DIY Station Monitoring 2018, 2019 (Carol Armstrong)

√ = no new or persisting problems with the sensor station transmissions, no problems with fouled sensors, no problems with battery status.

√* = Problems with the station can be identified from the on-line transmissions, such as: 1) fouling beyond natural levels, 2) battery voltage is low and could affect reliability, 3)battery is highly variable can indicate a problem, 4) sensors data is not reflecting normal transmissions, 5) transmission of depth, turbidity, conductivity, temperature, or DO has stopped. Unusual elevations in conductivity are not often reported here.

Blank space/Absent √ = sensor station is no longer functioning. Highlighted station number indicates particular concerns. Data not online --

2020	6/27	7/11																			
sl103	√	√																			
sl104	√	√																			
sl101																					
sl102																					
sl111	--	--																			
sl112	√	√																			
sl113	√*	√*																			
sl114	√*	√*																			
sl105	√*	√*																			
sl116	--	--																			
sl117	√*	√																			
sl118	√*	√*																			
sl119	√	√																			
sl120	√*	√*																			
sl121	√*	√*																			
sl122	√	√																			
sl123	--	--																			
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sl167	√*	√*																			
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sl171	√*	√*																			
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sl177	--	--																			
sl179	--	--																			
Sl188	--	--																			
sl189	√	√																			
sl190	√	√																			
sl191	√*	√																			
sl246	√	√*																			
sl248	√	√																			
Sl249	√*	√																			
Sl276	√*	√*																			
Sl279	√	√*																			
Sl286		√*																			

SL103(Cherry D) Base turbidity is 3-4 NTU. Shannon put new 2G board on (May 2020).

6/20 – Turbidity is very elevated and flashy indicating sensor fouling.
6/14 – Turbidity is elevated above natural levels indicating sensor fouling.
5/30 – Turbidity has increased often >1000 NTU at base flow.
5/19 – Turbidity has increased and become very flashy at base flow.
5/7 – Turbidity is above natural levels and is very flashy, indicating sensors are fouled.
1/27, 2/3, 2/10, 2/17, 2/24, 3/2, 3/30, 4/8, 4/20, 4/28 – No transmissions to MonMW since 1/16/20.
1/20 – This logger stopped transmitting to MonMW on 1/16/20 when battery was 4.08v.
1/13 – This site might need very regular cleanings, as it appears to have been cleaned to 6.0 NTU on 1/9/20, but today it is elevated beyond natural levels (only slightly above base flow at this time), and sensors need to be cleaned for good turbidity data.
1/6 – Turbidity is >50 NTU and flashy, indicating sensors are fouled.

2020

12/31 – Turbidity is very elevated even at low water depth, indicating sensors are fouled.
12/23 – Turbidity continues to be elevated above natural levels and flashy indicating fouling.
12/16 – Turbidity is elevated above natural levels and flashy indicating fouling.
12/9 – Turbidity is elevated above natural levels and sensors appear fouled.
11/11 – Turbidity is elevated above natural levels and suggests sensors need to be cleaned.
10/7 – Based on turbidity, sensor may be fouled after major storm event.
10/1 – Turbidity is about 10 NTU which is beyond natural levels at baseflow.
9/3 – Sensors highly fouled after major storm on 9/2, depth returning to baseflow.
8/27 – Sensors still fouled; turbidity is very elevated and flashy at base flow.
8/20 – Sensors have become highly fouled with turbidity reading as high as 1000+ NTU.
8/4 – Turbidity is spiking high and sensors need to be cleaned.
7/5 – This site only transmits to MMW. Turbidity is high (15-19 NTU) since water level dropped, and sensors needs to be cleaned.
6/28 – This site last transmitted to Dreamhoster on 6/25/19 at 6p EDT. Data can be seen updated on MMW.
6/19 – Turbidity is elevated above base levels and sensors need to be cleaned.
5/31 – Turbidity remains elevated beyond natural levels (40-60 NTU) and sensors need to be cleaned.
5/27 – Slow rise in turbidity suggests sensors may have sediment or algae on them.
5/17 – Turbidity is mildly elevated and sensors may have sediment or algae on them.
5/3 – Turbidity remains mildly elevated and sensors need to be cleaned.
4/29 – Turbidity is mildly elevated and higher than the natural levels when the station was installed.
4/26 – Turbidity is mildly elevated and sensors need cleaning as other sites are showing sediment and algae on sensors.
4/8 – Turbidity is mildly elevated while flow is reduced, sensors need cleaning.
3/30 – Turbidity is elevated 50-100 NTU and sensors need cleaning.
3/25 – Turbidity is elevated 30-50 NTU and sensors need cleaning.
3/11 – Turbidity is elevated above 30 NTU and sensors need cleaning.
3/4 – Turbidity is elevated after recent stormwater runoff and sensors need cleaning.
2/18 – Turbidity remains elevated and sensors need cleaning.
2/15 – Turbidity remains elevated and sensors need cleaning.
2/9 – Turbidity remains elevated above natural level and sensors need cleaning.
2/4 – Turbidity is mildly elevated above natural level and sensors need cleaning, might be sediment coating the sensors as seen at other sites.
2/1 – Turbidity is mildly elevated above natural level and sensors need cleaning since early January.
1/28 – Turbidity is mildly elevated above natural level and flashy, may have something flapping on them (>7 NTU).
1/21 – Turbidity is 30-45 NTU.
1/18 – Sensors need cleaning.
10/8 – No signals since 10/4. Stroud in contact with Paul and Christa about this problem.
9/28 – Turbidity levels are chronically elevated from a minimum of 18 NTU.
9/24 – Turbidity levels are low but something may be flapping against them and affecting the data.
9/6 – Although most material has fallen from the sensors, the turbidity is still too elevated, may be algae, need cleaning.

8/31 – Sensors need cleaning, turbidity >100 NTU.
8/27 – Sensors need cleaning.
8/20 – Sensors are fouled, need cleaning.
8/17 – Sensors are fouled, need cleaning.
8/3 – Sensors are fouled, may have algae, need cleaning.
7/30 – Sensors were cleaned but this site seems to become dirty frequently. Fouled again and needs cleaning.
7/23 – Today turbidity stuck at almost 1000 NTU.
7/20 – Sensors need cleaning, turbidity high and vary variable.
7/16 – Sensors needs cleaning, turbidity is 50-100 NTU.
7/13 – Site really needs attention to cleaning sensors.
7/9 – Sensors are badly fouled.
7/6 – Sensors are badly fouled, turbidity >500 NTU.
7/1 – Sensors are fouled.
6/18 – Frequent peaking in turbidity for the past few days suggests there may be matter stuck on the sensor installation.
5/14 – Needs cleaning
5/11 - Turbidity has crept higher, 10-17 NTU.
4/30 - Turbidity is a problem, >75 NTU
4/11 - Turbidity has become a problem since 4/7.
2/9 - Turbidity build up since 2/6 that did not resolve after peak in depth.
2018

SL104 (Cherry U) Baseline turbidity is 2-3 NTU.
5/30 – Turbidity is elevated at base flow, indicating sensors are fouled.
5/19 – Turbidity is above natural levels and flashy, indicating sensors are fouled.
5/7 – Turbidity is above natural levels indicating sensors are fouled.
4/28 – Turbidity is above natural levels indicating sensors are fouled.
4/20 – Turbidity has consistently increased, now around 65 NTU.
4/8 – Turbidity has significantly increased outside of rain event.
3/30 – Turbidity is elevated above natural levels and flashy and needs cleaning.
3/2 – Turbidity is has become frequently flashy, and high, indicating major fouling. Measurements during flashiness of low turbidity does not mean that the sensors become cleared.
2/24 – Turbidity is highly elevated (>200 NTU) and more flashy, indicating fouling.
2/17 – Turbidity is highly elevated (>200 NTU) and more flashy, indicating fouling.
2/10 – Turbidity is elevated beyond natural stream levels and flashy, indicating fouling.
1/27 – Turbidity is significantly elevated beyond natural stream levels indicating fouling.
1/20 – Turbidity is elevated and flashy.
1/6 – No transmissions to MonMW. Battery was 3.75 v.
2020
12/31 – This site stopped transmitting to MonMW. Battery ranged from 3.67v-3.76v. Turbidity indicates sensors need cleaning.
12/23 – Battery is dropping and now around 3.7 v; should consider recharging. Turbidity is highly elevated and flashy indicating fouling of sensors.
12/16 – Turbidity is highly elevated beyond natural levels.
12/9 – Turbidity is elevated above natural levels and sensors appear fouled.
12/2 – Turbidity was elevated and flashy prior to recent precipitation event, and sensors need to be cleaned.
11/11 – Turbidity is >200 NTU.
10/22 – Sensors fouled since Oct. 2, self cleaned, but severe fouling occurred again.
10/7 – Sensors have become fouled since storm event on 10/3.
10/1 – Was this station redeployed on 9/24 when data resumed?-- Conductivity and water level dropped significantly
8/27 – Turbidity was around 8-10 NTU which often indicates something coating the sensors, but not turbidity is higher and flashy so sensors need cleaning.
8/20 – Turbidity has risen since last rain event, and sensors need to be cleaned.
8/4 – Turbidity has become very elevated, sensors need cleaning.
6/19 – Turbidity is as high as 800 NTU and very flashy indicating a lot of debris on the sensors.

6/14 – Turbidity became elevated and flashy today.
5/31 – Turbidity is elevated beyond natural levels and sensors need to be cleaned.
5/17 – Sensors appear to have been naturally cleaned by currents but turbidity is mildly elevated above baseline and may have sediment or algae on them during warm period.
5/3 – Turbidity has become more elevated and is now 200 to >1000 NTU.
4/29 – Turbidity is mildly elevated and higher than the natural levels when the station was installed.
4/26 – Turbidity is mildly elevated and sensors need cleaning as other sites are showing sediment and algae on sensors.
3/30 – Turbidity is elevated 30-70 NTU and flashy indicating that sensors are fouled and need cleaning.
3/25 – Turbidity is elevated 20-55 NTU indicating that sensors are fouled and need cleaning.
3/11 – Turbidity is elevated above 10-15 NTU indicating that sensors are fouled and need cleaning.
2/15 – Turbidity is elevated and flashy and sensors need cleaning.
2/9 – Turbidity is mildly elevated and flashy and sensors need cleaning.
2/4 – Turbidity is mildly elevated (~9 NTU) and sensors need cleaning, might be sediment coating the sensors as seen at other sites.
12/7 – Sensors need cleaning, turbidity >30 NTU.
11/19 – Sensors need cleaning, turbidity >30 NTU.
11/16 – Sensors need cleaning.
11/9 – Sensors need cleaning.
9/28 – Sensors are fouled and need cleaning.
8/20 – Looks like debris on the sensors.
8/10 – Turbidity is mildly elevated but even, and may be algae on the sensors.
7/30 – Sensors need cleaning.
7/6 – Sensors are fouled since 7/2/18.
7/1 – Sensors are fouled.
6/28 – Turbidity mildly elevated. Largest conductivity flush ever in summer months, with small depth increase.
6/11 – May be fouled since major precip event last night.
6/1 – Battery below 3.7v two x on May 29.
5/25 – Battery dropping below 3.7v.
5/21 – Signals have been regular except for a few hundredths of a second. There is new variability beginning 5/20. Signals regular again as of 12 p EST.
5/14 – Needs cleaning. Pulse of conductivity on 5/7/18 from 200 uS/cm to 700 uS/cm, not explained by changes in depth (pulse came at the down gradient after the increase in depth (of 100 mm).
5/11 – Needs cleaning. Pulse of conductivity on 5/7/18 of 4-5 x the current base level over a 4.5 hour period in the am. Does not correlate with turbidity at same time.
4/30 - Turbidity has risen, and based on observation of algae on the Pickering sensors, may need cleaning. Battery dropped to 3.53 v on 4/28 midday.

2018

SL101(Musconetcong U-Waterloo) Nancy Lawler. New board placed in mid April'18. Signal change because ant spray corroded board and the station will have to be replaced (Hicks). Signals became more frequent on 9/8/18. Baseline turbidity is 1-2.5 NTU. 6/6/19 Hicks indicated turbidity sensors were removed from SL101 and SL102 so they could be used on SL244 and SL245. Transmits to MMW.

2020

6/6 – Turbidity has been 0 since 10 days. Was turbidity sensor removed? See note above
5/31 – Were the sensors cleaned on 5/29? Both low and high turbidity are reading a constant 0 NTU for 52 hours as of this note. Depth readings appear unusual because of rapid changes in levels today, but it might reflect the intensity of intermittent rains on 5/29 and 5/30.
5/27 – Sensors appear to be fouled, turbidity is 40-45 NTU.
5/17 – Turbidity is elevated and sensors need to be cleaned.
5/13 – Turbidity remains elevated after natural cleaning by today's storm event, and sensors need cleaning.
5/10 – Turbidity is 300-600 NTU and sensors are packed/embedded.
5/3 – Turbidity is 1400 NTU and sensors are packed/embedded.
4/29 – Turbidity has risen to 1300-1400 NTU and sensors are packed/embedded.
4/26 – Turbidity has risen to >1300 NTU and sensors are packed/embedded.
4/19 – Turbidity is persistently >40 NTU. Sensors were cleaned late March, and need to be cleaned again.
4/12 – Turbidity is increasing, now >30 NTU, and sensors need cleaning.

4/8 – Turbidity is mildly elevated and indicates sensors need cleaning. Other sites showing sediment buildup.
4/5 – Turbidity is mildly elevated and indicates sensors need cleaning. Other sites showing sediment buildup.
3/15 – Turbidity remains elevated, indicating that sensors need cleaning.
3/11 – Turbidity remains elevated above 35 NTU and flashy, indicating that sensors need cleaning.
3/4 – Turbidity remains elevated indicating that sensors need cleaning.
3/1 – Turbidity remains elevated indicating that sensors need cleaning.
2/22 – Turbidity remains elevated indicating that sensors need cleaning.
2/18 – Turbidity remains elevated indicating that sensors need cleaning.
2/15 – Turbidity is elevated, now >27 NTU and sensors need cleaning.
2/9 – Turbidity is climbing, now >21 NTU and sensors need cleaning.
2/4 – Turbidity is climbing, now >18 NTU and sensors need cleaning; consider possible sediment on sensors.
1/28 – Sensors were naturally cleaned but turbidity remains elevated: >25 NTU.
1/21 – Turbidity >450 NTU.
1/18 – Turbidity keeps rising, at an historic high level (without flashiness) and sensors may be buried.
1/14 – Sensors appear to be wrapped with leaves or debris, turbidity still increasing - >400 NTU.
1/11 – Sensors may be wrapped with leaves or debris, turbidity still increasing - >300 NTU.
1/5 – Turbidity increased greatly prior to storm event of today.

2019

12/31 – Turbidity has been chronically elevated for months, sensors need to be cleaned.
12/24 – Sensors need cleaning, turbidity is highly elevated >100 NTU.
12/14 – Sensors need cleaning, turbidity at minimum of 100 NTU.
12/7 – Sensors need cleaning, turbidity >350 NTU.
11/30 – Sensors continue to be fouled and blocked.
11/19 – Sensors continue to be fouled and blocked, ~1000NTU.
11/16 – Sensors very fouled and need cleaning.
11/9 – Turbidity plateaued at >80 NTU, and sensors need cleaning.
11/5 – Turbidity is 18-20 NTU, and sensors need cleaning.
11/2 – Turbidity is 18-20 NTU, and sensors need cleaning.
10/29 – Turbidity dropped at around 8am (EDT) today, but turbidity still >20 NTU, so many not have been cleaned yet. Base water
10/26 – Sensors remain highly fouled, probably wrapped with debris, turb. is 100-200 NTU . Base water depth has remained significantly elevated since late September. What does this mean?
10/22 – Sensors fouled. Base water depth is still changed to >650mm.
10/19 – Sensors are fouled. This stream seems very flashy, but the base water depth was around 100-300mm until September when the depth increased and now is >650mm. The sensors would have to have been lowered a great deal; has the area become saturated? Is there another reason?
9/6 – Last signal was 8/31.
8/31 – One signal every 2-3 days. Battery at 3.58v today.
8/27 – Battery is 3.56v.
8/23 – Last signal 8/19, battery was 3.61v.
8/10 – Last signal 8/1.
8/6 – Last signal 8/1. Battery was >3.8v
8/3 – Last signal 8/1.
7/30 – Last signal 7/27 during big rain event. Battery was >3.8v
7/23 – Last signal was on 7/21 at 7:30a. Albeit cell phone coverage may be poor, signal is much less frequent than it was when installed, and compared to March 2018.
7/20 – Since 7/14, two signals on 7/17, two on 7/18. Signals were regular one year ago; pattern changed and signals became extremely infrequent occurred on 2/27/18. Battery signals remains around 4v.
7/16 – One signal on 7/14. Battery signals remains around 4v.
7/13 – One signal each on 7/10, 7/11, and 7/12. Battery signals remains around 4v.
7/9 – One signal on 7/6.
7/6 – Since 7/1, only one signal on 7/5.
7/1 – One signal on 6/30 and one on 7/1.
6/28 – Signals still very infrequent: one on 6/22, next, and last, on 6/26.
6/15 – One signal on June 13, w battery of 3.65 v.
6/11 – No signals since June 4.

