	*.13*	*.03*	*.1*	*.47*
Difference (inches)		*0*	*0*	*1.56*	*.36*	*1.2*	*5.64*
TLR Lake Inlet	**593.8**	**594.4**	**594.3**	**594.5**	**594.6**	**594.9**	**595.45**
Difference from previous		*0.6*	*-.1*	*.2*	*.1*	*.3*	*.55*
Difference (inches)		*7.2*	*-1.2*	*2.4*	*1.2*	*3.6*	*6.6*
TLR Stream Outlet	**593.7**	**594.2**	**594.1**	**594.4**	**594.5**	**594.6**	**594.85**
Difference from previous		*0.5*	*-.1*	*.3*	*.1*	*.1*	*.35*
Difference (inches)		*6.0*	*-1.2*	*3.6*	*1.2*	*1.2*	*4.2*
669 Bridge	**593.8**	**594.35**	**594.3**	**594.4**	**594.42**	**594.6**	**594.95**
Difference from previous		*.55*	*-.05*	*.1*	*.02*	*.18*	*.35*
Difference (inches)		*6.6*	*-.6*	*1.2*	*.24*	*2.16*	*4.2*

CHANGES IN CULVERT INLET-OUTLET DIFFERENTIAL WITH RAIN EVENTS APRIL 2026



TLR INLET-OUTLET DIFFERENTIAL CORRELATION TO INLET LAKE LEVELS, March-April 2026

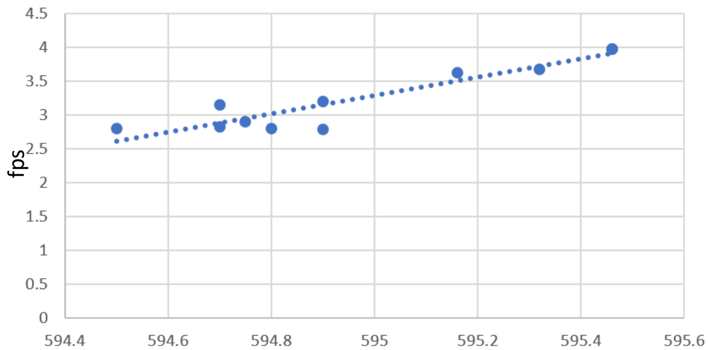


Flow rates are usually defined as the volume of water passing through a structure within a certain time measurement, often expressed as cubic feet per second (cfs). This is dependent on two factors: 1) the area of the culvert being used for water flow in cubic feet (cf), and 2) the velocity at which the water flows through the culvert, often expressed as feet per second (fps). Velocity is influenced by the degree of hydraulic pressure or the drop in elevation from one side to another. The greater the drop in elevation, the greater the hydraulic pressure, the faster the flow with higher velocities. For purposes in this paper, "flow rates" often refer to velocity as measured by a flow meter.

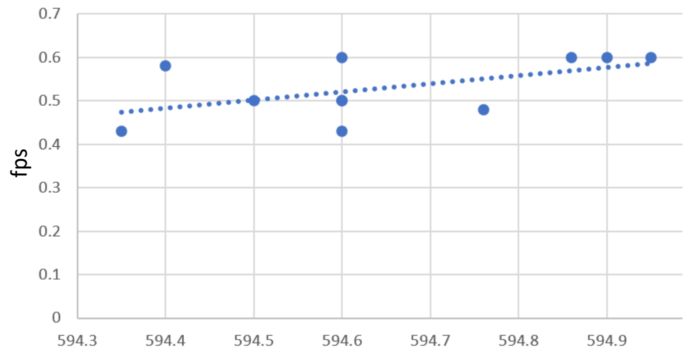
Water levels are measured on the eastern TLR Lake Inlet side and the western TLR Stream Outlet side of the TLR culvert. The difference between the two is known as the culvert inlet-outlet differential. As LTL water levels (TLR Lake inlet) increase, the culvert inlet-outlet level increases proportionally in a linear fashion. The culvert inlet-outlet differential nearly doubles as water levels increase from 594.7 (0.35') to 595.5 (0.65'). The culvert inlet-outlet differential increased approximately 2" above 595.0, which is considered flood stage with significant shoreline breach of water. At this level, the additional 2" creates even more water problems. This is another reason why it is important to keep LTL levels as low as possible before heading into spring rains, allowing the bathtub capacity to absorb the rain events before reaching high water levels. Thus, the culvert inlet-outlet differential does not become as much of a factor if levels are kept below 595.0 or even below 594.7.

It is important to note that there will be an elevation differential between the lake side and stream side of TLR regardless of structure. This is due to the fall in Shalda Creek the first 200 feet. There is also a drop in the start of Shetland Creek from Lime Lake. The flow of water through a structure depends on a fall or difference as water flows downhill.

CORRELATION OF TLR CULVERT FLOW RATE TO INLET LAKE LEVELS, March – April 2026



CORRELATION OF 669 BRIDGE FLOW RATE TO 669 BRIDGE LEVELS, March – April 2026



Flow rates were measured using a JDC Electronics Flowatch Flowmeter with fluid impeller (https://www.forestry-suppliers.com/p/94356/65971/flowatch-flowmeter/anemometer) as described in previous reports and with the assistance of LTL residents Jerry Leanderson and Doug Verellen. TLR flow rates (fps) are 10x the flow rates (fps) observed in Shalda Creek at 669 Bridge. TLR flow rates are correlated to LTL Lake Inlet levels in a linear fashion; as levels increase so does the velocity of water (fps) moving through the culvert. The 30' span offers a larger area for water to move and the southern portion begins to have some flow at high water levels, whereas under normal conditions the southern one-third under the bridge has no flow (see February 2026 report).

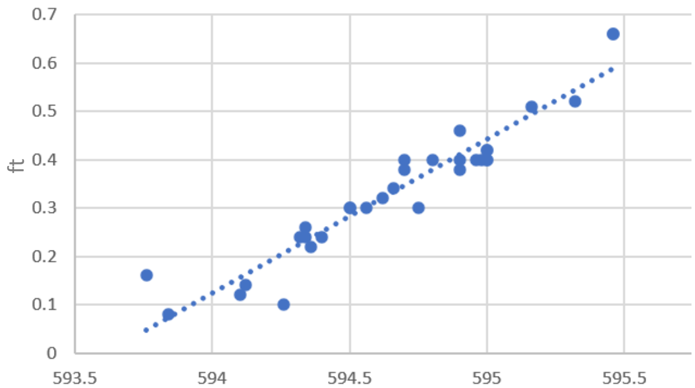
At 595.5, nearly all of the culvert area is used to move water (1" air gap on TLR Stream Outlet side and 6" air gap on TLR Lake Inlet side). The 64"x43" elliptical culvert is equivalent to a 54" round culvert that has an area of 15.9 sq ft. There is gravel in the bottom of the culvert taking up some of the culvert area and capacity. At 595.5, with culvert inlet-outlet differential at 0.66' (7.92"), flow velocity of 4.0 fps, and nearly all of culvert area utilized (15 sq ft), the culvert flow is approaching 60 cfs.

Date	TLR Inlet	TLR Outlet	Differential	Difference	TLR flow	669 Bridge	669 flow
	ft	ft	ft	in	fps	ft	fps
3/14/2026	594.5	594.2	0.3	3.6	2.8	594.35	0.43
3/17/2026	594.8	594.4	0.4	4.8	2.8	594.6	0.6
3/18/2026	594.75	594.45	0.3	3.6	2.9	594.6	0.5
3/19/2026	594.7	594.32	0.38	4.56	3.15	594.5	0.5
3/31/2026	594.7	594.3	0.4	4.8	2.83	594.4	0.58
4/6/2026	594.9	594.5	0.4	4.8	2.79	594.6	0.5
4/10/2026	594.9	594.44	0.46	5.52	3.2	594.6	0.43
4/13/2026	595.16	594.65	0.51	6.12	3.63	594.76	0.48
4/13/2026	595.46	594.8	0.66	7.92	3.98	594.95	0.6
4/16/2026	595.46	594.8	0.66	7.92	3.98	594.9	0.6
4/21/2026	595.32	594.8	0.52	6.24	3.68	594.86	0.6
4/29/2026	595.2	594.54	0.66	7.92	3.43	594.68	0.52
5/5/2026	594.78	594.38	0.4	4.8	2.78	594.52	0.43

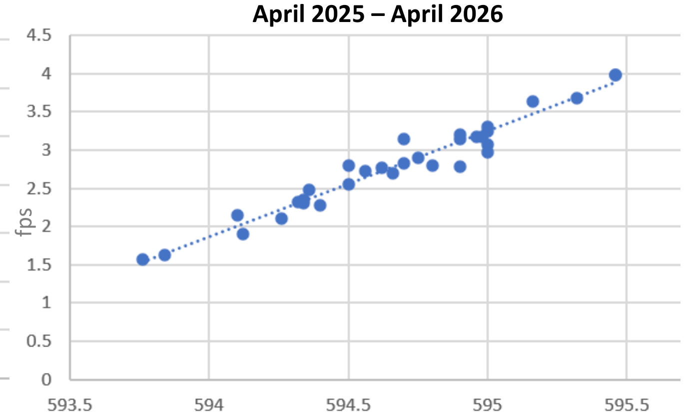
COMBINED DATA MEASUREMENTS FROM LOW TO HIGH WATER LEVELS

With the highest water levels observed in April 2026 and LTL nearly reaching 595.5, it would be good opportunity to look at a comprehensive compilation of data from summer lows to this extremely high level. The following graphs represents data collected in person from 2025 and 2026 and combined into one data set that represents times when no beaver dams were known to be present.