6/8 – One signal each day on June 1, 2, 3, 4; no signals since june 4. Battery betw 3.7-3.9 v.
6/1 – Since 5/23, one signal on 5/29 and one signal on 5/30.
5/25 – Six signals since 5/22.
5/21 – No signal since 5/18.
5/18 – One signal today, last signal on May 12. The battery reading - 3.9 v.
5/14 – Last signal May 12. The few battery readings >4v.
5/11 – One signal per day. The few battery readings >4v.
5/7 – Two signals on 5/5, one on 5/6. The few battery readings >4v.
5/4 – Two signals on 5/1. Battery ranging from 3.56v to 4.17v.
4/30 – One signal on 4/28.
4/27 – One signal on 4/23, no signals since then.
4/23 – Since 4/9, only one signal on 4/21 and one signal on 4/22. Signals began to be infrequent beginning 2/28/18, and regular before that. Also needs cleaning.
4/20 – No signal since 4/9/17.
4/16 – No signal since 4/9/17.
4/11 – Erratic signal, once every two days.
3/30 - For all a sensors and battery, no signal 3/25, one signal each day 3/27, 3/28, 3/29. Battery was very erratic up to the loss of signal on 3/11.
3/26 - No signal since 3/11.
3/19 - No signal since 3/11.
3/16 - No signal since 3/11. Battery at 3.7 at last signal. Battery was very erratic in February.
3/12 - Since 3/1, there have been signals on 3/4, 3/6, and 3/11. This applies to all sensors. There were episodes of loss of battery voltage in February, down to 2.85v. Last signals occurred when battery was above 3.7. Battery might have crashed. Turbidity indicates sensors need cleaning.
3/5 - Last signal 3/1/18 at 11p. Only 6 signals from 2/27/18 to 3/1/18. Needs cleaning.
3/2 - Last signal 3/1/18 at 11p. Only six data signals from 2/27/18 to 3/1/18. Turbidity still a problem. * Also, water depth dropping since 2/26, and conductivity increasing. Battery appears to be failing – big drops in voltage (down to 2.85-2.9v) since 2/15; last big drop on 2/27/18.
2/26 - Turbidity chronically high: 40-50 NTU.
2/23 - Average turbidity gone higher, remains above baseline.
2/16 - It was cleaned on 2/12 between 2:30p and 6p and then returned to prior dirty plateau - needs cleaning. Battery below 3.7 during afternoon, as low as 2.85v, then charged again.
2/12 - storm event partially cleaned, still needs cleaning.
2/5 - Looks like increased water depth partially cleaning the turbidity.
2/2 - showing increasing **turbidity** trends beginning around Jan. 22 and 24. Needs cleaning?
2018

SL102(Musconetcong D-Riverside Pk) Nancy Lawler. Baseline turbidity is 2-3 NTU. 6/6/19 Hicks indicated turbidity sensors were removed from SL101 and SL102 so they could be used on SL244 and SL245. Transmitting to MMW.
6/14 – Signals became much less frequent on 6/2/20. Battery down to 3.63v.
5/30 – Battery steadily dropping as of May 20, now at 3.8v.
2020
11/1 – Battery still low, as low as 3.68v on 10/28, rebound to 3.8 v.
10/22 – Battery rapidly dropping, now at 3.73v.
9/18 – Is conductivity reading at 0 uS/cm because water depth is low, 10-25mm? Beginning at the end of August, conductivity began to go to 0 uS/cm during low flow while before that there was high conductivity even during low flows. Did point source pollution decrease during September?
9/9 – Water depth levels are at historic lows in this stream in August and September, with data going back to 2017.
9/3 – Water depth levels do not appear normal unless sensors were moved and are higher in the stream.
8/27 – Water depth dropped below 0; did stream drop and sensors fully exposed?
6/6 – Turbidity has been 0 for days. Was turbidity sensor removed? See note above.
5/31 – Turbidity is very flashy and >250 NTU, and sensors need to be cleared and cleaned. Battery is unusually flashy and should be checked.
5/27 – Turbidity is 35-40, and sensors need to be cleared and cleaned. Battery is very flashy, varies between 3.6 and 4.1 v

5/17 – Turbidity is elevated and very flashy, and sensors need to be cleared and cleaned. Battery is very slowly decline and very flashy, and may need drying or recharging.
5/13 – Turbidity remains elevated after the current rain event, and sensors need to be cleaned.
5/10 – Turbidity is >130 NTU and sensors need to be cleaned.
5/3 – Turbidity remains elevated and sensors need cleaning.
4/29 – Turbidity is elevated and flashy since water level dropped to baseline after 4/26 rain event; sensors need to be cleaned.
4/26 – Turbidity is highly elevated and highly flashy since cleaning last on 4/4/19; sensors need to be cleaned.
4/19 – Turbidity is highly elevated and highly flashy; sensors need to be cleaned.
4/12 – Turbidity is highly elevated; sediment and debris may be covering sensors.
4/8 – Turbidity has become elevated beyond natural base flow level; sediment and debris may be on sensors.
3/30 – Turbidity is high elevated >300 NTU, and sensors need to be cleaned.
3/25 – Turbidity is high elevated >200 NTU, and sensors need to be cleaned.
3/15 – Turbidity is elevated >70 NTU, and sensors need to be cleaned.
3/11 – Turbidity is elevated >70 NTU, have not been cleaned, and sensors are fouled.
3/4 – Turbidity is elevated >100 NTU, sensors need cleaning.
3/1 – Turbidity is elevated >100 NTU, sensors need cleaning.
2/22 – Turbidity remains above 50 NTU, and sensors need cleaning.
2/18 – Turbidity remains above 50 NTU, and sensors need cleaning.
2/15 – Turbidity is rising since mid January. Sensors need cleaning.
2/9 – Turbidity is further elevated >70 NTU. Sensors need cleaning.
2/4 – Turbidity is further elevated >46 NTU. Sensors need cleaning.
2/1 – Turbidity remains elevated 35-46 NTU. Sensors need cleaning.
1/28 – Turbidity remains elevated 35-40 NTU. Sensors need cleaning.
1/21 – Turbidity's base level is not natural, around 40 NTU, though higher now due to storm runoff. Sensors need cleaning.
1/18 – Turbidity is >38 NTU, and **s**ensors need cleaning.
1/14 – Turbidity is >30 NTU, and **s**ensors need cleaning.
1/11 – Sensors have needed cleaning since early October 2018.
1/5 – Turbidity increasing prior to storm events.
2019
12/31 – Turbidity has been chronically elevated for months, sensors need to be cleaned.
12/24 – Sensors need cleaning, turbidity >40 NTU.
12/14 – Sensors need cleaning, turbidity >40 NTU.
12/7– Turbidity continues to be elevated, >45 NTU.
11/19 – Turbidity is 100-130 NTU, so sensor seem blocked, possibly wrapped.
11/16 – Sensors need cleaning.
11/9 – Sensors remained fouled.
11/5 – Sensors remained fouled.
11/2 – Sensors remained fouled.
10/29 – Sensors remained fouled.
10/26 – Sensors are fouled (turb. >30 NTU), need cleaning. Base water level is higher at this second Musconetcong site as well.
10/22 – Sensors are fouled, need cleaning.
10/19 – Sensors are fouled, need cleaning. The base water level has increased in this reach of the stream as well by approximately the same amount.
10/15 – Sensors are fouled, need cleaning.
10/8 – Sensors may be fouled, need cleaning after big storm event and decrease in depth.
9/17 – This site was well cleaned, but fouled again and needs cleaning.
9/6 – Turbidity very elevated, sensors need cleaning.
8/31 – Sensors need cleaning, turbidity >30-35 NTU. Battery plateauing at 3.3-3.7 v.
8/27 – Sensors need cleaning. Battery persistently but slowly trending down.
8/23 – Turbidity remains elevated and sensor appears fouled. Battery has been persistently trending down since end of July, now ranging from 3.53-3.73v.

8/20 – Turbidity is increasing with each storm and has not been cleaned for very long time; also last time it seemed to be cleaned, it did not return to natural level and perhaps something is below the sensors?? Battery is 3.53-3.93 v, and battery or box might be moist.
8/17 – Turbidity consistently well above 100 NTU. Battery is declining slowing but steadily since Aug. 1.
8/10 – Turbidity is 40-70 NTU in a stable way.
8/6 – Although there is historic stream depth, sensor was not cleaned since low storm event and needs cleaning.
8/3 – Turbidity remains elevated.
7/30 – Turbidity remains elevated.
7/27 – Turbidity remains elevated – 20-80 NTU. Battery is very erratic and down to 2.6v since 7/23.
7/23 – Turbidity remains elevated – 20-80 NTU. Battery dips <3.7v (down to 3.2-3.2v) each day for a period of time.
7/20 – Turbidity elevated – 20-80 NTU. Battery dipped <3.7v two times in last 24 hours.
7/16 – Turbidity mildly elevated - 10-15 NTU.
7/13 – Turbidity mildly elevated - 6-15 NTU. Stream reading at ~15-25 mm in depth.
7/9 – Turbidity mildly elevated - 5-15 NTU. Stream reading at ~20-30 mm in depth.
7/6 – Turbidity mildly elevated - 5-15 NTU.
7/1 – Turbidity signals above baseline. Battery is struggling, goes <3.7 v each day. Could it be moist?
6/28 – Conductivity about 300 uS/cm higher compared to last summer. Turbidity mildly elevated. Battery often <3.7 v, as low as 2.85 v.
6/18 – Needs cleaning. Battery often <3.7 v, as low as 3.3v.
6/15 – Needs cleaning. Battery often <3.7 v.
6/11 – Needs cleaning. Battery still fluctuates, sometimes <3.7 v.
6/8 – Needs cleaning and may be fouled. Battery still <3.7 v.
6/1 – Needs cleaning. Battery still low, 3.02v on May 29. Voltage often higher in evening/night.
5/25 – Needs cleaning, turbidity >30 NTU. Battery still low, <2.8v on May 24. Seems to charge higher in evening/night.
5/21 – Needs cleaning. Battery very variable, going <3.7v.
5/18 – Looks like it was cleaned by the storm flow on May 16, but turbidity is still above the level after installation, and should be cleaned. Battery often <3.7v.
5/14 – Needs cleaning. Battery better but still <3.7v in the am.
5/11 – Needs cleaning. Battery <3.7v about half the time.
5/7 – Needs cleaning. Battery frequently <3.7v.
5/4 – Needs cleaning. Battery ranging from 2.65v to 4.1v.
4/30 – Has not been cleaned, turbidity 40-100 NTU.
4/27 – Needs cleaning, turbidity typically >200NTU. Battery >3.7v, but variable. Does it need recharging?
4/23 – Needs cleaning. Battery dropped to 3.2 at 9:20a this morning; began dropping at about 5a, but this did not characterize this site in the past until mid April, then two drops below 3.7.
4/20 – Needs cleaning.
4/16 – Needs cleaning.
4/11 – Needs cleaning.
3/30 – Needs cleaning.
3/26 – Needs cleaning.
3/19 – Needs cleaning.
3/16 – Historic peak of conductivity on 3/13 at 2762 us/cm, since 5/19/17. Still needs cleaning, due to fluctuations in conductivity and levels above ~130NTU.
3/12 - Turbidity fluctuations of ~50 NTU. This site badly needs cleaning.
3/2 - High turbidity fluctuations of ~100 NTU (see prior notes)
2/26 - Turbidity fluctuations of ~100 NTU within five minutes, per Shannon suggests debris on or near the sensor.
2/23 - Typical turbidity ranges ~250-400NTU, needs cleaning.
2/19 - Typical turbidity ranges ~250-400NTU, which is elevated compared to Dec and Feb.
2/16 - Typical turbidity ranges ~250-400NTU, which is elevated compared to Dec and Feb.
2/12 - Needs cleaning.
2/9 - Needs cleaning.
2/5 - Needs cleaning.
2/2 - Increasing turbidity trends beginning around Jan. 22 and 24. Needs cleaning?

2018

SL111 (Pennypack U-Pennypack Parkway) This stream fouls daily and very warm. Base turbidity is 2-4 NTU.

1/6, 1/13,1/20,1/27,2/3,2/10,2/17,2/24,3/2,3/30,4/8,4/20,4/28,5/7,5/19,5/30,6/6,6/14,6/20,6/277/11 – Sensors off line.

2020

12/16, 12/23, 12/31 – Sensors not yet back on line.

12/9 – Sensors not yet back on line.

12/2 – Sensors not yet back on line.

11/22 – Sensors not yet back on line.

11/1 – Per Bressler notes, this site was vandalized; Rachel will go to the site to retrieve sensors; plans being made to replace.

10/24 – Turbidity is elevated at base flow, indicating need for cleaning sensors.

10/7 – Turbidity is flashy.

10/1 – Turbidity has risen showing debris blocking sensors.

9/9 – Turbidity slowly rising beyond natural levels.

8/20 – Turbidity is mildly elevated beyond natural levels and flashy, and sensors need cleaning.

8/14 – Turbidity is mildly elevated beyond natural levels, and sensors need cleaning.

7/5 – Turbidity is mildly elevated beyond natural levels, and sensors need cleaning. This site no longer transmits to MMW.

6/19 – Turbidity became elevated (100-250 NTU) during rain event today, and seems likely sensors might remain fouled. Data from this logger is not sent to the MMW portal.

6/6 – Turbidity remains elevated, and sensors need to be cleaned.

5/31 – Turbidity is ~50 NTU at baseflow after the recent storm, and sensors need to be cleaned.

5/27 – Turbidity is ~10 NTU during base flow, and sensors need to be cleaned.

5/17 – Turbidity is elevated and is flashy, and sensors need to be cleaned.

5/10 – Turbidity has risen and is flashy, and sensors need to be cleaned.

5/3 – Turbidity is >25 NTU, and debris has fouled the sensors.

4/29 – Sensors were naturally cleaned but turbidity remains elevated above natural levels for this site during base flow.

4/26 – These sensors foul frequently, and require cleaning again as turbidity is >20 NTU at relatively low depth.

4/19 – Turbidity ranges from 80 to 10 NTU, and there may be times of natural cleaning but the sensors are likely covered with silt/sediment/algae, and need to be cleaned

4/12 – Turbidity is >15 NTU and sensors need to be cleaned after last rain event on 4/8. Battery has become very flashy; check for moisture.

4/8 – Turbidity has become elevated and sensors need to be cleaned.

3/30 – Turbidity is mildly elevated above natural levels; though not high, it might not be accurate as turbidity rose as water depth returned to baseline.

3/11 – Turbidity is elevated above 60 NTU, sensors need cleaning.

3/4 – Turbidity is elevated and sensors need cleaning. Conductivity reached an historic level since sensors in

2/15 – Turbidity indicates sensors need cleaning. Conductivity reached an historic level since sensors installed in June 2017, and conductivity was 7147 uS/cm on 2/12/19.

1/14 – Turbidity indicates sensors are fouled.

1/11 – Turbidity indicates sensors are chronically fouled.

12/14 – Turbidity is mildly elevated, sensors need cleaning.

11/19 – Turbidity is mildly elevated beyond natural levels after storm event and water depth return to baseline, so sensors need cleaning. Battery is stable.

11/16 – Sensors transmitting again on 11/14. Battery was down after the signals restarted, and charge is declining, now 3.9-3.93v; perhaps the battery will recharge, except that it has been two days.

11/9 – No signals since 11/7/18. This site regularly transmitted every 5 min.

11/5 – Sensors are fouled after major rain event of 11/3.

10/15 – Sensors are fouled, need cleaning.

9/24 – Turbidity is trending up and appears that sensors need cleaning.

8/10 – Sensors may have been cleaned yesterday, but have become fouled again today. Water gets to 80^{o} f.

8/6 – Since rain event with depth rise and fall, turbidity now elevated >60 NTU.

8/3 – Turbidity mildly elevated.

7/27 – Turbidity elevated, sensors need cleaning.

7/20 – Sensors need cleaning.
7/13 – Needs cleaning, possibly algae.
7/9 – Looks like it was cleaned on 7/9 but sensors are fouled again.
7/6 – This sensor gets frequently fouled; it is elevated above baseline.
7/1 – This sensor gets frequently fouled; it is elevated above baseline, 5-15 NTU.
6/28 - Base turbidity is elevated.
6/8 - Turbidity 6-10 NTU, with higher peaks.
6/1 - Needs cleaning after discharge surge in early hours today.
5/21 - Similar to SL104-Cherry Ck U, change in regular signal as of 21:15 EST on 5/20/18; signals regular again as of 12 p EST.
5/14 - Needs cleaning; turbidity >7 NTU.
5/7 - Either naturally or human cleaned but turbidity still above natural levels.
4/30 - Turbidity not high but above natural levels.
3/19 - Sensors need cleaning; baseline without high peaks is >330 NTU.
3/16 - Increased fouling and sensors need cleaning.
3/12 - Turbidity indicates sensors need cleaning.
3/5 - Needs cleaning since storm.
2/9 - No data
2/5 - No data
2/2 - No data since 7p on Jan. 27; battery was 4.11 at last reading.
2018

SL112(Pennypack D-PaperMillBridge) Rachel replaced the CTD sensor on 12/14/18 (damaged in storm on 11/25). Baseline turbidity is 1-2 NTU.
6/14 – Turbidity is above natural levels at baseflow, indicating fouled sensors.
6/6 – Turbidity is above natural levels and flashy, indicating sensors are fouled.
5/19 – Turbidity is above natural levels and flashy, indicating sensors are fouled.
5/7 – Turbidity is rising and now >50 NTU, during base flow.
4/28 – Turbidity is mildly elevated above natural levels indicating sensors need cleaning.
4/20 – Turbidity is mildly elevated above natural levels.
4/8 – Sensors appear fouled based on turbidity as depth goes back to baseline after rain event.
1/20 – Turbidity is mildly elevated beyond natural levels indicating sensor fouling.
1/13 – Turbidity has become elevated beyond natural levels indicating sensor fouling.
2020
12/9 – Turbidity remains elevated beyond depth increase, due to fouling.
12/2 – Turbidity remains elevated due to fouling.
11/22 – Turbidity has become highly elevated and flashy indicating fouling.
8/14 – Turbidity is mildly elevated beyond natural levels, and sensors need cleaning.
7/24 – Turbidity is mildly elevated above natural levels and sensors need to be cleaned.
6/19 – Turbidity became elevated (100-200 NTU) during rain event today, and seems likely sensors might remain fouled. Data from this logger is not sent to the MMW portal.
6/14 – Turbidity is mildly elevated during base flow, and sensors need to be cleaned.
6/6 – Turbidity is mildly elevated during base flow, and sensors need to be cleaned.
5/31 – Turbidity is mildly elevated during base flow, and sensors need to be cleaned.
5/27 – Turbidity is mildly elevated during base flow, and sensors need to be cleaned.
5/13 – Turbidity has risen >30 NTU since recent rain event and sensors need cleaning.
3/30 – Turbidity recently rose beyond natural level but only mildly.
3/25 – Turbidity has become more elevated since the last storm on 3/22; sensors need cleaning.
3/11 – Although turbidity has reduced since last storm, turbidity is mildly elevated .
3/4 – Turbidity is mildly elevated and might have sediment on the sensors as turbidity is steady at ~6 NTU.
2/4 – Turbidity dropped to -5 NTU and -6 NTU once each on 2/3/19 and 2/4/19. On 1/23/19 it went to -13 NTU.
12/14 – CTD had a 20 min. failure today (14:25-14:45). Second failure on online record, first time was 11/25/18.
11/30 - Please check the water depth – values appear abnormal possibly indicating problem with CTD.
11/9 - Battery trending down since 10/2, now down to 3.68 v
10/1 - Battery trending down since 8/30, now around 3.65 v