CORRELATION OF TLR CULVERT INLET-OUTLET DIFFERENTIAL TO INLET LAKE LEVELS, April 2025 – April 2026



CORRELATION OF TLR CULVERT FLOW RATE TO INLET LAKE LEVELS, April 2025 – April 2026



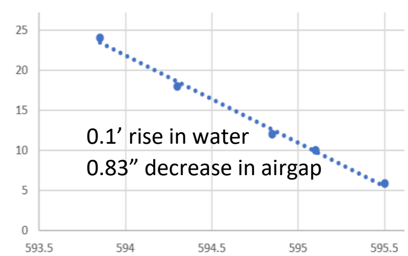
Culvert performance is often referred to as the volume of water flowing through a defined space (cubic feet per second, cfs), which is dependent on the area being utilized (cubic feet, cf) and the velocity at which the water is moving (feet per second, fps). As the velocity increases, the performance (cfs) increases (assuming area does not decrease). As the amount of area is increases, the performance (cfs) increases (assuming velocity does not decrease).

From low water levels of 593.8 to high water levels of 593.5, the culvert inlet-outlet differential is a direct linear relationship; as water levels rise, the inlet-outlet differential rises. In addition, the velocity of water moving through the culvert as increases in a direct linear fashion; as water levels rise, the velocity of water moving through the culvert rises. The increasing inlet-outlet differential creates a greater hydraulic pressure, thus increasing the velocity. The increasing velocity did not appear to reach a maximum or slow at 595.45.

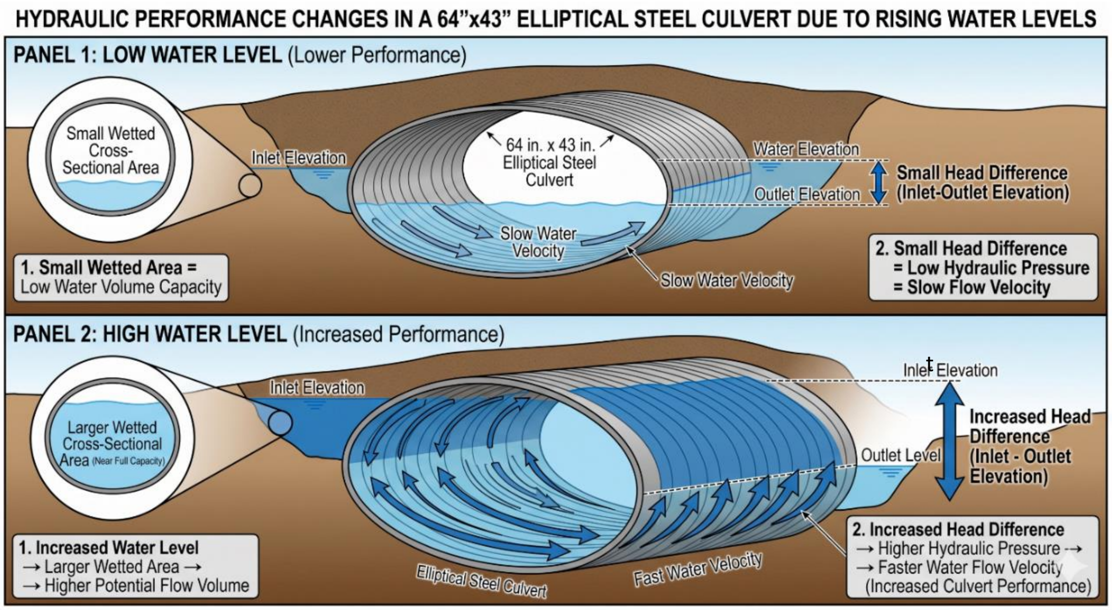
As water levels rise, more of the culvert is being used which increases the area used in calculating flow rates (volume per second). The airgaps at various levels have been noted through the reports and to verify the area of culvert filled with water at different water levels. For every 0.1’ change in water level, the airgap decreases by 0.83”. At 595.5, the air gap at the west end of the TLR culvert was 1” and the air gap at the east end was 6” with a water eddy observed in front of culvert inlet. At that level, the area of the culvert utilized had essentially reached a maximum. As water levels increase, the additional increase in area is less due to the elliptical nature of the culvert and with a smaller area at the top of culvert.

Observed air gaps measured on site (subject to human reading)

Water level height (TLR Lake Inlet)	593.85	594.3	594.85	595.1	595.45
Air gap observed (inches)	24”	18”	12”	10”	5.8”



The performance of the culvert (cfs) continues to increase from low to high levels with a linear increase in velocity (fps) and an increase amount of area (cf) being used, although the increases in total culvert area being used are less at higher levels due to the elliptical nature of the culvert and curved top. The volume of water handled by the culvert (cfs) increases more of the culvert is filled with water as levels rise, increasing the area utilized by the culvert. The culvert inlet-outlet difference creates a hydraulic pressure allowing greater volumes of water to be cleared through the culvert at higher water levels as velocity of flow increases.



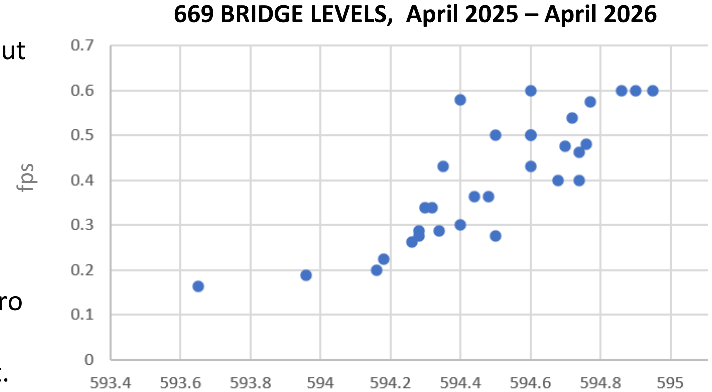
Skjaerlund AI Illustration

It is important to note that the linear increase in velocity is the result of a greater inlet-out differential. Thus, to achieve higher flow rates, the levels at TLR Lake Inlet must rise, which is not desired during high water levels, especially above 595.0. Culvert performance (cfs) continues to increase at high levels, but at the expense of an increase in culvert inlet-outlet differential. As water levels rose from 595.0 to 595.5, the culvert inlet-outlet differential increased by 2" which allowed greater velocity of water to flow through the culvert, increasing culvert performance, but at the expense of higher lake levels. Thus, the increase in LTL levels at the higher levels was atypical in comparison to Shalda Creek or even Lime Lake, attributable to the additional 2" in culvert differential.