7/1 - Huge peaks in water depth every few days or more, with increase of 1.5 m. in three hours, and then slow draw down. Increased depth accompanied by increased turbidity, sometimes extreme. The apparent man-made peaks occur in warm months of the year.
6/28 - Base turbidity is elevated, needs cleaning.
6/11 - May need cleaning after heavy rain of last night.
6/1 - Needs cleaning after discharge surge in early hours today.
5/14 - Needs cleaning.
4/20 - Battery better but dipped to 2.4 v on 4/18 and still erratic.
4/16 - Battery down to 1.8v on 4/13 and 1.7v on 4/14; extremely erratic.
4/11 - crashed to 2.1 on 4/6, and very erratic, usually below 3.7 since 3/30.
3/30 - Battery crashed now at 3.03, max at 3.8 since 3/27.
3/26 – On 3/18 and 3/26 turbidity sensors went significantly below 0. Battery fluctuating more, dipping in afternoons to 3.08v; does not correspond with turbidity lows. Historic peak in conductivity occurred on 3/22 (3374 us/cm).
3/19 - Battery fluctuating about .40-.50v during day, peaking at 6p, and dipping to 3.5v
3/12 - Battery is beginning to fluctuate about .25v unrelated to time of day. Should it be cycled to prevent a failure?
2/19 - Why is water depth trending higher after each surge from 2/8 to 2/19?
2018

SL113(Pickering, Str 1 (east)) May have bad CTD sensors (Hicks, 8/6). New CTD sensor installed by Bullard on 12/3/18. Baseline turbidity is 3-4 NTU. 5/28/19 Bressler: the quick dips in battery are an artifact but partially accurate representation of actual battery level.
7/11 – Turbidity is elevated indicating fouled sensors.
6/27 – Turbidity is elevated indicating fouled sensors. Battery flashy, up to 4.82v.
6/20 – Turbidity indicates fouled sensors. Battery still flashy.
6/14 – Turbidity remains elevated and flashy. Battery fluctuating up to 4.9v
6/6 – Turbidity remains elevated indicating fouling of sensors, even when flow removes debris from sensors. Battery continues to fluctuate but not as extremely.
5/30 – Turbidity remains extremely elevated. Battery continues to fluctuate but not as extremely.
5/19 – Turbidity is >400 NTU and very flashy. Battery continues to fluctuate but not as extremely.
5/7 – Turbidity is >200 NTU and very flashy. Battery ranges from 4v to 4.639v and has become more flashy since 4/29.
4/28 – Turbidity remains highly elevated(~500 NTU) and very flashy; sensors have been fouled long term.
4/20 – Turbidity remains highly elevated and very flashy; appears sensors have been fouled long term.
4/8 – Turbidity remains highly elevated and very flashy.
3/30 – Turbidity was >200 NTU and very flashy, and while some natural cleaning has occurred, sensor appear fouled.
3/2 – Water depth appears abnormal on 3/2/20, reduced to 50 mm from morning until afternoon when returned to baseline around 150 mm. Turbidity had been 1300 NTU on 2/27 for a few days, and was naturally cleaned, but turbidity remains elevated during base flow and flashy.
2/24 – Turbidity shows sensors are packed or buried, now ~1300 NTU.
2/17 – Base turbidity is still elevated beyond natural levels, and it is very flashy.
2/10 – Turbidity has become extreme and flashy indicating sensors are fouled with debris.
2/3 – Although turbidity is only around 4-5 NTU, it is flashy and based on other Pickering observations after 1/26 storm, there may be sediment on the sensors.
1/13 – Turbidity is very high and very flashy indicating major fouling of sensors since rain event on 1/12.
1/6 – Though sensors were naturally cleaned after storm, the turbidity is still above natural levels and sensors should be cleaned for most accurate turbidity data.
2020
12/31 – Turbidity is elevated after major increase in depth.
12/23 – Sensors were cleaned but have fouled again, and turbidity is now >50 NTU.
12/16 – Turbidity is flashy indicating need to clear sensors.
12/9 – Turbidity is elevated beyond storm level, and sensors are fouled. Water level increases rapidly at this narrow incised stream
11/22 – Turbidity is highly elevated and sensors are fouled.

11/1 – Turbidity has gone >100 NTU and flashy *after* peak of depth from storm event yesterday, and sensors need to be cleaned.
10/7 – Turbidity is mildly elevated but usually indicates debris or sediment/algae on sensors.
9/3 – Turbidity is >250 NTU.
8/27 – Turbidity is highly elevated and flashy.
8/14 – Turbidity is highly elevated and sensors need cleaning. Battery continues to drop to very low levels and returns to 4+v.
8/4 – Turbidity is elevated and sensors need cleaning. Battery continues to drop to very low levels and returns to 4+v.
7/5 – Turbidity is elevated and sensors need cleaning. Battery needs resynchronization of solar panel and battery – see details in note of 6/28.
6/28 – Turbidity is very flashy which might indicate debris/woody material stuck on sensors. Has the battery been reset or replugged in. Per Hicks recommendation in Wikiwatershed on 6/6/19: "The easiest fix seems to be just turning off the Mayfly the next time someone makes a site visit. Swap out the memory card (because it's good to do that anytime you visit a station), and then unplug the battery and solar panel from the Mayfly and wait a few seconds. Plug the panel and battery back in (make sure to put them back in the correct sockets!) and turn the logger back on. The battery readings should stabilize and read normally for many months now."
7/24 – Battery continues to be very flashy, most recently down to 2.73 v.
6/14 – Turbidity is mildly elevated indicating sensors may be fouled.
6/6 – Turbidity is mildly elevated indicating sensors may be fouled. Battery still dropping to ~2.4 v and recovering to ~4.1 v.
5/31 – These sensors foul easily, and turbidity is mildly elevated beyond natural levels and sensors need to be cleaned. Since May 18, battery continues to drop to ~2.4 v and recovering to ~4.1 v.
5/27 – Since May 18 battery is dropping down to ~2.4 v and recovering to ~4.1 v.
5/17 – Turbidity began to rise today after baseline (12-15 NTU). Battery is dropping below recommended levels, today as low as 2.41 v; could be moisture, or need a reset.
5/13 – Turbidity remains significantly elevated beyond storm levels and sensors need to be cleaned.
5/10 – The sensors at this site may foul easily; turbidity is 10-14 NTU and sensors need to be cleaned.
5/3 – Turbidity has risen above natural levels and sensors need cleaning.
4/26 – Sensors were cleaned but turbidity of 15-30 NTU indicates fouling again.
4/12 – Turbidity now ~600 NTU and sensors may be buried. Battery has become flashy, and should be checked for moisture, and maybe recharge the station.
4/8 – Turbidity is >250 NTU; sensors need to be cleaned.
4/5 – Turbidity is >250 NTU; sensors need to be cleaned.
3/30 – Turbidity is 200-550 NTU; sensors need to be cleaned.
3/25 – Turbidity has become highly elevated (100-300 NTU) and sensors need to be cleaned.
3/15 – Turbidity is mildly elevated above 40 NTU and sensors need to be cleaned.
3/11 – Turbidity is mildly elevated and sensors need to be cleaned.
3/4 – Turbidity is mildly elevated and sensors need to be cleaned.
2/22– Turbidity is significantly elevated (100-300 NTU) and sensors need to be cleaned.
2/18– Turbidity is highly elevated and indicate that sensors are fouled.
2/15 – Turbidity is highly elevated (100-350 NTU). Sensors need cleaning.
2/9 – Turbidity is >40 NTU. Sensors need cleaning.
2/4 – Turbidity is >20 NTU. Sensors need cleaning.
2/1 – Turbidity is increasing- >100 NTU though depth has returned to winter baseline. Sensors need cleaning.
1/28 –Base turbidity remains elevated (15-22 NTU) and sensors need cleaning.
1/21 –Base turbidity remains mildly elevated and sensors need cleaning.
1/18 –Turbidity is climbing, now 60-70 NTU.
1/14 –Turbidity is climbing, now 40-60 NTU unrelated to increasing depth.
1/11 –Turbidity elevated-15 NTU, sensors need cleaning.
1/5 –Turbidity mildly elevated, sensors need cleaning.
2019
12/31 –Turbidity mildly elevated, sensors need cleaning.
12/24 –Turbidity mildly elevated, sensors need cleaning.
12/14 – CTD working well. Turbidity mildly elevated, sensors need cleaning though they foul easily.
12/7 – New CTD was installed on 12/3, but Mike Bullard needs to trouble shoot and repair because not on-line since installation.

11/30 – Turbidity remains too high, sensors need cleaning.
11/19 – Turbidity is up to 100 NTU, need cleaning.
11/16 – Turbidity is elevated after natural cleaning by storm, and sensors need cleaning. Depth readings seem normal
11/9 – Turbidity highly elevated.
11/5 – Turbidity elevated and sensors appear fouled.
11/2 – Turbidity >200 NTU. Depth readings still in typical range.
10/29 – Turbidity 100-250 NTU. Depth readings still in typical range.
10/26 – Sensors need cleaning, turbidity 100-250 NTU since Oct. 21 NTU. Depth readings still in typical range since Oct. 13.
10/22 – Sensors need cleaning, turbidity >100 NTU.
10/19 – Sensors need cleaning. CTD will be replaced, probably by the end of this month. Water depth since 10/13 appear stable.
10/15 – Sensors need cleaning. CTD will be replaced, probably by the end of this month.
10/8 – Sensors have not returned to a natural turbidity level, and need cleaning.
10/1 – Sensors were naturally cleaned, but turbidity remains>10 NTU.
9/28 – Turbidity is mildly elevated, sensors need cleaning.
9/21 – Large water depth fluctuations continuing unrelated to precipition. Although cleaned on 9/20/18, it
9/24 – Turbidity is elevated and sensors need cleaning. Water depth fluctuations stopped on evening of 9/22.
9/17 – Large water depth fluctuations continuing unrelated to precipitation, e.g., going from 230 mm to 1245 mm in 8 hours. These fluctuations are not found on the sister station-SL114 on the other branch of the Pickering. It should be noted that these fluctuations did not occur last year that included summer months. Sensors need cleaning as turbidity is highly elevated.
9/6 – Water depth fluctuations are increasing in intensity, e.g., going from 230 mm to 1245 mm in 8 hours. Turbidity is elevated above natural levels (15-30 NTU) and outside of a rain event – need cleaning.
8/31 – Water depth readings continue to fluctuate in a ~10-24 hour cycle – this has occurred regularly since June. Sensors need cleaning.
8/27 – Water depth readings continue to fluctuate in a ~10-24 hour cycle. Sensors are fouled.
8/23 – Water depth readings continue to fluctuate in a ~10-24 hour cycle. Sensors are fouled.
8/20 – Water depth readings continue to rise to a peak daily now in midday. Armstrong visited the stream when the online sensor depth was half way risen, and when fully risen (942mm), and the water level appeared to actually be a higher level for this grassy/herbaceous (riparian buffer just a few feet) and very narrow channelized stream. Instructed by Bullard not to visit the station, so could not read staff gauge or see the sensors or see any aspect of the station site. Turbidity remains very elevated and needs cleaning.
8/17 – Water depth readings continue to fluctuate daily now in midday from ~280mm to >1000mm. Turbidity increases during these times, and also appears to increase or dilute conductivity. Sensors need cleaning, mildly fouled.
8/10 – Water depth readings continue to fluctuate daily in overnight hours from ~280mm to >1000mm.
8/6 – Water depth readings do not appear plausible as they indicate depth of over 1.6 m.
7/30 – Turbidity elevated >60 NTU. Water pulses continue.
7/27 – This small shallow stream had a historic depth on 7/26 of more than 1.5 m on 7/24. Fouled and needs cleaning.
7/23 – Turbidity elevated 40-300 NTU. Water pulses the same time.
7/20 – Turbidity elevated >40 NTU. Water pulses the same time.
7/16 – Turbidity elevated – 25-100 NTU. Water pulses continue at same time (15:00 EST) daily.
7/13 – Many daily pulses of water with increased depth of ~0.5m, with associated pulses of conductivity. Sensors need cleaning, turbidity >~50 NTU.
7/9 – Sensors needs cleaning. Pulses of water, with increased depth of ~0.5m continue to occur daily, and increase conductivity and some turbidity.
7/6 – Sensors needs cleaning. Pulses of water, with increased depth of ~0.5m continue to occur daily, with increases in conductivity pulses of ~ 50 uS/cm.
7/1 – Turbidity elevated, needs cleaning. Water put into channel causing peaks of .3-.5 m. about once day since 6/18.
6/18 – Turbidity 50-150-NTU.
6/15 – Turbidity mildly elevated.

5/25 – Needs cleaning.
5/21 – Battery going below 3.7 v three times beginning 5/2/18. Needs cleaning.
5/18 - Needs cleaning.
5/14 - Needs cleaning.
5/7 – Sensors severely fouled – could it be elevating conductivity? Battery better since May 5.
5/4 – Sensors are fouled, 200-600 NTU. Battery showing major fluctuations <3.7v since 5/2/18.
4/30 – Sensors are fouled, 200-400 NTU.
4/27 – Very fouled, >250NTU.
4/23 – Needs cleaning.
3/30 – After sensors clean, foul again quickly, now above 700 NTU again. Conductivity seems to reflect depth changes; could fouling depress conductivity levels (generally 200-250 uS/cm).
3/26 – Turbidity plateaued at ~700-800 NTU.
3/19 – Turbidity at history peak; self-cleaned at 2a on 3/19, but still >100 NTU.
3/16 – Some spontaneous clearing of turbidity sensor, but still needs cleaning - >300 NTU.
3/12 - Turbidity remains above baseline, needs cleaning.
2/26 - Turbidity fluctuations of ~100+NTU within five minutes.
2018

SL114 (Pickering, Str 2, West) CTD probably needs to be replaced but may freeze this winter and should wait until 2019 to replace. Baseline turbidity is 3-4 NTU. Depth readings are abnormal at this site.
7/11 – Turbidity rising after major rain event; now >100 NTU.
6/27 – Turbidity indicates sensors are fouled.
6/20 – Turbidity indicates sensors are fouled.
6/14 – Turbidity is remains elevated indicating fouling.
6/6 – Turbidity is still very elevated indicating major fouling.
5/30 – Turbidity is still very elevated indicating major fouling.
5/19 – Turbidity is >400 NTU and very flashy. Battery showed one episode of extreme high (4.44v).
5/7 – Turbidity is 150-300 NTU and very flashy.
4/28 – Sensors were naturally cleaned in a storm surge, but turbidity remains above natural levels and increasing, indicating sensors are fouled.
4/20 – Turbidity is elevated above natural levels.
4/8 – Turbidity has risen to >200 NTU, slowly rising for past week and not resolved with depth at baseline.
3/30 – Turbidity was elevated >25 NTU before recent storm and increase in depth, suggesting sensors need to be cleaned.
2/10 – Turbidity is still above natural levels, around 7-8 NTU, indicating sensors need to be cleaned.
2/3 – Although turbidity is only around 4-5 NTU, based on other Pickering observations after 1/26 storm, there may be sediment on the sensors.
1/27– Turbidity is elevated after storm and water depth near base level, indicating fouling.
1/13– Turbidity is very flashy and elevated beyond natural levels.
1/6– Turbidity is elevated above natural levels with stream at base flow and appears that sensors are fouled.
2020
8/27– Turbidity is elevated and rising.
8/4 – Turbidity is only mildly elevated but rising and might reflect algae on sensors.
7/5 – Battery needs resynchronization of solar panel and battery – see details in note of 6/28 for SL113.
6/28 – Same issue as for SL113 of battery dropping to a level that normally is not sufficient to operate the logger. See the comments for SL113.
6/6 – Battery dropped to ~1 v and ~2 v in past week, always recovering to ~4.1 v.
5/27 – Depth reading continues to be deflated by bad sensor. Battery is continues to drop to 3.3-to-3.5 v, and recovers to >4v.
5/10 – Depth reading continues to be deflated by bad sensor.
5/3 – Were sensors removed from the stream? Last signal transmission was 4/29.
4/26 – The partially damaged CTD sensor will be replaced.
4/12 – Stream seems dry (0-5mm depth), conductivity is at 150-200 uS/cm, and turbidity is measuring as flashy and >18 NTU. What are your thoughts on the CTD sensor?
4/8 – Turbidity has become elevated 20-50 NTU and sensors need to be cleaned.
4/5 – Turbidity has become elevated >20 NTU and sensors need to be cleaned.
3/30 – Turbidity is elevated above natural levels and sensors need to be cleaned.