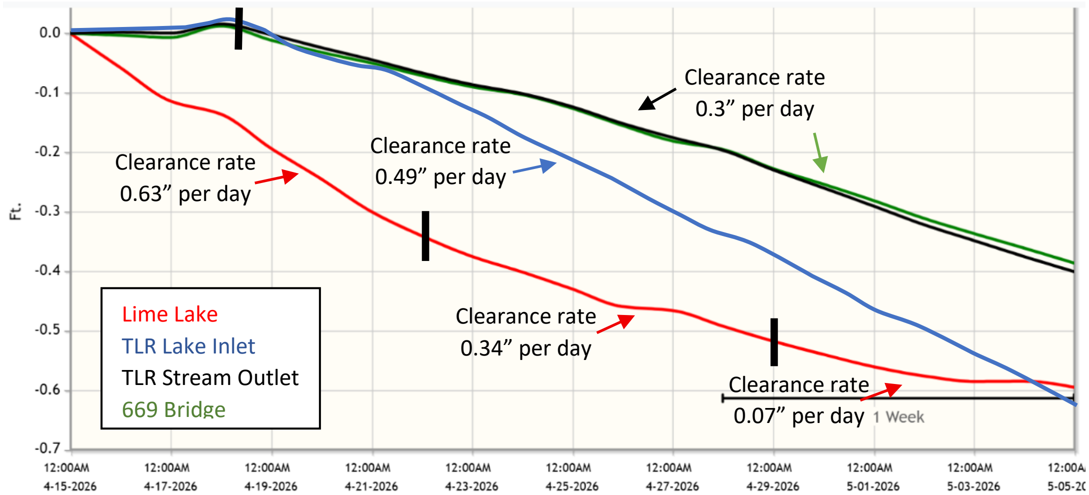
Lake levels do not continue to rise after a rain event ends, even at the highest levels. Culvert performance, any evaporation, and seepage into the water table, is allowing all the water to be cleared at least as fast as the water entering the watershed from Lime Lake, tributaries, water table and springs. However, culvert performance at higher levels above 595.0 is impacted by the lack of additional culvert area available to move water while the increase in velocity is at the expense of the increasing inlet-outlet differential. Adding additional culvert area at high levels would be beneficial, without altering culvert area at lower levels to minimize impact on lower levels.

CR 669 flow rates increased as water levels increased but the trend line is less defined and less linear. There are fewer changes in velocity at lower levels and at higher levels. As noted, the velocity at 669 Bridge is 10x slower than that observed at TLR culvert. However, the area is much greater due to the 30' span bridge and the southern one-third portion of the bridge is not utilized with flow rates measuring near zero (discussed in March 2026 report). Flow rates are also slower partially due to the more gradual slope gradient.

CORRELATION OF 669 BRIDGE FLOW RATE TO 669 BRIDGE LEVELS, April 2025 – April 2026



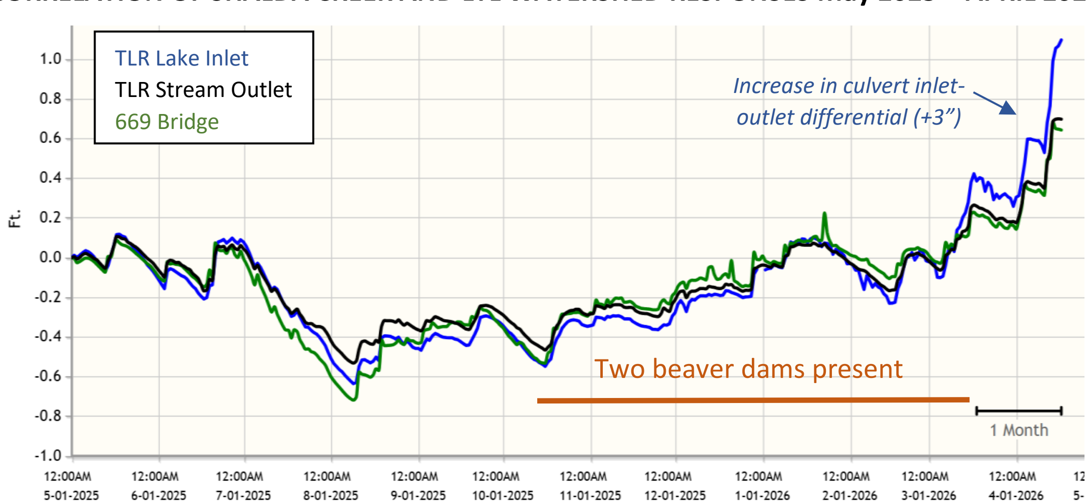
WATERSHED CLEARANCE RESPONSES AND CLEARANCE RATES AFTER APRIL 2026 RAIN EVENTS



Water levels did not continue to increase after rains ended early April 15. As observed across Michigan's lower peninsula, flood waters do not recede quickly. With the watershed elevated and saturated with standing water in many places, it takes time to clear water from the watershed. After the end of rain, Lime Lake levels began to decrease as water was cleared through the Shetland Creek outlet. Between April 15 and May 5, Lime Lake levels dropped 0.6' (7.2") while LTL levels decreased 0.68' (8.16") at TLR Lake Inlet. LTL levels were dropping while also clearing out all the inflow of water from the watershed, including all the water from Lime Lake. During this time, Shalda Creek dropped 0.42' (5.0") at both 669 Bridge and TLR Stream Outlet, a smaller decline due to significant water standing in the Shalda Conifer Swamp and associated bottlenecks. All levels returning to March 15 levels.

Water levels plateaued initially (four days) in Shalda Creek at 669 Bridge and at Shalda Creek TLR Stream Outlet as well as for LTL at TLR Lake Inlet. Water must first be cleared out from the elevated levels of Shalda Creek and the surrounding areas downstream. Shortly thereafter, water levels began to decrease for Shalda Creek at both locations as well as LTL levels at TLR Lake Inlet as water is cleared from Shalda Conifer Swamp. The rate of decrease in LTL levels accelerated with additional decline in Shalda Creek, the slowing of watershed inflow, and a proportional decrease in the culvert inlet-outlet differential with lowering water levels. The culvert inlet-outlet differential decreased 3" as water levels decreased from 595.45 to 594.85. After the initial plateau, the clearance rates for LTL (0.49" per day) matched or exceeded the rates observed for Lime Lake (maximum clearance rate observed: 0.63" per day for first week). This pattern is consistent for what was observed April 2025 after rain events ended (LTL levels reached 595.1) that was described at length in the February 2026 report.

CORRELATION OF SHALDA CREEK AND LTL WATERSHED RESPONSES May 2025 – APRIL 2026

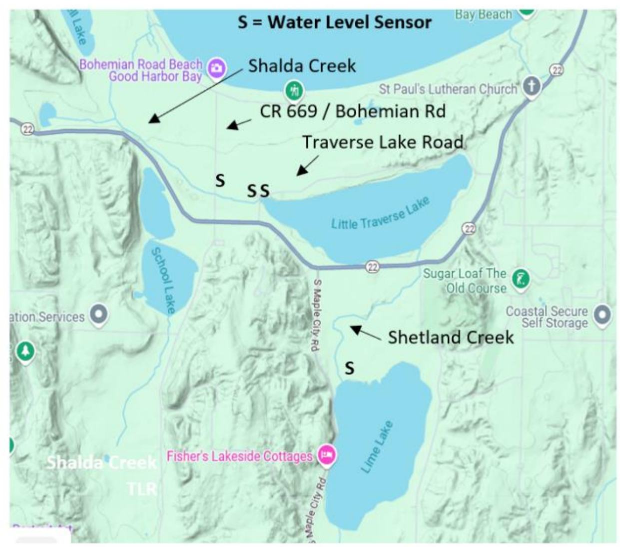


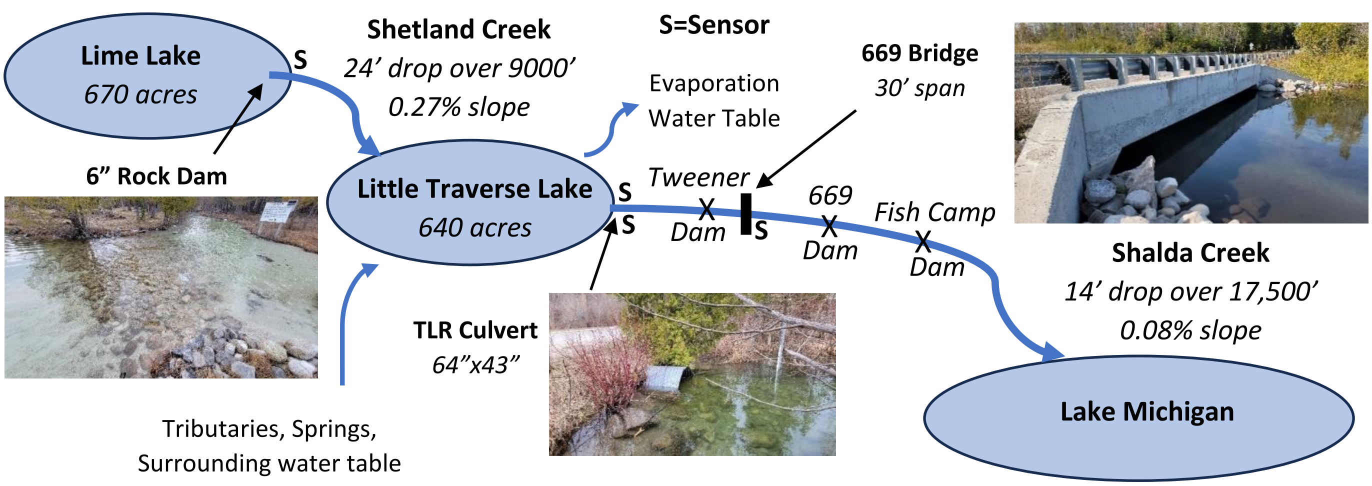
It’s important to note that Little Traverse Lake (TLR Lake Inlet) and Shalda Creek (whether at 669 Bridge or TLR Stream Outlet) water levels and responses are very closely interdependent, with the exception of the linear increase in culvert inlet-outlet differential at high water levels. Shalda Creek and LTL respond in parallel in a closely correlated fashion as seen in the graph above using data from over the course of last year. Water levels need to recede in Shalda Creek before water levels follow in LTL. Levels in LTL cannot receded any lower than the Shalda Creek level at TLR Stream Outlet. That is why the data measurements of Shalda Creek at 669 Bridge and TLR Stream Outlet provide helpful insights into watershed responses. Once the TLR culvert inlet-outlet equilibrium is reached at a level, the interdependence between LTL and Shalda Creek dynamics becomes significant.

In contrast, Shetland Creek has no controlling influence over Lime Lake due to its greater slopes over the course of the creek as it flows into LTL. That is unless a beaver dam is present, at which time Lime Lake levels will increase as water is backed up behind the dam. Lime Lake is a good indicator of normal watershed responses. When Shalda Creek is free of dams, water levels change at four measurement locations in a similar fashion under normal conditions. (This has been discussed in greater detail in the previous February 2026 and March 2026 reports).

WATERSHED CHARACTERISTICS

It is helpful to first understand the watershed characteristics. Subject to water levels in the lakes, Lime Lake (640 acres) has an elevation of approximately 618’ and drains through Shetland Creek (dropping 24’ over 9000 feet in length, 0.27% slope) with a 6” rock dam at the north outlet of Lime Lake. Little Traverse Lake (640 acres) has an elevation of approximately 594’ and drains through a 64”x43” elliptical steel culvert at the west end. Shalda Creek drains west and north, dropping 14’ over 17,500’ (0.08% slope) and feeds into Lake Michigan (elevation of approximately 580’) with passing under a 30’ span bridge at CR 669 and through multiple culverts at Lake Michigan Drive. Some sections of Shalda Creek have more gradual slopes with less of a drop that would be closer to 0.02% slope, notably in sections between 669 dam and Traverse Lake Road. There are also extensive wetland areas along Shalda Creek between Traverse Lake Road and just downstream of Fish Camp Dam area where Shalda Creek is in closer proximity to M-22 before turning north.





SHALDA CREEK WATERSHED

An overview of the Shalda Creek watershed can be gained by use of satellite photos (Google Earth). In person scouting is another useful approach and Little Traverse Lake Association often hires individuals to scout Shalda Creek for restrictions, obstructions, or to gain a better understanding of present conditions. On April 21, 2026, a personal scouting trip was done from 669 Bridge to the intersection where the Narada Lake outlet stream feeds into Shalda Creek beyond Fish Camp Dam (where Shalda Creek is close to M22 and makes it turn north) to capture photo documentation and to check for beaver dams. No dams were rebuilt and no new locations were found. Drone imagery can be useful as well but restrictions by NPS prevent a direct fly over of National Park Wilderness Areas and limit the view attainable. On April 21, 2026, Zero Gravity Aerial conducted a drone survey of LTL shoreline and captured aerial imagery of Shalda Creek, as allowed complying with NPS and FAA requirements.

Shalda Creek Wetlands: Shalda Creek has extensive wetlands as part of the rich conifer swamp between Traverse Lake Road and Fish Camp, upstream of Narada Lake outlet intersection. This wetland / rich conifer swamp area of Shalda Creek is especially extensive downstream 669 Bridge and narrows just downstream of Fish Camp where Shalda Creek is close to M22 before turning north past the intersection with Narada Lake stream inlet. The area is outlined in blue in the satellite photo on the next page, known as Shalda Conifer Swamp or sometimes as “Shalda Lake.” This area is full with standing water as visible through in-person observations as well as in drone imagery. It’s a large area with elevated high levels and holds a significant amount of water upstream of Fish Camp area. During the recent rain events, water was elevated to the bottom of 669 Bridge. This standing water in the watershed needs to be cleared in the process of Shalda Creek water levels dropping after a rain event.

In addition, the majority of this portion of Shalda Creek has low slope, almost flat at places, while some shorter sections have slightly more slope that creates an observable current at the surface. The 0.08% average slope of Shalda Creek is considered a very low slope gradient with some sections flat (less than 0.02% slope), as evidenced in photos (water reflections of trees). In addition to the low slope gradient, the presence of debris, wetland vegetation, and accumulation of sediment are additional factors that further slows the rate of water flowing through Shalda Creek.

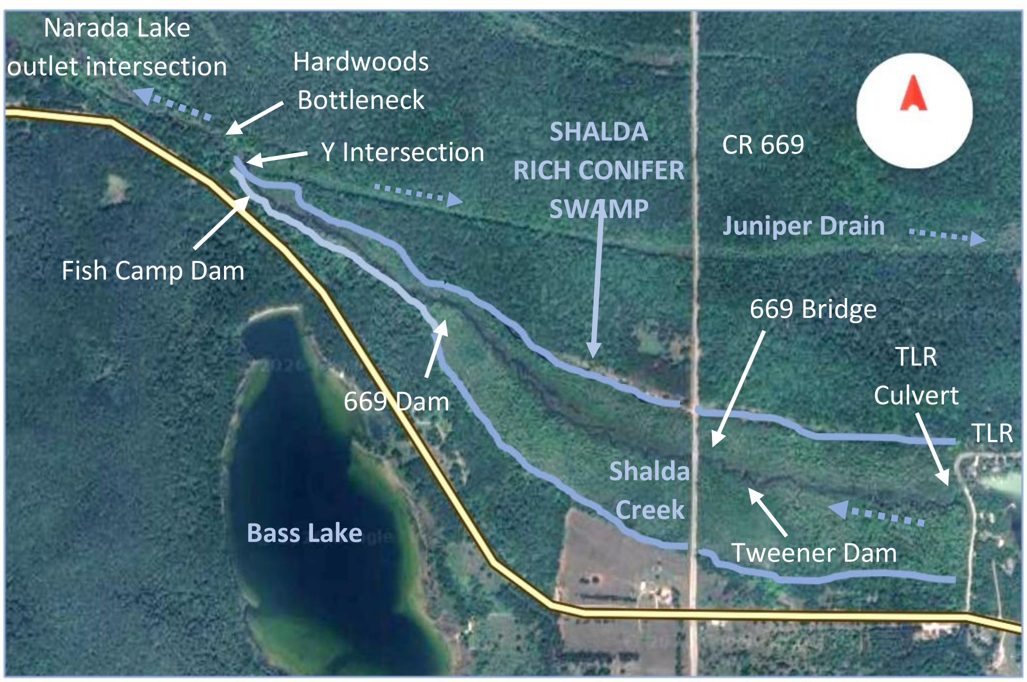
Shetland Creek presents no such challenge to the draining of Lime Lake. The slope of Shetland creek is 3.4x greater than that of Shalda Creek. The 0.27% slope of Shetland Creek is on par with the world average for rivers (source). The steeper slope of Shetland Creek allows water to freely flow from Lime Lake to LTL. Thus, Lime Lake and its clearance after a rain event is not as interdependent with Shetland Creek as LTL is with Shalda Creek.

Shalda Creek has no significant man-made structure limitations from the headwaters west of TLR to Lake Michigan Drive and Lake Michigan. The full 30’ span 669 Bridge is not normally fully utilized and there is no restriction of water. Shalda Creek west of the TLR Stream Outlet is an open stream with no man-made structure restrictions. A visible current is visible on the surface for about 200 feet and then Shalda Creek turns into more of a flat pool of water with gradual downstream flow. Water levels in Shalda Creek rise in a similar fashion at both 669 Bridge and at TLR Stream Outlet. And the rate of clearance (i.e. a drop in water levels) is similar at both locations is similar as evidenced by water level measurements. Data observations indicate that as Shalda Creek decreases, then so does LTL in a closely correlated and interdependent fashion. Regardless of structure, LTL levels cannot decrease faster than Shalda Creek clears out standing water in Shalda Conifer Swamp. LTL needs to wait its turn until Shada Creek has the opportunity to clear out some water, resulting in a drop in water levels.