3/25 – Turbidity is 15-28 NTU and sensors need to be cleaned.
3/15 – Turbidity is mildly elevated and sensors need cleaning.
2/22 – Turbidity is elevated (~25 NTU), sensors need cleaning.
2/18 – Turbidity is elevated (>30 NTU), sensors need cleaning.
2/15 – Turbidity is elevated (10-30 NTU), sensors need cleaning.
2/9 – Turbidity is increasingly elevated, sensors need cleaning.
2/4 – Turbidity is elevated above natural levels, >15 NTU, sensors need cleaning.
2/1 – Turbidity is elevated above natural levels, now >10 NTU, sensors need cleaning.
1/28 – Turbidity increased since last storm and sensors need cleaning.
1/18 – Sensors need cleaning, turbidity mildly elevated.
1/14 – Turbidity mildly elevated (~7 NTU) as depth returns to baseline, and sensors need cleaning.
1/11 – Turbidity mildly elevated as depth returns to baseline, and sensors need cleaning.
11/30 – Depth readings continue to appear abnormal.
11/16 – Depth readings continue to appear abnormal. Turbidity low.
11/9 – Turbidity is 3-10 NTU and appears fouled. Station was cleaned before 11/6 storm event, but turbidity was elevated by the storm. Depth returned to <0mm.
11/5 – Sensors appear to be fouled. Depth elevated during storm of 11/3, returned to <0mm.
11/2 – Sensors need cleaning as turbidity is >10 NTU. Depth <0mm.
10/29 – Sensors need cleaning as turbidity is >10 NTU. Depth <0mm.
10/26 – Sensors need cleaning. Depth <0mm.
10/22 – Sensors need cleaning. Depth <0mm.
10/19 – Sensors need cleaning. Depth <0mm.
10/15 – Sensors need cleaning.
10/8 – Turbidity is elevated, sensors need cleaning.
9/24 – Turbidity is mildly elevated, sensors need cleaning.
9/17 – Turbidity is consistently elevated, sensors need cleaning. Water depth readings no longer problem.
9/6 – Depth began to go into negative range on 8/29, now consistently below 0 yet conductivity still being measured. Turbidity currently elevated. Battery trending down to low 3v and recovers to 4-4.1v.
8/27 – Battery trending down.
8/10 – Depth reading down to 7mm, with turbidity 10-20 NTU. Battery down to 3.05 v, recovers to 4-4.1v.
8/6 – Battery down to 2.74 v, recovers to 4-4.1v.
8/3 – Battery down to 2.9 v, recovers to 4-4.1v.
7/30 – Battery below 3.7v daily, recovers to ~4v. Turbidity elevated and sensors need cleaning
7/27 – Battery down to 2.74 at 9:56 EST today. Turbidity remains elevated.
7/23 – Turbidity sensor was partially cleaned by discharge, but remains elevated ~10 NTU. Battery is <3.7 daily and dropping a little lower each day.
7/16 – Turbidity elevated, >20 NTU.
7/13 – Turbidity elevated-~20 NTU, needs cleaning. Daily pulses of increased water.
7/9 – Turbidity mildly elevated, needs cleaning. Daily pulses of increased water.
7/6 – Turbidity mildly elevated, needs cleaning.
7/1 – Turbidity mildly elevated, needs cleaning. Battery dips to <3.7 v about every day, down to 3.5 v on 6/30.
6/18 – Turbidity mildly elevated, needs cleaning.
6/1 – Storm surge defouled the sensors, but levels still suggest that cleaning is needed.
5/25 – Needs cleaning.
5/21 - Needs cleaning.
5/18 - Needs cleaning, turbidity >14 NTU. Battery as low as <3.5v, more often <3.7v.
5/14 - Needs cleaning, turbidity >14 NTU .
5/11 – Battery at low levels between 8-9 am EST - 3.65v on 5/10/18 and at 3.53 on 5/11/18
5/7 – Needs cleaning. Battery <3.7v on May 4.
5/4 – Needs cleaning.
4/30 – Needs cleaning, >250 NTU.
4/23 – Needs cleaning, still at plateau >100 NTU.
4/20 – Needs cleaning as reached plateau of 90-100NTU since 1a today.
3/30 – Although turbidity varies greatly at this site, sensors appear fouled.
3/26 – Sensors self-cleaned betw 3/23 an 3/24, but very fouled since then, and increasing.
2018

SL105 (Paulinskill-Memory Pk) Nature Conserv. May have bad CTD sensors (Hicks, 8/6/18). Baseline turbidity is 1-3 NTU.
7/11 – Turbidity rising after major rain event as depth returns to base flow, indicating sensor fouling-~50NTU.
6/27 – Turbidity remains very high.
6/20 – Turbidity very high indicating fouled sensors.
6/14 – Turbidity very high indicating fouled sensors.
6/6 – Turbidity continues to be elevated indicating sensors need to be cleaned.
5/30 – Turbidity is ~50 NTU indicating fouled sensors.
5/19 – Turbidity is ~50 NTU indicating fouled sensors.
5/7 – Turbidity remains highly elevated.
4/28 – Turbidity is highly elevated and increasing.
4/20 – Turbidity is highly elevated.
4/8 – Turbidity has risen past few days, and now 40 NTU unrelated to rain event.
3/30 – Turbidity is highly elevated and flashy at baseflow, indicating fouling of sensors.
3/2 – Turbidity is highly elevated at baseflow indicating significant fouling of sensors.
2/17 – Turbidity is highly elevated at baseflow indicating significant fouling of sensors.
2/10 – Turbidity is still highly elevated - ~90 NTU - and flashy indicating significant fouling of sensors.
2/3 – Turbidity is still highly elevated and very flashy indicating significant fouling of sensors.
1/27 – Turbidity highly elevated and very flashy indicating significant fouling of sensors.
1/20 – Though turbidity is lower due to natural cleaning, turbidity remains elevated indicating significant fouling of sensors.
1/13 – Turbidity has risen and now 100-200 NTU not due to rain event.
1/6 – Turbidity is still highly elevated 50-90 NTU, and very flashy, indicating sensors are fouled.
2020
12/31 – Turbidity is highly elevated ~90 NTU, indicating sensors are fouled.
12/23 – Turbidity remains elevated and sensors need cleaning.
12/16 – Turbidity is still elevated and flashy and needs cleaning. Big increases in water depth do not cause much dilution of conductivity, so incoming surface water must have high conductivity.
12/9 – Turbidity remains very flashy and elevated beyond natural level with depth increase, indicating fouling.
12/2 – Turbidity is extremely flashy every day, and sensors need to be cleared. Conductivity is extremely high, and looks like the salt brine or crystals are washing into the stream causing conductivity at 3,000-6000 uS/cm.
11/11 – Turbidity is mildly elevated above natural levels with water near baseline and suggests sensors needs to be cleaned.
10/22 – Turbidity is elevated after last rain event, and sensors are fouled.
9/19 – Though debris has fallen off sensors, turbidity remains above natural levels during base flow and sensors need cleaning.
9/9 – Turbidity is mildly elevated, beyond natural levels.
8/27 – Turbidity very elevated and flashy.
8/4 – Turbidity became elevated and sensors need cleaning, may be accumulation of algae.
7/5 – Turbidity is elevated and sensors need cleaning.
6/28 – Turbidity has slowly risen during base flow and due to heat, sensors might need to be cleaned of algae or other fouling.
6/14 – Turbidity remains very elevated and sensors need to be cleaned.
6/6 – Turbidity is very flashy appear to be fouled.
5/27 – Sensors were naturally cleaned, and turbidity is mildly elevated; sensors need cleaning.
5/17 – Turbidity is above baseline and flashy after storm event, and need clearing and cleaning.
5/3 – Sensors appear to have been naturally cleaned but turbidity remains significantly above natural levels indicates sensors need to be cleaned.
4/29 – Turbidity remains highly elevated and flashy and sensors need cleaning.
4/26 – Turbidity is elevated (40-100 NTU) and sensors need cleaning.
4/19 – Turbidity has become mildly elevated and there might be sediment and algae on sensors.
4/12 – Was the turbidity sensor cleaned despite oxidation on optical window**?** After going to baseline (at installation) on 4/7/19, turbidity has risen again above base flow levels, and sensors need to be cleaned.
4/5 – Turbidity is very elevated, > 225 NTU, sensors need cleaning.
3/30 – Turbidity is very elevated, > 225 NTU, sensors need cleaning**.**

3/25 – Turbidity is very elevated, > 225 NTU, sensors need cleaning.
3/15 – Turbidity remains very elevated, above 225 NTU, sensors need cleaning.
3/11 – Turbidity very elevated, above 225 NTU, sensors need cleaning.
3/4 – Turbidity remains >225 NTU and sensors need cleaning.
3/1 – Turbidity remains >225 NTU and sensors need cleaning; pattern shows something is covering the sensors, as they fouled suddenly and remained at the same approx. NTU since 2/11/19.
2/22 – Turbidity remains >225 NTU and sensors need cleaning.
2/18 – Turbidity is highly elevated since storm on 2/11, now >225 NTU, and sensors need cleaning.
2/15 – Turbidity is highly elevated since storm on 2/11, now >200 NTU, and sensors need cleaning.
11/19 – Turbidity is mildly elevated, up to 10 NTU, and need cleaning.
10/29 – Sensors are fouled.
10/22 – Sensors need cleaning.
9/28 – Although water depth has been unusually high since 9/25, sensors may be fouled.
9/24 – Turbidity mildly elevated unrelated to depth. Correlated sharp fluctuations in depth, conductivity, and temp. still discontinued on 9/18/18.
9/21 – Correlated sharp fluctuations in depth, conductivity, and temp. discontinued on 9/18/18. Sensors appeared cleaned on 9/20/18 but are fouled again as of midnight EDT on 9/20.
9/17 – Correlated sharp fluctuations in depth, conductivity, and warmth continued to occur daily. Turbidity is elevated and sensors need cleaning.
9/6 – Correlated sharp fluctuations in depth, conductivity, and warmth continued to occur daily. Turbidity elevated above natural level, perhaps algae.
8/31 – Since 8/4/18, five minute, correlated sharp fluctuations in depth, conductivity, and water temp. continue to occur. More frequent on some days than others. Sensors may have material flapping against them.
8/27 – Five minute sharp fluctuations in depth, conductivity, and water temp. occurring. Sensors need cleaning.
8/23 – Very rapid, sharp fluctuation in depth and conductivity today over a one hour period.
8/20 – No unnatural drops in depth, conductivity, and water depth signals since 8/16/18.
8/17 – Rapid unnatural drops in depth and conductivity signals continue not quite daily, and temperature drops 5^{o}-10^{o}f.
8/10 – Rapid unnatural drops in depth and conductivity signals continue, and temperature drops >10^{o}f at same times. Very fouled.
8/6 – Rapid unnatural drops in depth and conductivity signals.
8/3 – Turbidity is mildly elevated and sensors need cleaning.
7/30 –Sensors need cleaning.
7/27 –Sensors need cleaning.
7/9 –Daily pulses of increased conductivity.
5/21 - Similar to SL104 and SL111, change in regular signal as of 21:10 EST on 5/20/18; signals regular again as of 12 p EST.
5/7 – Needs cleaning.
3/30 – Needs cleaning.
3/26 – Turbidity ranging between 40 and 200 NTU.
3/19 – Sensor cleaned on morning of 3/14, but this site becomes dirty/fouls easily.
3/12 - Turbidity remains high since early March though water level has been decreasing; needs cleaning.
2/16 - Base turbidity remains high, seems only partially related to water depth spikes.
2/9 - Fouling since 2/7.
2/5 - Does this need a long term solution for frequent fouling?
2018

SL115(Trout Brook (previously Merrill)) No 2G coverage at Trout Bk. Not online at Trout Brook. Bressler inquiring if Nancy/Christa could maintain Lubbers, West Portal, and Merrill/Trout/Unkn until replacement found for Baldino.

2019
7/27 – No data from any sensor since 7/19/18.
7/23 – No data coming from turbidity, temp, and battery since 7/19; conductivity and depth flatlined since 7/18.
7/20 – Conductivity flatlined and depth dropped to invalid reading. Sensors need cleaning. Were the sensors pulled out at some point? Unusual signals began on 7/18 at ~13:00 EST, and began to be regular again on 7/19 ~8:10 EST, but conductivity and depth still bad.
7/13 – Sensors badly fouled and need cleaning.
7/9 – Sensors badly fouled and need cleaning.

7/1 – Sensors need cleaning.
6/28 – Sensors need cleaning.
6/18 – Increased variability in conductivity since May 30. Turbidity is high and needs cleaning.
6/15 – Turbidity is high and needs cleaning, debris may be stuck on it.
6/11 – Turbidity still >130 NTU.
6/8 – Turbidity still plateaued at 150-175 NTU.
6/1 – Discharge surge cleaned but turbidity plateaued in 160's NTU.
5/25 – Fouled, turbidity >350 NTU.
5/14 – Needs cleaning because turbidity today at ~10 NTU that occurred before the depth increase during the last rain – could be algae.
5/7 – Needs cleaning.
5/4 – Needs cleaning.
4/30 – Although turbidity has naturally improved, it is at 70 NTU which is above its natural level.
4/27 – Turbidity remains >250NTU.
4/23 – Needs cleaning - Turbidity still around 300 NTU.
4/20 – Needs cleaning - Turbidity plateaued at ~300 NTU since 4/16.
4/11 – Needs cleaning - Turbidity ranging from 20-1250 NTU in short periods of time since 4/6/18.
3/12 - Turbidity is fluctuating abnormally and rapidly *after* the storm event, is this a sensor problem?
2/16 - Though base turbidity not very high, it has trended higher since ab 2/4/18.
2018

SL116(West Portal B at Woverton Rd(NJ)) Baseline turbidity is 2-3 NTU. Cole Baldino no longer with TU. Bressler inquiring if Nancy/Christa could maintain Lubbers, West Portal, and Merrill/Trout/Unkn until replacement found for Baldino. On hold until Cole's replacement is found.

3/2, 3/30, 4/8, 4/20, 4/28, 5/7, 5/19, 5/30, 6/6, 6/14, 6/20,6/27,7/11 – No signals to MMW.
2/24 – Station back online and data saved to MMW. Turbidity is very flashy indicating sensors are fouled. Extreme short term increases of 200-300 uS/cm in conductivity over 25 minutes.
1/6, 1/13, 1/20, 1/27, 2/3, 2/10, 2/17 – No signals to MMW.
2020
12/16, 12/23, 12/31 – No signals to MMW.
12/9 – No signals to MMW.
12/2 – No signals to MMW.
11/1 – Needs new sim card and "redo".
10/1 – Waiting to hear on status of this station, and if data on card is saved.
9/9 – Data not available on either portal. Is data being saved to sd card?
9/3 – Data not available on either portal. Is data being saved to sd card?
8/27 – Data not available on either portal after 7/26/19. Is data being saved to sd card?
8/20 – Battery has stabilized at 3.7 v. Turbidity is elevated at a constant level suggesting possibly algae/sediment on sensors.
8/14 – Battery is slowing draining, and now down to 3.7 v. Turbidity is elevated at base flow and sensors need to be cleaned
8/4 – Battery is slowing draining, but still just above 3.7 v. Turbidity is significantly elevated and sensors need cleaning.
7/24 – Turbidity is mildly elevated beyond natural level and sensors need to be cleaned.
7/5 – Turbidity is elevated and sensors need to be cleaned.
6/28 – Turbidity is mildly elevated at base flow indicating need for cleaning of sensors.
6/19 – Turbidity remains elevated indicating fouling after major rain event yesterday.
6/14 – Turbidity is elevated, suggesting sensors are fouled.
6/6 – Turbidity is mildly elevated and flashy, suggesting they might be fouled.
5/31 – Sensors were naturally cleared after the last storm event, but turbidity is elevated above natural levels and need to be cleaned.
5/27 – Turbidity is 20-7-0 NTU and flashy; sensors need to be cleared and cleaned.
5/17 – Turbidity is elevated after storm event, and very flashy; sensors need to be cleared and cleaned.
5/10 – Turbidity remains mildly elevated above natural levels at base flow indicating sensors need cleaning.
5/3 – Turbidity remains mildly elevated above natural levels at base flow indicating sensors need cleaning.
4/29 – Turbidity remains >100 NTU and flashy; sensors need cleaning.
4/26 – Turbidity has been consistently very elevated and is >100 NTU; sensors need cleaning.

4/19 – Turbidity has been consistently very elevated during the winter and spring, and is >150 NTU; sensors need to be cleaned.
4/12 – Turbidity has been consistently very elevated during winter storms, and is >150 NTU; sensors need cleaning. Station should be checked for general maintenance and QC.
4/8 – Turbidity is >150 NTU and sensors need to cleaned.
4/5 – Turbidity is ~140 NTU and sensors have not been cleaned.
3/30 – Turbidity is elevated and sensors have not been cleaned.
3/25 – Turbidity is >75 NTU and sensors need cleaning.
3/15– Turbidity remains very elevated and sensors need cleaning.
3/11– Turbidity is 115-300 NTU, indicates sensors need cleaning.
3/4– Turbidity is highly elevated, indicates major fouling, and sensors need cleaning.
3/1– Turbidity indicates major fouling, and sensors need cleaning.
2/22– Turbidity is ~350 NTU, and sensors need cleaning.
2/18– Turbidity is above 250-300 NTU, and sensors need cleaning.
2/15– Turbidity is above 200 NTU, and elevated since 1/24/19 storm, sensors need cleaning.
2/9– Turbidity is very elevated and flashy, sensors need clearing/cleaning.
2/4– Turbidity is 180-400 NTU, sensors need cleaning.
2/1– Turbidity > 150 NTU, sensors need cleaning.
1/28 – Turbidity elevated and flashy - 40-90 NTU, sensors need cleaning.
1/21 – Turbidity remains high after storm discharge subsided, sensors need cleaning.
1/18 – Turbidity has plateaued at 70-100 NTU, sensors need cleaning.
1/14 – Turbidity is increasing, now 60-110 NTU, sensors need cleaning.
1/11 – Turbidity is very elevated as depth drops, 40-65 NTU, sensors need cleaning.
1/5 – Turbidity has become chronically elevated >25 NTU.

2019

12/31 – Turbidity elevated since end of last rain event, and sensors need cleaning.
12/14 – Turbidity elevated, 60-80 NTU and sensors need cleaning.
12/7 – Turbidity elevated, 15-40 NTU since last storms and sensors need cleaning.
11/19 – Turbidity mildly elevated (7-10 NTU) since last storms and sensors need cleaning.
11/2 – Turbidity mildly elevated (>10 NTU) and sensors need cleaning.
10/19 – Sensors functioning again on 10/16.
10/8 – Last signal was 9/24.
10/1 – Last signal was 9/24.
9/28 – Last signal was 9/24. Prior gaps in signals were not more than one day. Turbidity was plateaued at >35 NTU. Battery was at 3.62v.
9/24 – Sensors remain fouled, >35 NTU. Battery has been trending down since August, now down to 3.64v.
9/21 – Sensors are fouled, >40 NTU. Battery has been trending down since August, now down to 3.7v.
7/20 – In summer, sudden and short term drops in conductivity unrelated to depth.
6/15 – Turbidity remains high after water depth lowered over almost 24 hr.
5/7 – Needs cleaning. Battery above 3.7v since 5/2.
5/4 – Needs cleaning. Battery dipped <3.5v four times in past two weeks.
4/30 – Sensors are naturally defouling but still needs cleaning because it is above base level.
4/27 – Needs cleaning, >250NTU.
4/23 – Needs cleaning. Battery dropping below 3.7v since 4/20.
4/20 – Self cleaned after last storm but still needs cleaning.
4/11 – Needs cleaning.
3/30- Does this site have a new base turbidity level since 1/2018? - ~30-100 NTU.
3/26- Turbidity > 300 NTU.
3/19 - Turbidity trended higher - > 300 NTU.
3/16 - Turbidity trended higher - > 250 NTU. Turbidity never near baseline since January-needs cleaning.
3/12 - Turbidity trended higher - > 200 NTU.
3/5 - Turbidity remains high - > 120 NTU.
3/2 - Turbidity remains high - > 75 NTU, often > 100 NTU.
2/23 - Turbidity remains high – both plateau and minimum and maximum levels trend high.
2/19 - Turbidity quite high – minimum and maximum levels, both plateau and trends high.
2/16 - Turbidity quite high – minimum and maximum levels.

2/9 - Needs cleaning.
2/5 - Trend in fouling/turbidity continues to rise since 2/2, trending towards peak since installation.
2/2 - Trend in fouling/turbidity rise since 1/12/18 event, not returned to baseline since.
2018

SL117(Sandy Run) Battery ran down to 3.7v in less than a month. Lindsay will swap battery, and plans to work with a volunteer to see if she is comfortable swapping the battery and backing up. Baseline turbidity was ~1 NTU. Turbidity sensor was removed. Rachel is resetting up Sandy Run on pipes and solar on 2/5/20.