All of the standing water in Shalda Conifer Swamp, including water flowing downstream within Shalda Creek stream banks, clears through a narrow section that is surrounded by higher banks and hardwood trees ("Hardwoods Bottleneck"). This section is located just upstream of the Narada Lake inlet before the creek turns north to Lake Michigan. The standing and flowing water is confined to a narrow width through this section in comparison to upstream towards 669 Bridge. It is a watershed bottle neck at higher levels. A good way to describe the challenge is having a highway with eight lanes of traffic merging down to one lane. It takes time to clear the traffic through a merging bottleneck. The low degree of slope is a watershed challenge of its own, but the bottleneck creates additional difficulties to quickly clearing water. As a result, Shalda Creek clearance rates are initially plateaued and then the rate of decrease accelerates as water is cleared from the Shalda Conifer Swamp. Levels in LTL decrease in a similar fashion as water is cleared downstream.

The areas where beaver dams are normally located (known as Tweener Dam, 669 Dam and Fish Camp Dam), also can be become pinch points narrowing the stream and creating a bottleneck for the watershed clearance. At the high levels observed, water was overflowing the stream bank and pushing water around the dam debris piles. With beaver dams, water spreads out more into the broader watershed upstream. In addition, the flat or gradual nature of the Shalda Creek watershed in this area amplifies the impact of beaver dam construction upon the watershed, filling Shalda Conifer Swamp and altering water dynamics upstream. The 669 dam, present Fall 2024 - Spring 2025, elevated water to the bottom of 669 Bridge and also impacted Shalda Creek upstream.

Thus, watershed clearance is influenced by the following Shalda Creek characteristics: large rich conifer swamp that holds significant water after a rain event, low gradient slopes result in slower velocities, bottleneck restrictions that creates a traffic jam during water clearance, and additional stream restrictions due to debris, vegetation, and sediment.

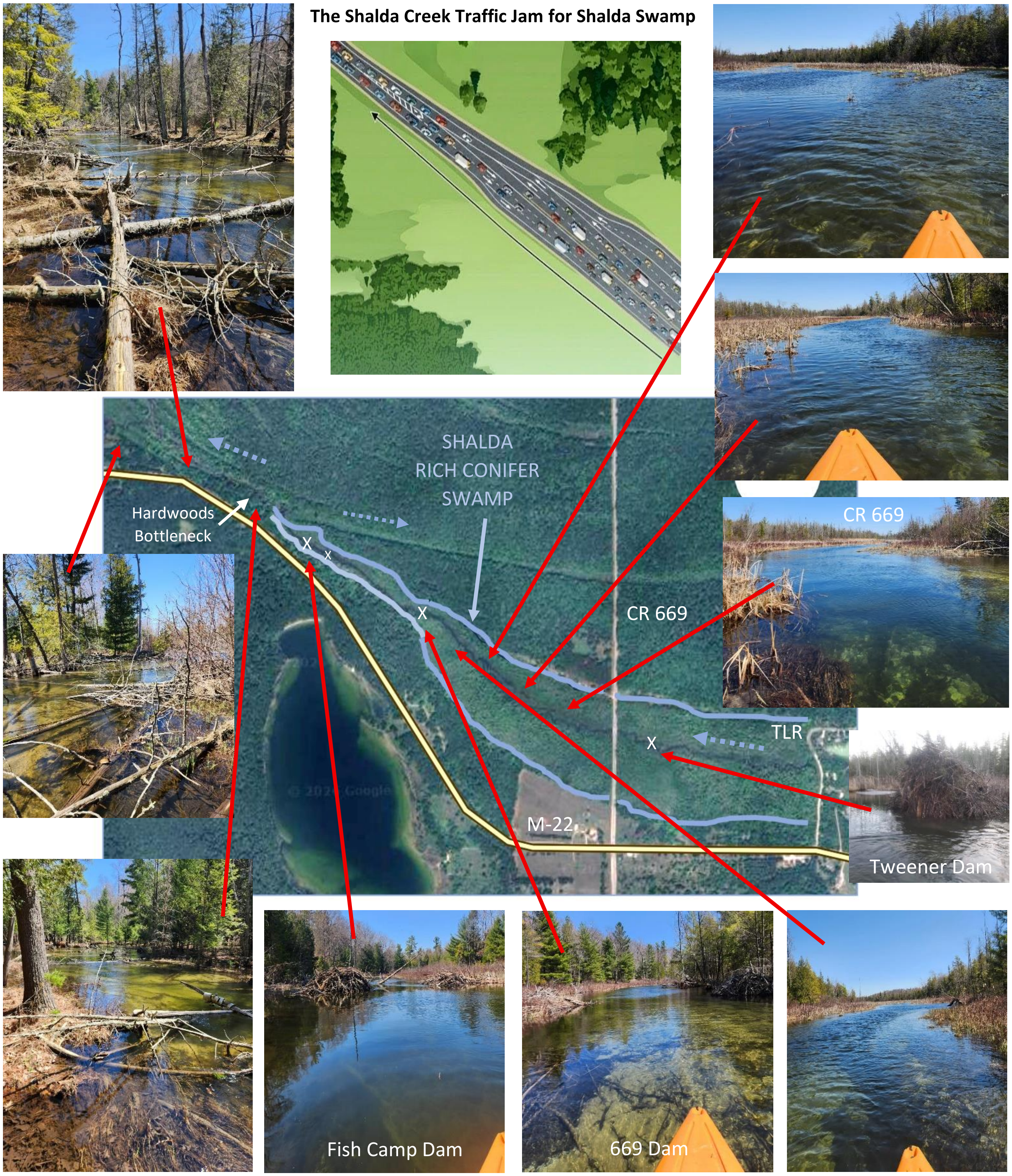


The following pages include a combination of photographs taken during an in-person scouting as well as a drone survey that took place on April 21, 2026. LTL levels at TLR Lake Inlet had dropped to 595.32 with flow rates of 3.68 fps through TLR culvert. Shalda Creek levels at TLR Stream Outlet were still at 594.8. Shalda Creek levels at 669 Bridge had dropped to 594.86 with flow rates of 0.6 fps.

SHALDA CREEK WATERSHED FROM TLR TO NARADA LAKE STREAM INLET

Visualizing the dynamics of Shalda Conifer Swamp and Shalda Creek

Pictures taken April 21, 2026 - Water level at 669 Bridge: 594.86



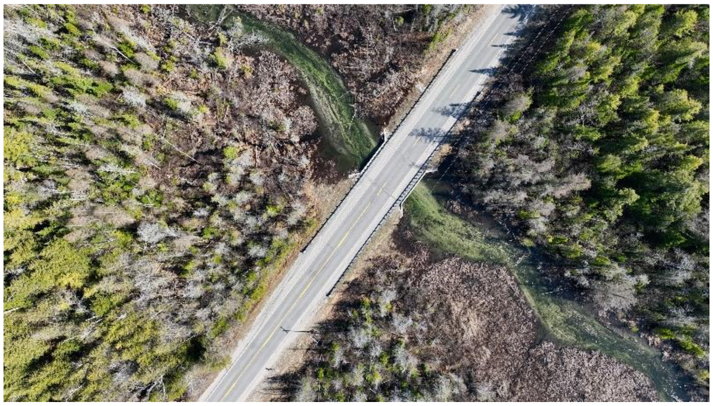
AERIAL PHOTOS OF SHALDA CREEK WATERSHED
Images by Zero Gravity Aerial

Eastward view from 669 Bridge, Little Traverse Lake and headwaters of Shalda Creek

Westward view from 669 Bridge, Shalda Conifer Swamp

Westward view of the central portion, 669 Bridge, and Tweener Dam

669 Bridge



Water entering underneath 669 Bridge

Tweener Dam Proximity to 669 Bridge

Tweener Dam with water going around for the first time

Westward view towards Tweener Dam

Eastward view away from Tweener Dam

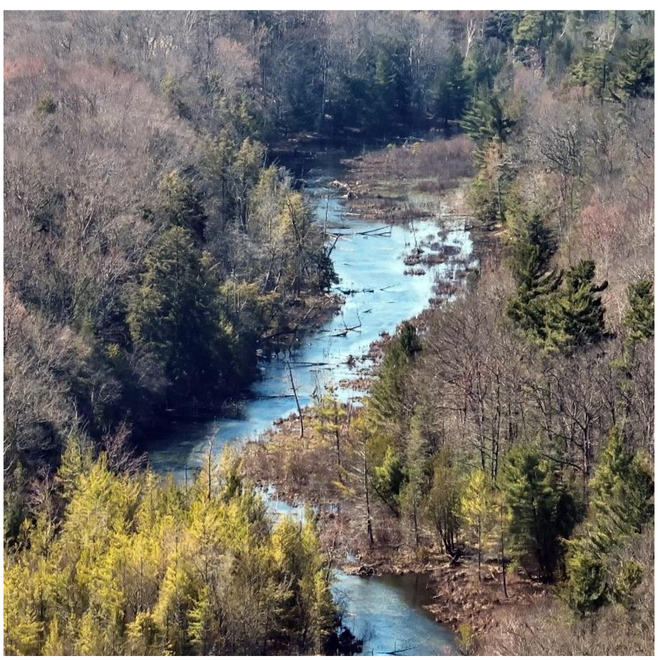
Shalda Creek headwaters at TLR, flat low slope

Closer look at standing water in watershed

Private footbridge

Shalda Conifer Swamp and the first narrowing upstream of 669 Dam, low gradual slope

Narrowing towards Fish Camp Dam (still wide!)



Standing water in watershed, slow gradual slope

Westward view downstream of 669 Bridge, note the flat gradual slope and standing water

Eastward view downstream of 669 Bridge, note the flat gradual slope and standing water up to 669 Bridge

Eastward view towards LTL from Y intersection of Shalda Creek (right) and Juniper Drain (left)

Locations of Bridge ("B"), 669 Dam ("669") and Fish Camp Dam ("FC" noted

Closer view of section between Fish Camp Dam (bottom downstream) and 669 Dam (top, upstream)

Closer view of 669 Dam area

Closer view of Fish Camp Dam area

Observation note: At these high flood water levels, the beaver dam areas have become overwhelmed with water. Potential beaver dams are not a restricting factor at this floodwater stage with dams removed March 14, 2026 and flood water submerging the adjoining wetland areas around the dam debris piles (from prior removals) that are observed in the photos. The presence of dams at Tweener Dam and 669 Dam are not as subject to being overwhelmed due to narrower stream width.

Westward view of Shalda Creek as it approaches 669 Dam downstream

Westward view of "Hardwoods Bottleneck" downstream of Y intersection

Shalda Creek on left, Juniper Drain on right

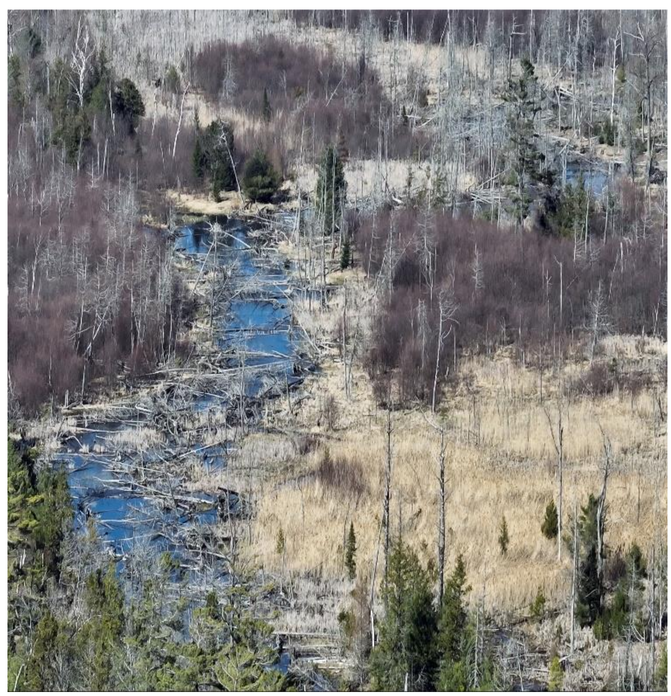
Closer view of "Hardwoods Bottleneck" downstream of Y intersection

Section between 669 Dam and Fish Camp Dam
Note reflections of trees in water surface

Section of bank collapsing into stream
with all the ground saturation

Water in Juniper Drain

Treefall in Shalda Creek, northern section



Westward view beyond Hardwoods Bottleneck, standing water in glacial formations, Narada Lake outlet

Northward view of Shalda Creek flowing towards Lake Michigan
Narada Lake beaver dam and stream outlet in foreground

Interactive 3D Modelling demonstrated

Zero Gravity Aerial has the capability of generating an interactive 3D model that can rotate and show various angle views from a mosaic composition of over 940 images. Here are a couple screenshots demonstrating that concept. Traverse Lake Road and a private foot bridge are capture in the image of Shalda Creek.

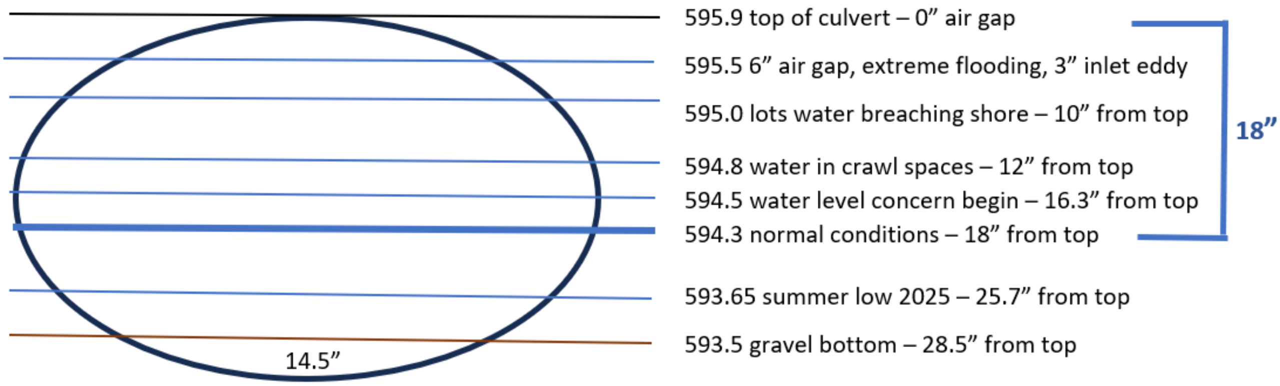
SUMMARY OBSERVATIONS

- Relevant elevation benchmarks for LTL (documented through photos and data observations): 1) 594.3 acceptable water levels; 2) 594.5 water levels become a concern; 3) 594.8 water shows up in some residential crawl spaces with some water appearing in low areas; 4) 595.0 extensive water standing in lakeshore properties; and 5) 595.5 flood waters significantly impacting some residential structures.

KEY BENCHMARKS WITH EXISTING TRAVERSE LAKE ROAD CULVERT – 64” x 43”

LTL Lake Inlet side (east)

(not to vertical scale)



- Shalda Creek (at both 669 and TLR Stream Outlet) increased over winter along with LTL while Lime Lake decreased after fall rains. Two beaver dams were identified in Fall 2025 and they were removed March 14, 2026, just hours before a massive snowstorm. Shalda Creek and LTL were 6” higher heading into spring precipitation events as compared to October 10, 2025. Lime Lake had returned to the same level observed October 10, 2025 (0’ difference). This is the second year in a row where the presence of beaver dams from Fall to Spring led to Shalda Creek and LTL levels increasing over the winter while Lime Lake retreats to pre-fall levels (see previous February 2026 report). Beaver dams block stream flow with debris that catches sediment, reduce measured flow rates, elevate water levels upstream, and saturate the watershed. Beaver dam maintenance is even more critical when considering Shalda Creek characteristics, including a gradual low slope, and its watershed influences on LTL. A long-term beaver dam maintenance policy, consistent with recommendations by Gosling Czubak in the December 2015 report, allowing beaver dams to be removed in October before fall and spring rains is essential in watershed management.
- A 24” snow storm (equivalent to 2.4” rain) and subsequent snow melt saturated water tables and decreased the capacity of the watershed to absorb more rain. Two subsequent large rain events (more than 6.0” rain) led to a rise in water levels to historic levels, peaking out at nearly 595.5. This scenario occurred all over the state of Michigan with widespread flooding that challenged infrastructure and impacted property with record rainfall for April. When it rains, the entire watershed at all four measurement points increase. That increase associated with a precipitation event cannot be prevented.
- LTL levels were near flood stage (595.0) when an additional 4.5’ of rain fell during April 12-14. As water levels at TLR Lake Inlet increased above 595.0 the culvert inlet-outlet differential increased by 2” and contributed to TLR Lake Inlet levels, increasing by an additional 2” at a time when flooding was already occurring with more than 4” rain (thus a 6” increase from approximately 595.0 to 595.5).
- Culvert performance continued to increase as velocity increased but was at the expense of the greater culvert inlet-outlet differential. Culvert area being used for water flow reached a maximum at 595.5 with minimal air gaps on both ends. When the rain ended, lake levels did not continue to rise. Culvert performance allowed the rate of clearance to be at least as much as all the water flowing into LTL. It is possible to reduce the 2” increase observed, as water rose from 595.0 to nearly 595.5, in culvert inlet-outlet differential at very high levels by adding more culvert area, resulting in more culvert performance at

higher levels (cfs) and allowing more water to pass through. Adding additional culvert area at high levels, without altering culvert area at lower levels to minimize impact on low conditions, would be beneficial in minimizing the detrimental increase in inlet-outlet levels when water levels are a concern with just rain events.