6/27 – CTD readings are abnormal.
6/14 – Stream depth reading negative mm, even when conductivity readings are made (e.g., on 6/11/20).
3/2 – Site is back online, but CTD conductivity appears abnormal. Conductivity dropped to 0 uS/cm when water dropped to 10.7 mm, and then remained at 0 uS/cm during many changes in depth including a depth of 100 mm.
1/6, 1/13, 1/20, 1/27, 2/3 – Site is not transmitting to MMW.
2020
12/16, 12/23, 12/31 – Site is not transmitting to MMW.
12/9 – Site is not transmitting to MMW. Cell board is dead because battery rusted.
12/2 – Site is not transmitting to MMW.
11/22 – Battery was recharged on 11/19. Hicks reported that as of 11/14 Dreamhoster would not transmit data to MonMW any longer and Hicks would update each station with the new portal code. However, MonMW stops reporting data on this site on 11/19. Did something happen as of that date?
11/11 – Battery has run down to 3.34v.
10/1 – Stream dry. No conductivity being recorded.
9/19 – Station back on line on 9/13. When battery was recharged, it only returned to 3.81v, and was in decline a few days later. Could someone trouble shoot this battery? Site does not use a solar panel.
9/9 – Station stopped transmitting on 9/2/19 at midnight when battery at 3.34 v.
9/3 – Station stopped transmitting on 9/2/19 at midnight when battery at 3.34 v.
8/27– Battery at 3.5 v.
7/24– CTD signals are highly abnormal; does not appear sensors were pulled out of the water.
7/5– Sensors are online as of 7/2/19.
5/31– Last transmission from Mayfly was on 5/4/19 at 7:46 EST. Is there station damage?
5/27– Last transmission from Mayfly was on 5/4/19 at 7:46 EST. Is there station damage?
5/17– Last transmission from Mayfly was on 5/4/19 at 7:46 EST.
5/13 – Last transmission from Mayfly was on 5/4/19 at 7:46 EST.
5/10 – Last transmission of any kind from Mayfly was on 5/4/19 at 7:46 EST. At that time battery was at 3.53v, and conductivity was very high (389 uS/cm) with low depth.
5/3 – Battery is in decline (3.46-3.55 v), and needs to be recharged.
4/29 – Battery is in a pattern of decline (~3.6 v), which is below recommended level for logger stability.
4/12 – Abnormal battery signals very frequent; should be checked.
4/8 – Abnormal battery signals occurred again this morning; appears to be a recurring problem.
4/5 – Battery signals are abnormal; may be recurring problem.
3/15 –Battery continues to decline, and is 3.37v; needs to be recharged.
3/11 –Battery continues to decline, and is 3.49v; needs to be recharged.
3/4 –Battery is continuously declining from 4.1v, and now is 3.58v.
3/1 –Battery is continuously decline from 4.1v, and now is 3.61v. Was solar panel reinstalled? May need to recharge battery.
2/4 –Station not transmitting but board has not been checked.
2/1 –Station not transmitting. Perhaps antenna was disconnected. Could the cellular board be disconnected? Battery was changed, sd card was collecting data.
1/28 – Memory card indicated data is being logged. Station not transmitting.
1/21 – Waiting for sd card to be checked for data logging; station is not currently operating.
1/18 – Waiting for sd card to be checked for data logging; station is not currently operating.
1/14 – Waiting for sd card to be checked for data logging; station is not currently operating.
1/11 – Waiting for sd card to be checked for data logging; station is not currently operating.
1/5 – Battery was changed but logger is not working-antennae was in contact with circuit board and might have shorted. Lindsay will collect sd card to check data.
2019

12/31 – Battery was too low to support transmission, and needs to be recharged. Antenna had been in contact with the board (found on 12/28/18), but battery connector would not come out of the board when Armstrong tried. Waiting for Blanton to change battery and change memory card.
12/24 – Battery is steady around 3.4, except extreme fluctuations between ~3.4v – 15v on 12/20 during mid day, then steady at 3.41v.
12/14 – Battery was switched on 12/10, but went to 0 v for about 2.5 hours this morning.
12/7 – Battery was recharged or switched on 11/8, but is dropping, down to 3.52 v.
11/5 – Battery is dropping, down to 3.46 v.
11/2 – Battery is dropping, down to 3.55 v.
10/29 – Battery is dropping, down to 3.62.
10/22 – DEP went to site and will report risers/manholes to Abington, as possible sources of contamination. This is marked as a problem because anyone maintaining this site needs to wear gloves until the contamination problem is resolved.
10/19 – Water around sensors was fouled with scum and particles during visit on 10/12, and smelled of human waste. Reported to MCCD and to DEP Clean Water Program.
8/10 – Low water depth is reported but 0 uS/cm conductivity.
7/27 –Because the site was vandalized, dummy sensors have been placed. Site being watched with a camera placed by Wissahickon VWA.
7/23 –Because the site was vandalized, dummy sensors have been placed.
7/20 –Are the depth and conductivity readings normal when the stream is dry?
7/6 – Although equipment moved here from Housten Run, the battery went up to ~12 v Sandy Run.
2018

SL117(Housten Run) Has damaged pressure sensor due to freezing. Now offline until redeployed to Sandy run.
6/11 – Still offline.
6/8 – Sensors removed.
6/1 – Last signal May 4.
5/25 – Last signal May 4.
5/21 – Last signal May 4.
5/18 – Last signal May 4.
5/14 – Last signal May 4.
5/7 – Last signal May 4.
5/4 – Needs cleaning. Depth values fluctuating abnormally.
4/30 – Needs cleaning and repair.
4/27 – Depth reading still fluctuating greatly each 24 hours, with turbidity also fluctuating contemporaneously with depth. The fluctuations and high peaks in depth were not found prior to late February. Turbidity between 400-1300 NTU. Battery >4v.
4/23 – Depth reading are fluctuating greatly each 24 hours: on 4/20 from 312mm to 2653mm in ~9hr, on 4/21 from 285mm to 2901mm in ~8hr, on 4/22 from 433mm to 3326mm in ~8hr, and again today. Also, fluctuations in turbidity on a daily basis beginning from a low in the morning to a high in mid afternoon, varying from ranges of 360NTU to 800 NTU during that time. Base level keeps rising, and now >300NTU.
4/20 – Self cleaned after last storm but still needs cleaning.
4/11 - Turbidity >200NTU since 3/11.
3/30 – Depth fluctuating greatly with little change in conductivity. Reached historic levels of turbidity since 3/25, continues to rise, now between 700-1200 NTU since 3/26. Could this be invalidating other sensor values?
3/26 - Turbidity 500-1000 NTU.
3/19 - Turbidity >390 NTU.
3/16 - Turbidity trending higher, now >390 NTU. Most recently near baseline on 2/23.
3/12 - Turbidity keeps trending higher, now >250-300 NTU. Needs cleaning.
2/23 - Turbidity remains high.
2/19 - Conductivity at historic peak – 5759 us/cm on 2/18. Turbidity at new plateau (~800NTU) and will need cleaning if not cleared by next rain event this week.
2/5 - Turbidity back near baseline as of high depth last evening. If peaking continues, is a longer term solution needed because of history of high turbidity and fouling since Nov.?

2/2 - Turbidity/fouling became a problem in November, with new elevated levels beginning 11/18/17. Maybe only sufficient discharge is cleaning it, but has not returned to baseline except for 30 min. on 1/23. Looked to me like stream discharge causing the cleaning, and may need human intervention.

2018

SL118(UT to Sandy Run) Wissahickon Ck sensor station moved here 8/30/19.

7/11 – Battery is slowly dropping and down to 3.67v. Turbidity is elevated after major rain event indicating fouling of sensors.

6/27 – Battery is slowly dropping and down to 3.775v. Turbidity is highly elevated when at measureable water depth and indicates major fouling else abnormal signals.

6/6 – Turbidity is elevated above natural levels when at measureable water depth.

4/20 – Turbidity is very elevated and seems not just due to low stream depth.

4/20 – Turbidity is very high (>1200 NTU) even with 250 mm of water in the stream.

4/8 – Turbidity is very high even with water in the stream.

3/30 – Turbidity is ~1000 NTU including when stream depth is >100 mm, suggesting that sensors might be debris-packed or buried.

3/2 – Turbidity remains very high indicating sensors are very fouled.

2/24 – Turbidity is so high that the sensors appear to be buried, and should be cleared out and cleaned as soon as possible so as not to damage sensors.

2/17 – Turbidity remains high (~1200 NTU) whether at low or high water depth. Water depth reading appears abnormal because it indicated 5.5 meters of water in the UT on 2/15/20. Depth sometimes reads as negative.

2/10 – Turbidity remains high (~1200 NTU) whether at low or high water depth. Battery is flashy but remains >3.9v.

2/3 – Although water level has dropped below sensors, there is no change in the turbidity reading.

1/27 – Since heavy rain event on 1/26, sensors appear to have become compacted and should be checked.

1/6 – When there is water running at depths of at least 9 or 10 cm, the turbidity reads high, and depending on the depth of the turbidity sensor, there could be fouling.

2020

12/9 – Sensors are chronically fouled and turbidity is 200-1000 NTU.

12/2 – Turbidity became highly elevated after precipitation event(~900 NTU) indicating sensors are fouled.

11/22 – Turbidity became highly elevated today (>400 NTU). Though there is no water in the stream and turbidity can be elevated under this condition at night (last night turbidity was mildly elevated), it is >400 NTU during the day, and sensors appear to be fouled.

11/1 – Battery is flashy. Turbidity has risen very high (>150 NTU) as the stormwater is receding, and sensors are fouled.

10/22 – Concerned about turbidity readings, which are 0 or – when water depth increases to 20-to-30 mm, which occurs daily separate from rain events. Then turbidity rises on the decreasing slope of these daily water influxes. Can the sensor be placed in slightly deeper water because turbidity readings seem usable only during precipitation events, and only partially from base flows.

10/1 – Square wave pattern persisting in turbidity, but cannot test whether this is due to low water depth or a problem until the stream rises beyond 30 mm. Battery is flashy

9/19 – Data stopped transmitting from dreamhoster to MMW on 8/29. Not sure if your use of the data requires this, but based on recent Dreamhoster data, the turbidity data does not appear correct. At similar low water depths in the past, turbidity was measured at high levels at times, as expected from the urban setting. Now, no peaks are measured at the same low water depths. It is not 0, but a square wave pattern.

9/3 – Turbidity data showing a square wave pattern in relation to non-peaking water depth that does not appear normal. Square wave turbidity covarying with depth occurs during baseflow.

2019

SL118(Wissahickon) Baseline turbidity is 1-2 NTU. Sensors may be moved 8/6/19.

9/3 –Data stopped transmitting to MMW on 8/29/19.

8/27 – Turbidity signals are strange; suddenly drop from 6 NTU to -2 NTU in 5 minutes, then rise in 5 minutes, drop in 5-10 min., then rise again, and go through similar changes several hours later. Water depth was 21-37 mm during this time.

8/4 – Turbidity is highly elevated and sensors should be cleared and cleaned.

7/24 – Turbidity is elevated (75 to ~200+ NTU), and sensors should be cleared and cleaned.

7/5 – Turbidity is elevated indicating need to clean sensors. The Hicks' protocol to resynchronize the battery and solar panel may be helpful to reduce flashiness of this battery. "The easiest fix seems to be just turning off the Mayfly the next time someone makes a site visit. Swap out the memory card (because it's good to do that anytime you visit a station), and then unplug the battery and solar panel from the Mayfly and wait a few seconds. Plug the panel and battery back in (make sure to put them back in the correct sockets!) and turn the logger back on. The battery readings should stabilize and read normally for many months now."

6/28 – Turbidity is very elevated and flashy, indicating need to clean sensors. Battery is persistently below 3.7 v and has fluctuations that are occurring in midday, and could affect data/logger performance. Battery should be recharged, checked for moisture, and/or restarted along with solar panel connection, per Hicks.

6/19 – Turbidity was very elevated before major increase in depth from rain event, indicating much debris on sensors.

6/14 – Turbidity is 70-200 NTU, and sensors need to be cleared and cleaned. Battery continues to require re-charging, resetting, or drying.

6/6 – Turbidity is >100 NTU, and sensors need to be cleared and cleaned. Battery continues slow decline, and recovered only to 3.35 v.

5/31 – Turbidity is >100 NTU, and sensors need to be cleared and cleaned. Battery is slowly declining, and recovers only to 3.5 v. Battery should be checked/recharged.

5/27 – Turbidity is 30-130 NTU, and sensors need to be cleared and cleaned. Battery goes to <3 v and recov-ers to 3.17 v. Battery needs to be checked and recharged.

5/17 – Turbidity increased, and sensors are packed and need cleaning. Battery became unstable last October. It is still unstable, no longer recovers to 3.7.

5/13 – Turbidity is remains >50 NTU, and sensors are packed and need cleaning. Battery is still unstable, and recovers to <3.7 v; should be checked for moisture, logger reset, and possibly recharged.

5/10 – Turbidity is 80-100 NTU, and sensors are packed and need cleaning. Even when debris is knocked off by the stream currents, the turbidity remains above natural levels. Battery was down to 3.1 v today, and never recovers to 3.7 v, so that battery needs to be checked for moisture and recharged.

5/3 – Fouling on sensors. Battery as low as 2.99 v with recovery to <3.6 v.

4/29 – Fouling has increased on sensors. Battery continues to need checking and recharge.

4/26 – Turbidity remains elevated (> 40 NTU) and sensors need cleaning. Battery needs attention (declining, down to 3.06 v; ranging 3.06 – 3.62 v).

4/19 – Turbidity has risen to 50-75 NTU, and sensors need to be cleaned. Battery problematic, needs to be recharged, and station reset.

4/12 – Sensors were cleaned but turbidity remains elevated 10-20 NTU indicating sensors need to be cleaned. Battery needs to be recharged.

4/8 – Turbidity is 100-230 NTU indicating that material is likely wrapped around the sensors. Battery is low

4/5 – Turbidity is highly elevated indicating that material is likely wrapped around the sensors. Battery is below the recommended low of 3.7 v, and the battery was as low as 3.16 and not been higher than ~3.8 v since mid march. Battery should be recharged.

3/30 – Turbidity is 160-200 NTU and sensors need cleaning. Battery is declining further, as low as 3.17v and should be recharged and checked for moisture as it is highly variable.

3/25 – Turbidity is 20-100 NTU and sensors need cleaning. Battery is flagging, often <3.7v and as low as 3.2v, and should be recharged.

3/15 – Turbidity remains elevated above 20 NTU and sensors need cleaning. Battery is very flashy and dropped to 3.37v, which risks the reliability of the battery.

3/11 – Turbidity remains elevated beyond natural levels (12-50 NTU) and sensors need cleaning. Battery should be checked.

3/4 – Turbidity remains elevated beyond natural levels, and sensors need cleaning. Battery should be checked.

3/1 – Turbidity remains elevated since depth returned to baseline, and sensors need cleaning. Battery fre-quently drops <3.7v, and should be checked for moisture.

2/22 – Turbidity remains elevated after storm event, and sensors need cleaning. Battery is variable and may be moist, currently at ~3.6v.

2/18 – Turbidity is highly elevated, and sensors are fouled.

2/15 – Turbidity is chronically elevated, and sensors need cleaning. Battery goes to 3.3x v and should be checked for moisture and recharged.
2/9 – Turbidity is chronically elevated, and sensors need cleaning. Battery is below 3.7 v and very variable which indicates problem; check for moisture on battery wrapper, and consider recharging battery.
2/4 – Turbidity is highly elevated, and sensors need cleaning. Battery dropped to 3.42 v.
2/1 – Turbidity remains elevated, >25 NTU, and sensors need cleaning. Battery >3.7 v.
1/28 – Turbidity remains elevated, >28 NTU, and sensors need cleaning. Battery >3.65 v.
1/21 – Turbidity plateaued around 25 NTU after storm discharge subsided. Battery >3.7v.
1/18 – Turbidity climbing and sensors need cleaning. Battery the same.
1/14 – Turbidity remains high, >50 NTU, and sensors fouled. Battery the same.
1/11 – Turbidity remains fouled, >50 NTU. Battery between 3.5-3.8 v.
1/5 – Turbidity increases dramatically with depth in storm events, but the baseline is >20 NTU and sensors need cleaning. Battery stable between 3.54 and 3.83v.

2019

12/31 – Turbidity remains elevated, sensors need cleaning.
12/24 – Turbidity remains elevated, never <20 NTU, sensors need cleaning. Battery 3.52-3.9v.
12/14 – Turbidity is elevated and sensors need cleaning. Battery around 3.7v.
12/7 – Turbidity is elevated, >25 NTU, and sensors need cleaning.
11/30 – Turbidity remains mildly elevated beyond natural level at installation, and sensors need cleaning. Battery stable within the range of 3.55-3.8 v.
11/19 – Sensors are fouled, >250 NTU. Battery stable within the range of 3.6-3.8 v.
11/16 – Sensors fouled again and need cleaning. Battery stable within the range of 3.65-3.8 v.
11/5 – Sensors have not been cleaned, >250 NTU. Battery stable within the range of 3.5-3.8 v.
11/2 – Sensors have not been cleaned, >160 NTU. Battery about the same with one peak to 4.12v at 3am.
10/29 – Sensors need cleaning, turbidity >200 NTU. Battery at 3.58v to 3.7v.
10/26 – Sensors need cleaning, turbidity >200 NTU. Battery stable at 3.5v to 3.85v.
10/22 – Sensors need cleaning, turbidity remains >300 NTU. Battery recovering.
10/19 – Sensors need cleaning, turbidity >300 NTU. Battery a little better but still <3.77v at all times, and typically in October betw 3.3 and 3.6v.
10/15 – Sensors need cleaning. Conductivity, depth, and water temp. were at 0 until 10/12. Battery remains below 3.7v since 10/3.
10/8 – Conductivity, depth, and water temp. are at 0 for parts of 10/7 and 10/8, which occurred also in September. Is CTD damaged? Sensors are fouled and need cleaning. Battery is below 3.7v since 10/3.
10/1 – Turbidity remains >60 NTU.
9/28 – Although sensors have been naturally cleaned, NTU is still >100.
9/24 – Turbidity is >350 NTU.
9/21 – Turbidity is >300 NTU.
9/17 – Turbidity has been >100 NTU since mid August.
9/6 – Conductivity trending higher since 9/1/18 while depth remains stable, now ~900 uS/cm, at peak of ~700 uS/cm after installation in August. Turbidity >100 NTU.
8/31 – Sensors functioning again! Sensors need cleaning, turbidity >125 NTU.
8/27 – Depth, conductivity, and water temp. bad since 8/18, and not recovered. Sensors need cleaning.
8/23 – Depth, conductivity, and water temp. bad since 8/18, and not recovered to normal. Turbidity >250 NTU.
8/20 – Depth, conductivity, and water temp. signals tanked on 8/18, and not recovered to normal. Turbidity >200 NTU.
8/17 – Turbidity very elevated, usually >150 NTU.
8/10 – Turbidity steadily elevated after rain event and depth lowered, needs cleaning.
8/6 – Turbidity remains elevated, needs cleaning.
8/3 – Turbidity >125 NTU.
7/30 – Sensors need cleaning, turbidity remains unnaturally high.
7/27 – Turbidity >80 NTU.
7/23 – Sensors need cleaning.
7/20 – Sensors need cleaning, turbidity > 130 NTU.
7/13 – Sensors need cleaning, turbidity 25-100 NTU.
7/9 – Sensors need cleaning.
7/6 – Sensors need cleaning.