- The Shalda Creek watershed, with a gradual slope, filled with water as well. The Shalda Conifer Swamp had significant standing water over a very large area. Shalda Creek rose to the bottom of 669 Bridge. Much of the Shalda Conifer Swamp has very low slope gradients. The watershed Hardwoods Bottleneck, where the Shalda Conifer Swamp narrows to less than 30’ stream width, creates a challenge for quickly clearing water from the watershed. Watershed clearance is influenced by the following Shalda Creek characteristics: large rich conifer swamp that holds significant water after a rain event, low gradient slopes result in slower velocities, bottleneck restrictions that creates a traffic jam during water clearance, and additional stream restrictions due to debris, vegetation, and sediment.
- Lime Lake began clearing water earlier. Shetland Creek has little influence on Lime Lake clearance rates. After a four-day plateau in levels, Shalda Creek and LTL levels begin to drop as water is cleared out of the Shalda Creek watershed (including the Shalda Conifer Swamp) and as the input of water from surrounding areas slow. When the excess water in the Shalda Creek watershed is cleared out and levels start dropping, LTL clearance rates (0.49” per day) equal or exceed that observed for Lime Lake (0.63” per day first week, 0.34” per day second week, 0.07” per day thereafter). Shalda Creek dropped at a rate of 0.3” per day. This is a similar watershed response Spring 2025 as detail in the February 2026 report. Clearance rates for LTL and Shalda Creek are interdependent based on watershed conditions downstream.
- Between April 15 and May 5, Lime Lake levels dropped 0.6’ (7.2”) while LTL levels decreased 0.68’ (8.16”) at TLR Lake Inlet. During this time, a 3” decrease in culvert inlet-outlet differential was also observed. LTL levels were dropping while also clearing out all the inflow of water from the watershed, including all the water from Lime Lake. During this time, Shalda Creek dropped 0.42’ (5.0”) at both 669 Bridge and TLR Stream Outlet, a comparatively smaller decline due to the extent of water standing in the Shalda Conifer Swamp and associated bottlenecks downstream. All levels returned to the levels observed around the time of beaver dam removal and the start of the 24” snowstorm. Shalda Creek and LTL levels will continue to decrease even further while Lime Lake will reach its plateau determined by the shallow rock dam at the transition between Lime Lake and Shetland Creek.

In summary, four main factors contributed to high water levels: 1) Significant rainfall upon saturated ground with a remaining frost line; 2) rise in water levels over winter due to beaver dams with elevated water levels prior to spring rain; 3) culvert area becoming a restriction while inlet-outlet levels increased, adding to the rise in water levels; and 4) Shalda Creek elevated conditions with standing water, slower gradient slopes, and bottlenecks.

STRATEGIES AND ACTION STEPS

Little Traverse Lake (LTL) drains through a 64”x43” elliptical steel culvert under Traverse Lake Road (TLR) and the flow creates the start of Shalda Creek on the west side of Traverse Lake Road. While rain events and the associated increase in watershed levels cannot be prevented, three strategies have been proposed to maximize LTL watershed response rates during significant spring and fall rain events to minimize impact of large rain events and high water levels as well as enhance clearance rates:

- Minimize the filling of LTL prior to fall and spring rains as much as possible to allow greater capacity to absorb rainfall events before reaching high water levels (keep the “bathtub” drained as much as possible);
- Maximize the flow of Shalda Creek by keeping it free of restrictions to help ensure proper Shalda Creek clearance and normal drainage of Shalda Conifer Swamp, thus minimizing the influence on LTL levels;

- Increase the clearance capacity of LTL culvert, by increasing the area available for water flow, during significant rain events at high water levels, and thus reducing the culvert inlet-outlet differential that adds to lake levels during high water situations.

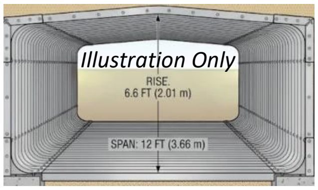
Two action steps have been suggested:

- Keep Shalda Creek (Fish Camp and upstream) free of beaver dams prior to fall and spring rain events to help maximize bathtub absorption capacity and Shalda Creek clearance (this has been covered in other reports and is an easily attainable and necessary prerequisite, regardless of TLR structure). Cleveland Township and LCRC have requested NPS establish a long-term policy, consistent with Gosling Czubak December 2015 recommendation, to keep Shalda Creek between TLR and CR 669 free of beaver dams and to remove dams downstream of CR669 before fall rains.
- Add additional area beyond the existing 64"x43" TLR culvert to allow for additional clearance capacity (areas) at higher levels to help enhance dynamics at higher water levels, without altering hydrology at normal or lower water levels. Some have suggested a different design type and a larger structure. Replacement of the existing culvert requires approval by EGLE and is under the authority of LCRC, with Cleveland Township providing jurisdictional support.

KEY CONSIDERATIONS IN TRAVERSE LAKE ROAD CULVERT REPLACEMENT

Key considerations in replacing TLR culvert with a larger and different type of structure design than the existing culvert:

1. Determining the need for culvert replacement and proposed design type. A culvert replacement needs to be justified, whether a compromise in structural integrity requires replacement or a need to address other limiting factors with existing structure (such as the culvert dynamics observed at high levels above 595.0).
2. Completing a detailed and acceptable Hydraulic Survey and Study. The permitting agency Michigan Department of Environment, Great Lakes, and Energy (EGLE) requires a modelling study for any alteration of a road structure type that serves as a lake outlet to determine the impacts a proposed change in structure type will have on water levels, and particularly addressing the changes or concerns that might occur at lower water levels. A modelling study for a different TLR structure was done by OHM/MDOT during Segment 9 Heritage Trail planning process in 2024 and was not acceptable to EGLE.
3. Permitting approved by EGLE. EGLE is the permitting agency for any culvert replacement. During the Segment 9 Heritage Trail planning process, OHM/MDOT proposed a Conspan-type corrugated aluminum box culvert with a span of 12.1 feet and a rise of 6.6 feet and length of 53.25 feet. Decision makers at EGLE made it clear that only a like-kind replacement would be approved and rejected the proposed alternative structure. OHM/MDOT then defaulted to a like kind culvert design in their design plans. EGLE approval is a go / no go consideration for any effort to replace the existing culvert.



4. Addressing low water level concerns. Changing the structure type may have potentially lower water levels that some may perceive as a negative consequence for the use of their lake property and boating. This could be addressed by having a minimum lake level established through the use of a weir dam. If the weir dam has no normal stream channel to the bottom of stream bed (like the existing culvert), this may require a legal process to receive a court order to establish a lake level in accordance with the Inland Lakes and Stream Act, 1972 PA 346. Obtaining this approval may likely be necessary or a prerequisite for replacing existing culvert with a

larger structure as a way to address EGLE's concern about a structure altering water levels at normal or lower conditions.

5. Identifying funding for structure installation, design engineering, hydrology modelling, and any legal process. The cost of replacement can be varied and substantial based on type of structure, whether steel culvert, concrete box culvert, or larger span bridge ($1 M). Additional costs may be associated with modelling studies or and legal process to obtain a court order establishing a regulated water level. Funds need to be identified by Cleveland Township and LCRC, but would need to include obtaining additional funding through local, state, federal or tribal sources or could also involve an assessment to local property owners. Identification of funding is an important consideration, subsequent to gaining permit approval of structure design by EGLE.

There may be alternative design solutions besides replacing the existing culvert with an expensive 30' span bridge as was done at CR 669 or even a 12.1x6.6 box culvert as was proposed, but not approved by EGLE. It is feasible to preserve existing hydrology at normal and low conditions that exists with the existing elliptical culvert, addressing EGLE's concerns, while adding clearance capacity (area) at water levels above 594.3 to help provide clearance at higher water levels. There are various ways to add additional area for water flow at higher levels alongside the existing design, without altering the hydrology at normal or lower water levels. This approach could also be done with lower costs involved and could be done at the same time when other road improvements are being done by LCRC, currently scheduled for late summer 2026.

MOVING FORWARD

Little Traverse Lake residents bear the impact of high water levels. Little Traverse Lake Association has been collecting data for over a decade and have engaged professional engineering expertise to analyze that data. There is more understanding of LTL watershed than ever before. Implementing strategies and executing action steps lies with the decision makers, namely EGLE, LCRC, Cleveland Township, and NPS. Little Traverse Lake residents support efforts of those decision makers to establish a long-term beaver dam maintenance policy and to increase culvert area at levels above 594.3, while preserving existing hydrology at normal or low conditions.