7/1 – This site seems to need weekly cleaning; may have material on/around sensors.
6/28 – Depth increased by over 1.8 meters in 2.5 hours. Was highest depth since installation; water temperature increased 2-3^{o} c during 4-6 am EST, the time of the water discharge. Turbidity very elevated, needs cleaning.
6/18 – Turbidity varies, usually >20 NTU.
6/15 – Turbidity varies, generally >10 NTU.
6/11 – Turbidity seems excessively high after major rain event last night.
6/8 – Needs cleaning as of noon today.
6/1 – Needs cleaning.
5/21 – Needs cleaning.
5/18 – Needs cleaning.
5/14 – Extremely fouled.
5/11 – Depth is at historic low level since installation.
5/4 – Needs cleaning.
4/30 – Needs cleaning.
3/26 – This site was cleaned, but turbidity rises quickly; now 15-30 NTU.
3/12 - Turbidity a problem since 3/7/18.
3/5 - Turbidity remains a problem.
3/2 - Turbidity remains a problem.
2/26 - Turbidity cleared on 2/6/18 at 7p, but has begun to rise – will monitor to see if it becomes a problem.
2/5 - Elevation in turbidity still very high.
2/2 - Conductivity at new levels since big rain event of 1/12.
2018

SL119(Aquashicola) Wildlands Conservancy**.** This site is a control for Cherry. Baseline turbidity is 3-4 NTU. CTD replaced on 10/14/19.
7/11 – Turbidity is highly elevated at baseflow indicating fouled sensors**.**
6/14 – Turbidity is highly elevated at baseflow indicating fouled sensors**.**
6/6 – Turbidity is elevated and indicating fouling**.**
5/30 – Turbidity is elevated and flashy indicating fouling at base flow**.**
5/19 – Turbidity is elevated and flashy indicating fouling at base flow**.**
4/28 – Turbidity is elevated indicating sensors are fouled**.**
4/20 – Turbidity is mildly elevated slowly increasing over days**.**
4/8 – Turbidity is mildly elevated and flashy when depth is at baseline, which suggests there might be algae/sediment; sensors should be cleaned.
1/6 – No transmissions since 12/20/19.
2020
11/22 – Gap in site transmission ended on 11/20, and gaps are of shorter duration intermixed with normal transmissions to MonMW.
11/11 – Gaps in site transmission occurred rarely beginning 10/27, but by 11/05 gaps have become longer, there was a three day gap on 11/6, and a gap that persists beginning 11/9.
11/1 – Site is not transmitting as of early the morning on 11/1 after the huge wind and rain storm that night**.**
10/7 – Turbidity is very elevated and flashy indicating need for cleaning**.**
8/27 – Turbidity is very elevated**.**
8/14 – Turbidity has become mildly elevated and sensors need cleaning at base flow, possible algae/sediment on sensors.
8/4 – Turbidity highly elevated and need cleaning.
7/24 – Turbidity indicates significant fouling and debris on sensors; turbidity has not been at natural level since early July.
6/19 – Although stream depth has reached new high levels during April, May and June, turbidity appears to be elevated beyond natural levels, and need cleaning.
6/14 – Turbidity is elevated and sensors need to be cleared and cleaned.
6/6 – Turbidity is elevated and sensors need to be cleared and cleaned.
5/31 – Turbidity is very flashy and 25-55 NTU; sensors need to be cleared and cleaned.
5/27 – Turbidity is 25-55 NTU; sensors need to be cleared and cleaned.
5/17 – Turbidity has risen and is very flashy; sensors need to be cleared and cleaned.

4/5 – Sensors were naturally cleaned, but turbidity might still be above natural levels possibly due to sediment deposition on sensors.
3/15 – Turbidity is elevated and sensors need cleaning.
3/11 – Turbidity is 30-60 NTU, and sensors need cleaning.
3/4 – Turbidity is mildly elevated, and sensors need cleaning.
2/18 – Turbidity remains elevated, and sensors need cleaning.
2/15 – Turbidity remains elevated, and sensors need cleaning.
2/9 – Turbidity is more elevated, ~50 NTU, sensors need cleaning.
2/4 – Turbidity is elevated, >10 NTU, may be fouled by sediment, sensors need cleaning.
2/1 – Turbidity is mildly elevated, sensors need cleaning.
1/28 – Turbidity is mildly elevated, sensors need cleaning.
1/21 – Sensors are fouled by new discharges, but do not reach a natural baseline, and sensors are fouled.
1/18 – Sensors need cleaning, turbidity is chronically mildly elevated.
1/14 – Turbidity remains elevated and has become very flashy, sensors need cleaning.
1/11 – Turbidity remains elevated 12-25 NTU as depth returns to baseline, sensors need cleaning.
1/5 – Turbidity chronically elevated 15-50 NTU, sensors need cleaning.
2019
12/31 – Turbidity chronically elevated, sensors need cleaning.
12/24 – Turbidity elevated, sensors need cleaning.
12/14 – Turbidity elevated, sensors need cleaning.
12/7 – Turbidity elevated 10-15 NTU), sensors need cleaning.
11/30 – Turbidity elevated (>12 NTU), sensors need cleaning.
11/19 – Turbidity elevated (>10 NTU), sensors need cleaning.
11/2 – Turbidity mildly elevated, sensors need cleaning.
10/22 – Turbidity mildly elevated while water level has dropped, sensors need cleaning.
8/27 – Battery still fluctuating sharply, and could be moisture in the box.
8/23 – Battery fluctuating sharply, and could be moisture in the box.
7/20 – Sensors are fouled. Conductivity at historic high for a year, but depth is not at the lowest level.
4/30 – Needs cleaning.
4/11 – This site's conductivity is higher in summer than in winter.
2/26 - Gaps of hours in signal as readings are often at uneven epocsl121
hs, might be cellular signal gaps, but bigger gaps recently. Battery is >4v.
2/12 - Though not very high, turbidity is elevated chronically from baseline, not cleared by storm event, needs cleaning.
2018

SL120(Lopatcong at Morris Canal Greenway) Whenever we visit that site next to reprogram the station, we'll replace whatever part is causing the inaccurate battery measurement (Shannon). Data is logged to the sd card but not transmitted, and is being backed up. Baseline turbidity is 1-2 NTU.
7/11 – Turbidity is increasing after major rain event (~50NTU), indicating sensors are fouled.
6/27 – Turbidity is persistently elevated and flashy indicating fouling.
6/20 – Though turbidity is lower after drop in depth, it is still mildly elevated and sensors should be cleaned.
6/14 – Though turbidity is lower after drop in depth, it is still mildly elevated and sensors should be cleaned.
6/6 – Turbidity is very elevated and flashy.
5/30 – Turbidity is very elevated at baseflow and sensors are fouled.
5/19 – Turbidity goes back near baseline but highly flashy and sensors may be fouled.
4/28 – Turbidity has becomes more elevated and flashy indicating sensors need to be cleaned.
4/20 – Turbidity is mildly elevated (~10 NTU).
4/8 – Turbidity is mildly elevated and flashy when depth is at baseline, which suggests there might be algae/sediment; sensors should be cleaned.
3/2 – Turbidity is elevated and flashy unrelated to depth changes, indicating sensors are fouled.
2/17 – Turbidity very high and flashy (200-900 NTU) and sensors are fouled.
2/10 – Turbidity became very high and flashy (200-500 NTU) and sensors are fouled.
1/27 – Turbidity remains >200 NTU after storm and depth receded, indicating fouling.
1/20 – Turbidity is highly elevated and flashy.
1/6 – No transmissions to MonMW, probably since 12/30. Battery was 4.09 v.
2020

12/23 – Turbidity has greatly increased and been very flashy in past week and sensors should be cleaned - turbidity Is ~500 NTU.
12/16 – Turbidity remains very elevated at base flow; cleaning needed.
12/9 – Turbidity is elevated beyond natural levels and regardless of increases due to depth; cleaning needed.
12/2 – Turbidity is elevated though naturally cleaned by water movement, but remains fouled and sensors need to be cleaned.
11/1 – Turbidity is very elevated >200 NTU, and flashy, and was elevated before and after the elevations of the storm last night.
10/22 – Turbidity is elevated at base flow and sensors need cleaning.
10/1 – Turbidity is mildly elevated; check for sediment and algae.
9/9 – Turbidity is very elevated and flashy at low depths.
9/3 – Turbidity is elevated indicating sensors need cleaning.
8/27 – Turbidity is mildly elevated and flashy at base flow.
8/20 – Turbidity is mildly elevated and flashy at base flow and sensors need cleaning.
8/14 – Turbidity is mildly elevated and flashy at base flow and may be fouled by algae/sediment.
8/4 – Turbidity is elevated at base flow and may be fouled by algae.
7/24 – Turbidity is elevated at base flow. This data is visualized only on MMW.
7/5 – Turbidity is elevated and flashy since cleaning, indicating sensors need cleaning.
6/28 – Turbidity is increasingly elevated and flashy since cleaning, indicating sensors need cleaning.
6/19 – Turbidity is elevated during base flow after rain event, and debris likely on sensors.
6/14 – Turbidity is very elevated during base flow and sensors need to be cleared and cleaned.
6/6 – Turbidity is elevated during base flow and sensors need to be cleaned.
5/31 – Turbidity has declined since recent heavy rain event, but is elevated at baseflow and sensors need to be cleaned.
5/27 – Turbidity is mildly elevated at baseflow and sensors need to be cleaned.
5/17 – No transmissions since 5/9/19 at 14:30 EST.
5/13 – No transmissions since 5/9/19 at 14:30 EST, when turbidity was 101 NTU and battery was 4.09 v. No visualization available on MonMyWatershed. Back up data regularly.
5/10 – Turbidity has risen and is now 100 NTU, indicating sensors are packed.
4/29 – Turbidity continues to remain high indicating major fouling of sensors.
4/26 – Turbidity has risen in past week, now 80-140 NTU and sensors need to be cleaned.
4/19 – Turbidity is 40-140 NTU and sensors need to be cleaned.
4/12 – Transmissions are relatively regular now (some gaps of hours), but turbidity is remains elevated at base flow that indicates that sensors need to be cleaned.
3/30 – Last transmission was on 3/26 and turbidity was 325 NTU, and sensors need to be cleaned.
3/25 – Last transmission on 3/23 indicates turbidity was 326 NTU, and sensors need to be cleaned.
3/15 – Last transmission on 3/12 indicates turbidity was 389 NTU, and sensors need to be cleaned.
3/11 – Turbidity is > 390 NTU, and sensors need to be cleared and cleaned.
3/4 – Turbidity is highly elevated, and sensors are fouled.
3/1 – Turbidity is highly elevated, and sensors are fouled.
2/22 – Sensors remained highly fouled; 378 NTU as of today.
2/18 – Sensors do not appear to have been cleaned, and turbidity is >380 NTU.
2/15 – Last signal was 2/13/19, sensors are chronically highly fouled, last turbidity reading was 387 NTU.
2/9 – Last signal was 2/8/19, at that time turbidity was 378 NTU; sensors are highly fouled.
2/4 – Turbidity is mildly elevated and sensors need cleaning.
2/1 – Last transmission was 1/29/19. At that time, turbidity was very high, 353 NTU; battery was >4 v.
1/28 – Last transmission was 1/16/19 at 9:30a (on both MoMW and dreamhoster).
1/21 – Last transmission was 1/16/19 at 9:30a. At that time water temperature was about 3^{o}C and declining. Site does not transmit often, but should be checked for freezing.
1/18 – Last transmission was 1/16/19, at which time turbidity was 666 NTU, battery was 4.05v. Sensors may be buried
1/14 – Last transmission was 1/12/19, at which time turbidity was 650 NTU, battery was 4.02v.
1/11 – Last transmission was 1/10/19, at which time conductivity rose to 415 uS/cm, turbidity was >600 NTU, temperature of logger and water were warmer than other sites and year ago at this site, battery >4v.
1/5 – Last transmission was 1/2/19, at which time turbidity was very elevated (>400 NTU), battery >4v.

2019

12/31 – Last transmission was 12/27, at which time turbidity was very elevated (>250 NTU), battery >4v.
12/24 – Last transmission was 12/19, at which time turbidity was very elevated (448 NTU), battery >4v.
12/14 – Last transmission was 12/12, at which time turbidity was very elevated (~700 NTU), battery >4v.
12/7 – No signals since 12/3. At that time, turbidity was very elevated, >500 NTU, and sensors need cleaning.
11/30 – No signals since 11/19.
11/19 – Signals continue to be very rare, 0-1 signal/day. Sensors are blocked: ~1000NTU.
11/16 – Signals remain very rare; hopefully the sd card is being backed up. Sensors are blocked: >1000NTU. David emailed Juniper.
11/5 – Signals very rare. Sensors appeared naturally cleaned on 11/4, but turbidity still mildly elevated and need cleaning. Battery betw 4-4.2 v.
11/2 – Sensors remain blocked, >300 NTU. Two signals on 10/29 and one on 10/31. Battery OK.
10/29 – One signal from all sensors and battery on 10/28. Sensors remain blocked.
10/26 – One signal from all sensors and battery on 10/23, and one signal on 10/24. Last turbidity was ~1200 NTU. Battery was 4.12v.
10/22 – One signal since 10/12, on 10/21. Turbidity was 200 NTU on 10/21. Battery was 4.09 v.
10/19 – Last signals were 10/12.
10/15 – Last signals were 10/12.
10/8 – Sensors need cleaning.
9/17 – Sensors were cleaned, but turbidity has trended up and sensors need cleaning.
9/6 – Turbidity currently elevated and may be leaves wrapped around sensors.
8/27 – Turbidity mildly elevated without increased depth, and sensors need cleaning.
8/3 – Sensors need cleaning because turbidity remains above natural levels.
7/13 – Sensors need cleaning, may be algae.
6/28 – Needs cleaning since water discharge this morning. Battery going <3.7 v ever couple of days, as low as 2.96 v.
6/18 – Turbidity elevated and needs cleaning. Unusual lapse of signal for 9 hrs on 6/17 to 6/18.
6/15 – Battery drops <3.7v (today to 3.34 v), and seems to happen when logger temperature is heading to peak. On 6/14/18, logger temperature peaked at 44.5^{o} c.
6/11 - Needs cleaning as turbidity above base level before and after storm. Battery dropped to 3.27v midday today, more consistently above 3.7v since 6/8.
6/8 - Battery still <3.7 v several times a day.
6/1 - Battery 3.24 – 3.7 v on May 29.
5/25 - Battery 2.77 v on May 23 and 3.03 v on May 24.
5/21 - Similar to SL104, sl135
, and SL111, last signal on 5/20/18 at 21:10 EST. Signals regular again as of 12 p EST. Battery continues to be <3.7v often.
5/18 - Battery below 3v on May 14. <3.7v for about two hours about three times out of four days.
5/14 - Battery <3.7v for one time on 5/14.
5/11 - Battery <3.7v for increasing periods of time since May 7.
5/7 - Battery dropped <3.2v on May 4 and May5, >3.8v since May 6. Needs cleaning.
5/4 - Battery dropped <3.7v five times in past week.
4/30 - Although turbidity is 20-25 NTU, it is above base level and needs cleaning, turbidity. Battery still unstable, at historic low of 3.32v midday on 4/28.
4/27 - Needs cleaning, turbidity ~50 NTU. Battery still unstable, dropped to <3.35 at 2:24 EDT on 4/26, which was a sunny day. Should it be recharged?
4/23 - Battery still unstable since February; dropped to 3.35v in afternoon of 4/18.
4/20 - Battery unstable since February; dropped to 3.35v in afternoon of 4/18.
4/16 - Turbidity better since storm spontaneous cleaning, but still above base level; needs cleaning. Should battery be recharged? Highly variable since mid February 2018.
4/11 - Turbidity increasing steadily since 3/29/18, now >100 NTU.
3/26 - Turbidity increasing steadily since 3/19/18, now >100 NTU.
2/9 - Historic high (since installation in sept 2017) spike in conductivity-1988 us/cm. Several other sites had historic high peaks in ions in February or Jan.

2018

SL121(Hunter D, Borger Property) TU Brodhead. Solar panel stopped charging battery on 6/18. Squirrel chewing-Al Barney will repair (7/23). May have bad CTD sensors (Hicks, 8/6). Baseline turbidity is ~2 NTU.

7/11 – Depth continues to be too high, went to ~1400 mm in last major rain event. Turbidity remains elevated and shows that the sensors have not been cleaned.
6/27 – Depth continues to be too high and fluctuate too much; SWRC will investigate.
6/20 – Depth continues to be too high and fluctuate too much; SWRC will investigate.
6/14 – Depth fluctuated from 740 mm to 1141 mm (rain event) this week. Are these depths normal for this site? Also appears strong correlation of depth with temperature.
6/6 – Turbidity is flashy suggesting that sensors are fouled
5/30 – Turbidity has increased in level and still very flashy indicating major fouling (NTU 200-800).
5/19 – Turbidity is 200-300 NTU and flashy indicating fouling at base flow. Battery is vascillating too often since May 4.
4/20 – Turbidity is chronically elevated.
4/8 – Turbidity is ~75 NTU, and it is still high at baseline levels, indicating sensors are fouled.
3/30 – Although depth is relatively high based on frequent rain, turbidity appears unnaturally elevated, and sensors may be fouled.
2/24 – Turbidity remains high indicating sensors are fouled.
2/17 – Turbidity remains high indicating sensors are fouled.
2/10 – Turbidity is increasing daily, and now >60 NTU. Although base flow has been increasing over the past year, the increase in turbidity should not be related. Sensors are fouled and need cleaning.
2/3 – Turbidity is elevated beyond natural levels and suggests sensors are fouled.
1/20 – This logger last transmitted to MonMW on 1/20 at 10:40 am. Parameter labels are not corrected.
1/13 – Parameter labels are not corrected.
1/6 – No transmissions since 12/30, but could be due to cellular lapses. Battery does not appear to be correctly labeled, and could be low.