Good Harbor Bay
Watershed Boundary

Image:
Leelanau Conservancy

ADDITIONAL PHOTO DOCUMENTATION INCLUDED IN FOLLOWING PAGES

TRAVERSE LAKE ROAD CULVERT

On April 15, 2026, water levels measured at the east side TLR Lake Inlet measuring stick was 595.45 with a 6" air gap from top of culvert. The culvert opening had surrounding water creating an inlet eddy. The water level on the west side TLR Stream Outlet was 594.75 with a 1" air gap. The inlet-outlet differential was 0.7 or 8.4".

East Side TLR LAKE INLET

West Side TLR STREAM OUTLET

SHALDA CREEK AT CR 669

On April 15, the Shalda Creek water level on the measuring stick at CR 669 Bridge was 594.9. Water was up to the bottom of the bridge with no air gap. Debris was being collected and not passing under. The surrounding water shed areas were saturated with standing water way beyond the banks of Shalda Creek. A difference in surface elevation between the bridge section and the road has appeared over winter.

FLOODING OF LITTLE TRAVERSE LAKE PROPERTIES

April 15, 2026 – TLR Lake Inlet Level 595.5





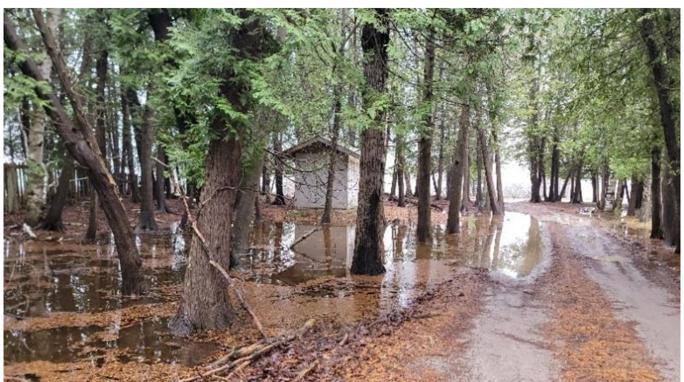












CLEVELAND TOWNSHIP BOAT LAUNCH


13:25:07
+44.924655
-85.860812


13:33:02
+44.923435
-85.862535


15:15:11
+44.924593
-85.855853


15:15:52
+44.924569
-85.856489


14:48:04
+44.928496
-85.829937


14:50:54
+44.928147
-85.833448


15:17:38
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-85.858631

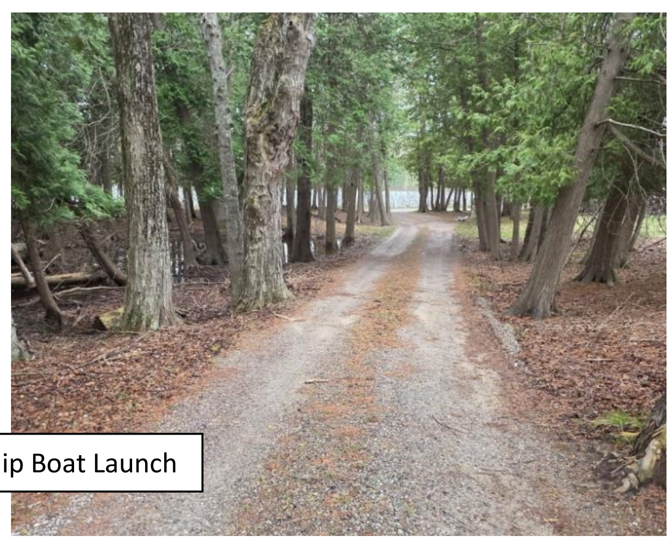

15:13:54
+44.924769
-85.854504


13:28:06
+44.924781
-85.863289


14:48:24
+44.928522
-85.830445

DOCUMENTATION OF WATER LEVEL IMPACT AT 594.8

TLR Lake Inlet – 594.8,   May 3, 2026



Cleveland Township Boat Launch

669 Bridge – 594.6, May 3, 2026

OTHER MICHIGAN FLOODING EVENTS

9&10 News Follow

Gov. Whitmer declares state of emergency for 32 Michigan counties

Grand Traverse County Ro... · Follow
13h

Here are pictures of the Beitner Bridge collapse. We will have a long road of repairs ahead of us. Areas near creeks/rivers will more than likely have water on the roadway. Please use caution.

FOX 17 WATCH NOW

People along Muskegon River from Croton to Bridgeton ordered to evacuate

MICHIGAN

Part of Tunnel of Trees washes out after heavy rains in northern Michigan

Tittabawassee River could crest at 26.7 feet

Boardman River spills over banks, flooding South YMCA (Michigan Sky Media)

CAPTION

PIONEER Sign in

Subscribe

Muskegon River flooding near Evart approaching record levels

Flood Warning remains in effect until 1:30 p.m. Friday

By **Dylan Schwartz**, *Staff Writer*
April 16, 2026

FOX Weather +4

Michigan and Wisconsin flooding crisis

Heavy rainfall and rapid snowmelt have triggered record-breaking floods across northern Michigan and Wisconsin. The deluge submerged hundreds of homes and forced widespread evacuations. In Cheboygan, crews are desperately working to stabilize the dam after water levels rose nearly a foot above capacity. Governor Gretchen Whitmer called the ongoing crisis a "slow-motion, expensive disaster."

Imminent threat: Rising water levels could cause collapse of Cheboygan Dam in Michigan

The region has experienced significant snow and rain, which have contributed to rising water levels at the Cheboygan Dam and led to the likelihood of a collapse any day now.

By **Raymond Sanchez** Source **FOX Weather**

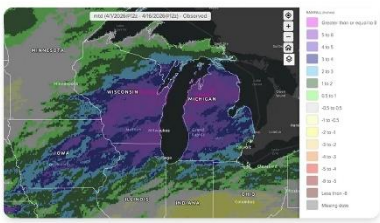
See it: Aerial footage highlights severe flooding in Cheboygan, Michigan amid critical dam levels

Michigan And Wisconsin's Record Flooding In A Historically Wet Spring

This spring has been one for the record books in the western Great Lakes. From a blizzard in March to torrential rain in April, here's how off the charts it has been in Michigan and Wisconsin, in particular.


By Jonathan Erdman • 5 days ago

Several other Great Lakes cities, including Madison (about 9.01 inches), Chicago (about 10 inches), Grand Rapids (9.86 inches), Toledo (10.36 inches) and Buffalo (9.01 inches), have had their wettest springs-to-date through April 16, according to the Southeast Regional Climate Center.



This map shows how much above (darker blue, purple, pink contours) and below (yellow contours) precipitation has been in April 2026 through April 16.
(NOAA/National Weather Service)

LIVE Watch live: WOOD TV+

April 2026 shattering rainfall records in West Michigan

by: Scott Larson
Posted: Apr 16, 2026 / 12:27 PM EDT
Updated: Apr 16, 2026 / 12:29 PM EDT

SHARE

GRAND RAPIDS, Mich. (WOOD) — The relentless rain that has pushed up river levels to concerning heights is also breaking precipitation records across West Michigan.

RAINY START TO APRIL

	RAIN TOTAL	APRIL RANK
GRAND RAPIDS	5.79"	1
KALAMAZOO	5.78"	1
MUSKEGON	5.36"	1
HOLLAND	5.06"	2
BATTLE CREEK	3.92"	2

ENVIRONMENT

All of Michigan under Flood Watch as historic flooding slams the north

Updated: Apr. 16, 2026, 10:53 p.m. | Published: Apr. 15, 2026, 7:07 a.m.

Bucks Pond Dam near Barton City collapsed on April 13 after heavy rain and snowmelt. The collapsed private dam is seen here on Tuesday, April 14, 2026. (Sheri McWhirter | MLive.com)

MICHIGAN

Flooding closes 22 bridges in 13 counties; half have reopened, state says


Kristi Tanner
Detroit Free Press

Updated April 22, 2026, 6:54 a.m. ET

Northern Michigan airport's runways closed for second week after historic flooding

Published: Apr. 20, 2026, 7:10 a.m.

Flooded areas at the Pellston Regional Airport. Photo courtesy of the Pellston Regional Airport

Lake Michigan-Huron rise significantly after wettest start to April on record

Ellen Bacca 22 hours ago

GRAND RAPIDS, Mich. (WOOD) — A surplus of rain from March through the first half of April has significantly boosted Lake Michigan-Huron ahead of the summer season. Over the last month, most locations in West Michigan have received 200 to 300% of normal precipitation. What's more, this is officially the wettest start to the year on record up to April 18.