2020

12/31 – Parameter labels are not corrected.
12/23 – Battery voltage still off (>120 v). Are other labels correct? Turbidity appears to be very elevated.
12/16 – Battery voltage still off (>120 v). Are other labels correct?
12/9 – Battery voltage still appears off (now 138 v).
12/2 – Turbidity is mildly elevated beyond natural levels and goes to -6 to -7 NTU.
11/22 – Turbidity is mildly elevated beyond natural levels.
11/11 – Turbidity is > 140 NTU and indicates fouling.
10/22 – Turbidity is highly elevated and flashy.
10/7 – Turbidity is very elevated and flashy.
9/3 – Turbidity is highly elevated and flashy.
8/27 – Turbidity is >200 NTU and flashy.
8/14 – Turbidity is significantly elevated above natural levels and flashy and indicates need to clean sensors.
7/24 – Turbidity is elevated above base flow level and indicates need to clean sensors.
7/5 – Turbidity is elevated above base flow level and indicates need to clean sensors.
6/28 – Turbidity is elevated and indicates significant fouling of sensors that occurred before today's rain event.
6/19 – Turbidity is elevated after rain events and sensors likely have debris on them.
6/14 – Turbidity is ~100 NTU and sensors need to be cleared and cleaned.
6/6 – Turbidity has risen further indicating sensors are blocked/packed.
5/31 – Turbidity has become very high (>200 NTU) indicating sensors are blocked/packed and need to be cleaned.
5/27 – Turbidity is rising and mildly elevated, and sensors need to be cleaned, possible sediment and algae.
5/17 – Turbidity has risen further, and sensors should be cleared and cleaned.
5/13 – Turbidity has risen and is ~100 NTU, and sensors should be cleaned.
5/10 – Turbidity has risen and is now ~90 NTU, and sensors should be cleaned.
4/29 – Turbidity remains high and indicates major fouling of sensors.
4/26 – Turbidity has risen and is now up to 100 NTU, sensors need cleaning.
4/19 – Turbidity has become elevated, possibly sediment and/or algae; sensors should be cleaned.
4/8 – Battery continues to decline, is down to 3.38 v, and should be recharged.
4/5 – Battery continues to decline, is down to 3.4 v, and should be recharged.
3/30 – Battery continues to decline, is down to 3.5 v, and should be recharged.
3/25 – Turbidity is 25-50 NTU, and sensors need to be cleaned. Battery has declined significant, is down to 3.58v, and should be recharged.

3/15 – Turbidity remains mildly elevated after last storm and sensors need to be cleaned. Battery has been declining over a month, and now 3.79v.
3/11 – Turbidity is mildly elevated after last storm and sensors need to be cleaned.
3/1 – Turbidity is elevated after depth recedes indicating sensors are fouled.
2/1 – Turbidity remains mildly elevated after water depth returned to winter baseline.
1/28 – Turbidity is mildly elevated and very flashy, sensors need cleaning.
1/18 – Turbidity remains mildly elevated (8-11 NTU), and sensors need cleaning.
1/14 – Turbidity remains mildly elevated, and sensors were only naturally cleaned to 6 NTU.
1/11 – Turbidity remains elevated, and sensors are chronically fouled.
1/5 – Turbidity is increasing as water level declines, and sensors are chronically fouled.
2019
12/31 – Sensors appear fouled and flashy, turbidity elevated.
12/7 – Sensors are fouled and flashy, 35 – 75 NTU.
11/30 – Sensors remain fouled as turbidity is 40-65 NTU.
11/19 – Sensors appear fouled as turbidity is 30-60 NTU.
11/16 – Sensors appear fouled.
11/9 – Turbidity elevated more than expected from rain events, and sensors need cleaning..
11/5 – Sensors naturally cleaned by rain event of 11/3, but turbidity still elevated 30-100 NTU.
11/2 – Turbidity still rising, 500-600 NTU, and has not been cleaned.
10/29 – Turbidity still rising, >400 NTU.
10/26 – Turbidity continuously rising since 10/19, now >250 NTU.
10/22 – Turbidity is 40-110 NTU as water level drops, and sensors need cleaning.
10/19 – Turbidity is mildly elevated since last big rain event on 10/11, and sensors need cleaning.
10/1 – Although there was a huge rain event on 9/28 and water level still dropping, turbidity suggests sensors need cleaning (10-30 NTU).
9/24 – Battery now at 3.56-3.58v.
9/17 – Turbidity has trended up and is mildly elevated, but might be changed by precipitation expected in next two days. Everytime this battery is recharged, it then declines after about one week; currently at 3.76v.
8/31 – Turbidity patterns suggest that sensors may have algae and also material stuck around them. Battery still slowly declining, now down to 3.46 v.
8/27 –Battery still slowly declining, now down to 3.49-3.55v.
8/23 –Battery recharged on 8/7-8/8, but continuously declining, now down to 3.55-3.59v.
8/20 – Turbidity elevated, 50-100 NTU. Battery recharged on 8/7-8/8, but declining again, down to 3.64v.
8/17 – Turbidity very elevated. Battery was recharged on 7/26, but declining again, down to 3.75v.
8/10 – Extreme increases in conductivity stopped as of the morning of 8/7/18.
8/6 – Extreme increases in conductivity continue up to 890 uS/cm. Turbidity 50-250 NTU. Are the conductivity measures accurate because of the sharp changes?
8/3 – Extreme increases in conductivity continue up to 890 uS/cm. Turbidity >40 NTU.
7/30 – Extreme increases in conductivity continue. Battery appears recovered.
7/27 – Extreme increases in conductivity today – as high as 820 uS/cm, not related to water depth. This site should be checked today for the source of conductivity. Battery is better, but not as high as 3.7v.
7/23 – Last signal from battery was 7/21.
7/20 – Sensors need cleaning, turbidity 250-1200 NTU. Repeated high spikes of conductivity since 7/15, at least 11 high spikes from a usual of ~180 uS/cm to ~250-300 uS/cm, concerning for discharges into stream. This has not been seen in this stream since installation in August 2017. Battery keeps dropping, now at low of 3.38
7/16 – Sensors need cleaning, turbidity elevated unrelated to increased water depth. Battery at low of 3.46v.
7/13 – Sensors need cleaning, turbidity ~100+ NTU. Battery as low as 3.52 v.
7/9 – Sensors need cleaning. Battery as low as 3.55 v.
7/6 – Battery bottomed at 3.61 v. Turbidity mildly elevated and needs cleaning.
7/1 – Battery declined for past two weeks, now plateaued at 3.7. Turbidity elevated and needs cleaning.
6/28 - Turbidity elevated and needs cleaning.
6/18 - Historic peak in conductivity on 6/12 without increase in depth; 365 uS/cm. Sensors need cleaning.
6/15 - Sensors need cleaning.
6/11 - Sensors need cleaning.
6/1 - Fouled and needs cleaning, base level rising since 5/29.

5/25 - May be fouled and needs cleaning.
5/21 - Needs cleaning.
5/18 - Needs cleaning since storm event.
3/26 - Turbidity high for this site, base range now is 17-50 NTU.
3/5 - Turbidity remains elevated after the 3/2/18 storm event.
2/16 - Other sites are now showing mainly dilution of ions when water depth increases (bec of less salt use?), but this site having big spikes in conductivity with water depth increases. Wonder what the source is.
2018

SL122(Buckwha D-Creyer) TU Brodhead Appears to be a problem with just the CTD probe, possibly broken. Hicks will return on 10/23 to replace entire sensor/cable and possibly Mayfly. Baseline turbidity is 1-2 NTU. Since August 2019 this site is not transmitting to either data portal, but data is being saved on sd card.
5/30 – Turbidity is mildly elevated above natural levels and has not been cleaned except naturally.
5/19 – Turbidity is elevated above natural levels, and flashy, and sensors need to be cleaned.
4/28 – Turbidity is elevated above natural levels, and flashy, and sensors need to be cleaned.
4/20 – Turbidity is elevated above natural levels, and flashy.
4/8 – Turbidity was highly elevated before rain event today, and is higher after depth decreased.
3/30 – Turbidity is elevated (>30 NTU) and flashy during all depths, indicating sensors are fouled.
2/24 – Turbidity is higher than natural levels, suggesting sensors are fouled.
2/17 – Turbidity is higher than natural levels, as water depth decreases turbidity increases, sensors appear fouled.
1/6, 1/13, 1/20, 1/27 – Site not transmitting.
2020
12/9, 12/16, 12/23, 12/31 – Site not transmitting.
12/2 – Site not transmitting.
11/1 – Site not transmitting. Hicks tested for 4G (at least 50%) but needs to make appointment with new home owners to evaluate whether the board has a problem
9/3 – This site does not transmitting to either Dreamhoster or MMW. Data is being saved on the sd card
8/27 – This site does not transmitting to either Dreamhoster or MMW.
8/20 – This site does not transmitting to either Dreamhoster or MMW.
8/14 – Turbidity is highly elevated and sensors need to be cleaned.
6/28 – Depth signals are abnormal and in negative range as of 6/10/19, though conductivity and temperature appear typical. Should the white ceramic pressure transducer be checked?
5/31 – Since last heavy rain event, turbidity has become elevated at base flow and sensors should be cleaned.
5/13 – Turbidity is mildly elevated and flashy after storm events, sensors should be cleared and cleaned as there may also be sediment and algae on them.
5/10 – Turbidity is now ~50 NTU, and sensors should be cleaned.
4/29 – Sensors were naturally cleaned but require careful cleaning as turbidity is well over 10 x the natural level at baseline flow. Sensors do not appear to have been cleaned this winter and spring.
4/26 – Turbidity has become highly elevated as high depth from rain event declined to base level.
4/12 – Turbidity is 40-50 NTU, and sensors need cleaning.
3/25 – Turbidity is >100 NTU and flashy, and sensors need cleaning.
3/15 – Turbidity is >100 NTU and increasing, and sensors need cleaning.
3/11 – Turbidity is >65 NTU, and sensors need cleaning.
3/4 – Turbidity remains elevated, and sensors need cleaning.
3/1 – Turbidity is elevated since storm-related depth returned to baseline, and sensors need cleaning.
2/18 – Turbidity is elevated above natural levels and above discharges, and sensors need cleaning.
1/21 – Sensors need cleaning.
1/18 – Turbidity is >15-20 NTU because sensors were naturally cleaned, but sensors need cleaning so data indicates the natural levels of turbidity.
1/14 – Turbidity is >70 NTU, and sensors need cleaning.
1/11 – Turbidity remains elevated, >40 NTU, and sensors need cleaning.
1/5 – Turbidity rising with storm, but base level is >15 NTU and sensors need cleaning.
2019
12/31 – Sensors need cleaning.
12/7 – Sensors need cleaning as turbidity is >40 NTU.
11/30 – Sensors need cleaning as turbidity remains elevated after natural storm cleaning.

11/19 – Sensors are fouled, turbidity is 50-100 NTU.
11/16 – Sensors appear fouled, NTU increasing as water depth drops.
11/9 – Turbidity remains mildly elevated and sensors need cleaning.
11/5 – Sensors were naturally cleaned, but turbidity remains mildly elevated.
11/2 – CTD crashed on 10/23, and signals appear normal since. Sensors appear fouled.
10/22 – CTD sending typical signals as of 10/20. However, turbidity remained mildly elevated, so not sure if maintenance occurred.
10/19 – CTD sensor dropped out on 10/11.
10/15 – CTD sensor dropped out on 10/11.
10/8 – Conductivity, depth, and water temperature at 0 since 9/14/18.
10/1 – Conductivity, depth, and water temperature still at 0, abnormal since 9/14/18. Turbidity is mildly elevated, need cleaning.
9/28 – Conductivity, depth, and water temperature still at 0, abnormal since 9/14/18. Turbidity is very elevated but correlates with recent big rain event. However, sensors probably need to be cleaned.
9/24 – Conductivity, depth, and water temperature now at 0, abnormal since 9/14/18. Turbidity is mildly elevated.
9/21 – Conductivity, depth, and water temperature remain abnormal (damaged?) since 9/14/18.
9/17 – On 9/14/18 conductivity, depth, and water temperature discontinued accurate measurement though still sending signals. Turbidity and logger temperature appear normal, and battery still rebounding to ~4v.
9/6 – Battery always bounces back to 4v, but has dropped to lowest level (3.17v) since installation12 months ago, and daily going <3.2v since 9/3/18.
8/20– Turbidity elevated, 20-35 NTU.
8/17– Turbidity still mildly elevated above natural levels, may be algae.
8/10– Turbidity still mildly elevated above natural levels.
8/6– Turbidity still mildly elevated unrelated to depth, need cleaning.
8/3– Natural turbidity at this site is 1-2 NTU, and turbidity now is 7-10 NTU, so sensors need cleaning.
7/30– Sensors need cleaning.
7/16 – Sensors naturally cleaned by rain event and increased depth, but still mildly elevated above baseline: 8-10 NTU.
7/13 – Sensors need cleaning, turbidity 100+ NTU.
6/28 - Needs cleaning.
5/25 - May need cleaning.
5/21 - Similar to SL104, SL105, SL111, and SL120, last signal on 5/20/18 at 21:10 EST; signals regular again as of 12:25 p EST. Battery stronger but not yet up to 4v.
5/18 – Battery stronger but not yet up to 4v. Turbidity not too high – 10-11 NTU – but higher than base level.
5/14 – Transmitting again on May 14; battery very low.
5/11 – Last signal 4/29
5/7 – Last signal 4/29
5/4 – Last signal 4/29
4/30 – Signal usually fairly regular, but became infrequent on 4/27, and 2 signals on 4/28, one signal on 4/29.
4/23 – Needs cleaning.
4/16 – Battery dipping lower since 4/11 during daylight hours – reached low point of 3.68 v.
3/19 - Turbidity/fouling increasing, >100 NTU.
3/16 - Turbidity/fouling still above baseline now with base range of 45-85 NTU.
3/12 - Turbidity/fouling remaining elevated since 3/2/18 storm event, 60 - >110 NTU.
3/5 - Turbidity remaining elevated since 3/2/18 storm event, ~ > 60 NTU.
3/2 - Turbidity still a problem.
2/23 - Turbidity trending up since 2/18/18.
2018

SL123(Jenkintown D) Data for Temple U. Station offline. Put in 4G according to Ryan Neuman email on 6/18.
8/3 – No signal since 5/2.
7/30 – No signal since 5/2.
7/27 – No signal since 5/2.
7/23 – No signal since 5/2.
7/20 – No signal since 5/2.

7/16 – No signal since 5/2.
7/13 – No signal since 5/2.
7/9 – No signal since 5/2.
7/6 – No signal since 5/2.
7/1 – No signal since 5/2.
6/11 – No signal since 5/2.
6/8 – No signal since 5/2.
6/1 – No signal since 5/2.
5/25 – No signal since 5/2.
5/21 – No signal since 5/2.
5/18 – No signal since 5/2.
5/14 – No signal since 5/2.
5/11 – No signal since 5/2.
5/7 – No signal since 5/2.
5/4 – Signals occur about 1 every two days. No signal since 5/2. Battery dropped to 3.49v on 4/30. Needs cleaning.
4/30 – No signals since 3 on 4/28, stopping at 14:31 EST. Needs cleaning of sensors. Battery had been consistently above 4 v.
4/27 – One signal 4/24, then two signals on 4/26; still no signals at night.
4/23 – Signal began on 4/22 at 9:31a EST, but signals very irregular and infrequent; no signals at night. Sensors appear to need cleaning. Battery >3.7v.
4/20 - No signal.
4/16 - No signal.
4/11 - No signal.
3/30 - No signal.
3/26 - No signal.
3/19 - Still no signal.
3/16 - Still no signal since 2/28.
3/12 - Still no signal since 2/28.
3/5 - No signal since 2/28.
3/2 - No signal since 2/28.
2/26 - No signal since 2/21 at 8p.
2/23 - Last signal was 2/21 at 8p. Loss of cell signal?
2/19 - Last signal was 2/17/18 at 12:56p.
2/16 - Big fouling problem.
2/12 - Fouling on sensors after storm event: water depth decreased but turbidity remains very high. Time reading behind by ~34 minutes.
2/5 - Needs cleaning.
2018

SL124(Jenkintown U) Data for Temple U. Station off line. Put in 4G according to Ryan Neuman email on 6/18.
8/3 – No signal since 6/17.
7/30 – No signal since 6/17.
7/27 - No signal since 6/17.
7/23 - No signal since 6/17.
7/20 - No signal since 6/17.
7/16 - No signal since 6/17.
7/13 - No signal since 6/17.
7/9 - No signal since 6/17.
7/6 - No signal since 6/17.
7/1 - No signal since 6/17. Is it offline?
6/28 - No signal since 6/17. Is it offline?
6/15 - Something was stuck on the sensors for 15 minutes on 6/13, and since it came off, turbidity appears unnaturally low and even to the present, with a couple of exceptions. Could these be true turbidity readings?

6/11 – Major discharge from rain event last night cleaned sensors, but turbidity above base level, and is >15 NTU.
6/8 – Turbidity elevated - ~20 NTU, needs cleaning.
6/1 – Sensors are fouled and need cleaning.
5/25 – Needs cleaning.
5/18 – Turbidity 8-12 NTU.
5/14 – Turbidity dropped but still >40 NTU.
5/11 – Turbidity ~200 NTU.
5/7 – Turbidity 350 NTU to 650 NTU.
5/4 – Fouled and sensors need cleaning.
4/30 – Fouled and sensors need cleaning.
4/27 – Needs cleaning, turbidity >250 NTU.
4/23 – Needs cleaning though turbidity went from >400 NTU to >200 NTU on 4/22.
4/20 – Base turbidity ~400 NTU since 4/16.
4/16 – Cleaned on 4/12, but fouled again since 4/16 storm event.
4/11 – Needs cleaning.
3/30 – Needs cleaning.
3/26 - Turbidity 360-375 NTU.
3/19 - Turbidity remains elevated since 3/2/18 storm event, base level increasing.
3/16 - Turbidity remains elevated since 3/2/18 storm event with large fluctuation, base range now 35-200 NTU. Needs cleaning.
3/12 - Turbidity remains elevated since 3/2/18 storm event.
3/5 - Turbidity remaining elevated since 3/2/18 storm event, ~ > 60 NTU.
2/23 - Turbidity elevated since 2/21, seems to need cleaning.
2/5 - Battery below 3.7v at night.
2/2 - Battery dipping below 3.7v at night since 1/16/18, and highly variable readings. Last high recharge 11/17/17.

2018

SL127(Jacobs U, Site 4) Rachel reports this station has very poor cell signal. Steve Tourto manages. Pressure sensor may be bad or may be jammed with debris.
9/24 – Last signal was 9/4/18.
9/21 – Last signal was 9/4/18. Water level became abnormal on 7/25.
9/17 – Last signal was 9/4/18.
9/6 – Last signal was 9/4/18. Depth remains flatlined. Battery is >3.8v.
8/31 –Last signal was 8/27/18. Depth remains flatlined. Battery declined but remains >3.8v.
8/27 –Depth remains flatlined. Battery declined but remains >3.8v.
8/23 – Rare signals on 8/21 and 8/22. Depth remains flatlined.
8/23 – Rare signals on 8/21 and 8/22. Depth remains flatlined.
8/20 – Last CTD and battery signals on 8/15.
8/17 – Depth reading totally flatlined and turbidity flatlined on 8/15.
8/10 – Depth reading totally flatlined.
8/6 – Last signal was 8/4. Depth readings remain in negative range.
8/3 – Depth readings remain in negative range. Frequency of signals are as rare as previously.
7/30 – Readings are as rare as previously. Depth readings in negative range.
7/27 – Readings are as rare as previously. Depth readings now in negative range. Needs cleaning.
7/23 – One signal on 7/21 and one on 7/23. Depth readings dropped but still abnormal (16152-19520mm).
7/20 – Depth changed on 7/17 and dropped to 23409-24060 mm. Conductivity remained typical. Battery around 4v.
7/16 – No signal since 7/14, depth remains at 29044 mm. Battery was around 4v.
7/13 – Depth sensor ceilinged at 29044mm since June 26. Last signal on 7/12; signals became less frequent since June.
7/9 – Depth sensor ceilinged at 29044mm since June 26. Signals became less frequent since June.
7/6 – Depth sensor not reading normally. Signals < 1/day.
7/1 – Depth sensor not reading normally. Signals very infrequent and irregular: about three per day. Transmitted battery signals indicate >4 v.

6/28 – Depth sensor not reading normally – reading 30 meters. Signals very infrequent: about three per day, only one today.
6/18 – Water depth varying unnaturally, suggests problem with depth sensor. Signals very infrequent.
6/1 – Signals very infrequent.
6/8 – Signals have become very infrequent, none in past 17+ hrs.
5/25 – May be fouled, and needs cleaning, turbidity >80 NTU. Signal sparse since 5/31.
5/25 – May be fouled, and needs cleaning, turbidity >80 NTU.
5/21 – Needs cleaning, turbidity >40 NTU.
5/18 – Storm reduced NTU, but still needs cleaning.
5/14 – Needs cleaning, fouled.
5/11 – Needs cleaning.
5/7 – Sensors need cleaning.
5/4 – Fouled and sensors need cleaning.
4/30 – Needs cleaning.
4/27 - Needs regular cleaning; turbidity >50 NTU, often >150 NTU. Frequent gaps in signal.
4/23 - Though cleaned on 3/28, needs regular cleaning. Frequent gaps in signal.
3/26 - Frequent gaps in signal. Turbidity continues to rise, now 300-590 NTU.
3/19 - Turbidity continues to rise, now above 340-350 NTU.
3/16 - Turbidity continues to rise, now above 300 NTU. Battery fluctuating greatly, should be checked?
3/12 - Turbidity continues to rise, now above 200 NTU since 3/6/18 and above 260 NTU since 3/10. Long gaps in signal (8 hr gap today). Water temperature still varies greatly, e.g., between 36°f and 48°f.
3/5 - Turbidity above 140 NTU since 3/3/18. Long gaps in signal. Water temperature varies greatly, e.g., between 36° f and 48° f.
3/2 - Turbidity above 100 NTU since 2/27. Long gaps in signal.
2/26 - Turbidity lower, but range of 77-102 NTU.
2/19 - Base turbidity remains high.
2/16 - Base turbidity high.
2/12 - Readings still variable; sometimes hours between readings. Readings were not regular when site was installed, but variability has increased.
2/9 - Readings still variable; sometimes hours between readings.
2/5 - Readings still variable.
2/2 - Logger is taking or transmitting measurements at uneven epochs for all sensors, logger temperature, and battery voltage: e.g., 5m, 10m, 20m, 30m, 40m, 50+m. Turbidity trending high since late Dec., never returned to baseline even after corrections from stream flow rate increase. Needs cleaning?

2018

SL128(Jacobs D, Mossimo property) David questions (10/15) if these signals are coming from sensors placed in the stream. Shannon reports sensors are not in the water because the CTD and Mayfly temperatures are identical.
6/6 – No signals since 5/26/19.
5/31 – No signals since 5/26/19.
5/27 – Frequent signals being sent since 5/22. Is station back on line? Please provide an update.
3/4 – Signal transmission began on 2/28/19, and one transmission on 3/4 but CTD signals indicate possible damage to CTD sensor. Turbidity was 234 NTU

2019
11/30 – No signals since 11/5/18.
11/16 – No signals since 11/5/18.
11/9 – No signals since 11/5/18; sensors might have been removed.
11/5 – The CTD signals appear abnormal because there was no increase in depth during major storm of 11/3, conductivity is 0, and water temp. appears abnormal. Battery is declining: 3.4-3.65 v.
10/26 – Signals more frequent (but still infrequent). CTD measurements are abnormal, e.g., since signals began again on 10/13, water and logger temps have been too close at all times. Turbidity might have dropped out. Battery seems ok.
10/19 – CTD signals coming infrequently since 10/17 (3 signals), but CTD measurements are abnormal, seems CTD is damaged. Battery v is OK.
10/19 – No signals since 10/17.
10/15 – Depth and water temp. signals began on 10/13, conductivity at 0. Turbidity began on 10/13.
9/21 – Last signals from all sensors and battery on 8/15/18.

8/31 – Last signals from all sensors and battery on 8/15/18.
8/27 – Last signals from all sensors and battery on 8/15/18.
8/23 – Last signals from all sensors and battery on 8/15/18.
8/20 – Last signals from all sensors and battery on 8/15/18.
8/17 – Signals less and less frequent, last one on 8/15 in morning. Battery was at 3.99v
8/3 – Turbidity elevated.
6/28 – Turbidity elevated, >20 NTU. Signals very infrequent
6/15 – Turbidity elevated and needs cleaning.
6/11 – Turbidity 50-80 NTU. Battery recovered to >3.7 v.
6/8 – Battery dropped to 3.47 v on 6/3, and was below 3.7 v for about 11 hrs on 6/3 and 6/4. Turbidity remains very elevated and needs cleaning.
6/1 – Battery dropped to new lows, but still >3.7v. Intervals between signals increasing since late April and May. Turbidity high and needs cleaning.
5/21 – Similar to many other sites, loss of signal as of 21:15 EST on 5/20/18. Signals returned at 12:06p EST, but not very regular.
5/18 – Needs cleaning, very fouled.
5/14 – Needs cleaning, very fouled.
5/11 – Needs cleaning.
5/7 – Needs cleaning.
5/4 – Needs cleaning.
4/30 – Conductivity has been fluctuating over 150 uS/cm in about 30 min. since early April, are these measurements accurate? Battery consistently >400v. Needs cleaning.
4/27 – Needs cleaning.
4/23 – Needs cleaning.
4/20 – Needs cleaning; baseline now ~45-200 NTU.
4/16 – Storm fouling with high turbidity.
3/26 – Turbidity rising since 3/22/18 storm. Conductivity historic peak on 3/22: 2116 us/cm
2/26 - Base turbidity remains very high since 2/11 (>380NTU).
2/23 - Base turbidity remains very high since 2/11 (360-940 NTU).
2/19 - Base turbidity remains very high since 2/11 (360-940 NTU).
2/16 - Base turbidity remains very high since 2/11.
2/12 - Fouling did not clear after storm event, remains at 1000 NTU. Needs cleaning.
2/9 - Fouling is frequent, though clear again. Is the site a problem?
2018

SL130 (W Branch Red Clay-Bucktoe Preserve) Baseline turbidity is 2-3 NTU. Diane McGovern saves the sd data. 6/20/20 has a bad 2G board; apparently there is no longer a strong enough 2G signal at that locations, so that station will have to be upgraded to a 4G LTE module. It's possible the current lack of signal drained the battery and is causing the board to act strangely.
7/11 – Sensors appear fouled after major rain even and stream is back at base level, turbidity is ~30 NTU.
6/27 – Turbidity very elevated at base flow indicating fouling.
6/20 – No data from this site since June 13. Battery was strong at that time.
6/14 – Turbidity remains very elevated at base flow, indicating fouled sensors.
6/6 – Turbidity is still very elevated even when at base flow, and sensors need cleaning.
5/30 – Turbidity is extremely elevated (~1000 NTU) at baseflow and sensors need attention.
4/20 – Turbidity is elevated above natural levels; signals are infrequent.
3/30, 4/8 – No online transmission since 3/18/20.
3/2 – Turbidity has become extremely flashy and above 200 NTU.
2/17 – Turbidity is rising while depth has fallen, and is elevated above natural levels (~20 NTU).
2/3 – Turbidity is mildly elevated and flashy, indicating that sensors are fouled; based on last storm, might be sediment on sensors.
1/20 – Turbidity is elevated above natural levels at lower flow, and sensors should be cleaned.
1/6 – Turbidity has increased beyond natural levels and indicates need for sensor cleaning.
2020
12/23 – Turbidity has slow been increasing and is now ~40 NTU while depth has decreased.
12/2 – Turbidity is significantly elevated and sensors need cleaning.
11/11 – Turbidity is progressively higher and flashy indicating significant fouling.
9/3 – No signal transmitted to either Dreamhoster or MMW.

8/27 – No signal transmitted since 7/10/19.
8/20 – No signal transmitted since 7/10/19.
8/14 – Still no signal transmitted since 7/10/19.
8/4 – No signal transmitted since 7/10/19. The length of this gap is not typical of this site.
7/5 – Turbidity is mildly elevated at base flow and sensors need cleaning.
6/9 – Turbidity is elevated after rain events and debris likely on sensors.
6/6 – Turbidity is mildly elevated during base flow.
5/27 – Although sensors were cleaned on 5/21, turbidity is 30-100 NTU and sensors need to be cleared and cleaned.
5/17 – Turbidity is elevated and flashy and sensors need to be cleared and cleaned.
5/3 – Turbidity remains elevated above natural levels at base flow, and sensors need cleaning.
4/29 – Sensors have not been cleaned except naturally and turbidity remains very elevated; sensors need cleaning.
4/26 – Sensors have not been cleaned except naturally and turbidity >30; sensors need cleaning.
4/19 – Turbidity is 300-450 NTU and sensors should be checked as turbidity is high enough to indicate being embedded/enclosed by debris.
4/12 – Turbidity is extremely elevated and sensors need cleaning.
4/8 – Turbidity is >200 NTU and sensors need cleaning.
4/5 – Turbidity is >140 NTU and sensors need cleaning.
3/30 – Turbidity is >120 NTU and sensors need cleaning.
3/25 – Sensors were naturally cleaned in last storm, but turbidity remains unnaturally elevated, and sensors need cleaning.
3/15 – Turbidity is elevated, 30-70 NTU, and sensors need cleaning.
3/11 – Though last storm did great job of naturally cleaning the sensors, turbidity is still mildly elevated and sensors should be cleaned.
3/4 – Turbidity is significantly elevated beyond natural levels and sensors need cleaning.
3/1 – Turbidity is significantly elevated and sensors have not been cleaned since past few storm events.
2/22 – Turbidity remains elevated after storm event and natural cleaning, and sensors need cleaning, should be checked for sediment on the sensors.
2/18 – Turbidity remains elevated and flashy, sensors need cleaning.
2/15 – Turbidity remains elevated and flashy, sensors need cleaning.
2/9 – Turbidity remains elevated (20-35 NTU) and flashy, sensors need cleaning.
2/4 – Turbidity remains elevated and flashy, sensors need cleaning.
2/1 – Turbidity remains elevated and flashy, sensors need cleaning.
1/28 – Sensors need cleaning, turbidity remains 50-100 NTU.
1/21 – Sensors need cleaning because turbidity is 50-100 NTU.
1/18 – Sensors need cleaning because turbidity is 60-160 NTU.
1/14 – Turbidity remains highly elevated 25-140 NTU, sensors need cleaning.
1/11 – Turbidity remains highly elevated with lower depth, sensors need cleaning.
1/5 – Turbidity is 45-100 NTU, sensors need cleaning.

2019

12/24 – Turbidity is 45-100 NTU, sensors need cleaning.
12/14 – Turbidity is 45-60 NTU, sensors need cleaning.
12/7 – Turbidity is 40-55 NTU, sensors need cleaning.
11/30 – Although turbidity is only 5-6.5 NTU, sensors do not appear to have been cleaned since 11/8/18 and this NTU is above the level at installation. This battery is usually above 3.7v, but fluctuates greatly, down to 2.65v, and could this be stabilized by recharging, or by checking logger for moisture in the box?
11/19 – Turbidity is mildly elevated but above natural levels after recent storms and depth returning to baseline; sensors need cleaning.
11/5 – Turbidity >200 NTU, sensors need cleaning.
11/2 – Turbidity is 100-200 NTU, sensors need cleaning.
10/29 – Turbidity fouled, sensors need cleaning.
10/26 – Turbidity >80 NTU, sensors need cleaning.
10/22 – Turbidity very variable with a median of 50 NTU, sensors need cleaning.
10/19 – Turbidity very high (>100 NTU) and sensors need cleaning.

10/15 – Sensors very fouled and need cleaning.
10/8 – Sensors need cleaning.
10/1 – Turbidity is elevated (80-150 NTU), and sensors look very fouled
9/28 – Turbidity is elevated, and looks like they are dirty and have material flapping around them.
9/24 – Turbidity is >100 NTU.
9/21 – Turbidity remains abnormally elevated.
9/17 – Turbidity is extremely elevated.
9/6 – Turbidity is extremely elevated.
8/31 – Sensors may have algae and have material around them.
8/27 – Turbidity sensor was naturally cleaned but remains elevated 30-55 NTU.
8/23 – Turbidity remains elevated with rapid changes.
8/20 – Turbidity remains elevated after drop in depth following storm event.
8/17 – Sensors need cleaning, turbidity 20-50 NTU.
8/10 – Sensors need cleaning, turbidity >20 NTU.
8/6 – Sensors need cleaning, after natural cleaning, turbidity remains mildly elevated, above natural level.
7/27 – Sensors need cleaning.
7/23 – Sensors need cleaning.
7/20 – Sensors need cleaning, turbidity >30 NTU.
7/16 – Sensors need cleaning, turbidity >30 NTU.
7/13 – Sensors need cleaning, turbidity increasing and now >30 NTU, maybe algae.
7/9 – Sensors need cleaning.
7/6 – Needs cleaning.
7/1 – Needs cleaning, maybe accumulating algae.
6/28 – Needs cleaning.
6/18 – Needs cleaning.
6/15 – Needs cleaning, sensors appear fouled.
6/11 – Needs cleaning.
6/8 – Needs cleaning, and has risen since mid May.
6/1 – Needs cleaning.
5/25 – Fouled and needs cleaning.
5/21 – Similar to many other sites, loss of signal as of 21:25 EST on 5/20/18. Signals returned at 12:00p EST. Needs cleaning.
5/18 – Needs cleaning.
5/14 – Needs cleaning.
5/11 – Needs cleaning.
5/7 – Needs cleaning.
5/4 – Needs cleaning.
4/30 – Needs cleaning.
4/27 – Needs cleaning.
4/23 – Needs cleaning.
4/20 – Needs cleaning.
4/16 – Storm cleaned but still needs cleaning.
3/30 – Turbidity rising since 3/24, now baseline ~150 NTU.
3/26 – after cleaning, turbidity high again – range 75-395 NTU.
3/16 – Fouling remains in place.
3/12 - Turbidity remains high since 3/2, could sensor optic window be scratched?
3/5 - Turbidity high since 3/2, looks like fouling and dirty sensor
2/5 - Last flush of water brought turbidity back to baseline.
2/2 - Turbidity trending high since 1/29; requires cleaning?
2018

SL131(Little Lehigh at Mill Brook Farms) David will check if solar cells blocked-10/19/18. Baseline turbidity is ~1.5 NTU. Ebel is waiting for levels to go down to address the problem. Data is recorded on SD card, but not transmitted. Plan to move the stations when conditions are favorable (6/5/19). Upgrading to 4G soon.
7/11 - Battery is dropping and now 3.67v. Sensors require cleaning in order to see storm-related changes in turbidity.
6/27 - Turbidity is above natural levels and indicates sensors need to be cleaned.

6/20 - Turbidity is above natural levels and indicates sensors need to be cleaned.
6/14 - Turbidity is above natural levels and indicates fouled sensors.
6/6 - Turbidity is highly elevated and sensors need to be cleaned.
5/30 - Turbidity is highly elevated, ~80 NTU during base flow and sensors need to be cleaned.
5/19 - Turbidity is highly elevated, ~110 NTU during base flow and sensors need to be cleaned.
5/7 - Site is transmitting again. Appears sensors were cleared but turbidity NTU is not back to baseline during low flow, and turbidity has become elevated again.
1/6, 1/13, 1/20, 1/27, 2/3, 2/10, 2/17, 2/24, 3/2, 3/30, 4/8, 4/20, 4/28 - No transmissions

2020

12/9, 12/16, 12/23, 12/31 - No transmissions
12/2 - Turbidity is up near 1400 NTU since 11/24/19.
11/22 - Turbidity is mildly elevated at base flow indicating need to clean sensors. Battery was recharged.
11/11 - Turbidity >280 NTU, needs clearing and cleaning. Battery at 3.58 v.
11/1 - Hicks will upgrade to 4G soon.
10/22 - Site went back online on 9/23/19. On 10/5/19 battery dropped to 3.37v and the last signal recorded on MMW is 5:30 am on 10/5. Was it removed from the stream?
8/27 - No signals from this site.
8/14 - This site has not yet been moved and re-deployed.
8/4 - No signals transmitted to either portal since 4/18/19. Sensors will be moved to avoid sediment covering them.
6/6 - Ebel is waiting for levels to go down to address the problem. Data is recorded on SD card, but not transmitted. Plan to move the stations when conditions are favorable (6/5/19).
5/31 - No signals since 4/30.
5/27 - No signals since 4/30.
5/13 - No signals since 4/30. Any concerns about the station? Has data been backed up?
5/10 – Last transmission on 4/30/19. Turbidity 385.7 NTU and battery was 4.11 v.
5/3 – One signal on 4/30/19. At that time, Turbidity remained very high (385.7 NTU) and sensors need to be cleaned, and data backed up.
4/29 – Last signal on 4/16. Unable to check whether data is sending to MMW as it is inaccessible.
4/26 – Last signal on 4/16. Unable to check whether data is sending to MMW as it is inaccessible.
4/19 – One signal submitted on 4/16. At that time, turbidity was 979 NTU indicating that sensors could be buried in debris and should be cleaned. Could you confirm that data is backed up?
4/12 – No signals transmitted since 3/16 to either Dreamhoster or MonitorMyWatershed. Is there a problem?
4/8 – No signals transmitted since 3/16 to either Dreamhoster or MonitorMyWatershed. Station should be checked and data backed up.
4/5 – No signals transmitted since 3/16. Turbidity was extremely elevated, battery >4v. Station should be checked and data backed up.
3/30 – Turbidity is 150-200 NTU, and sensors need cleaning. Water depth and conductivity signals are shown between Mar13 and Mar16 but not after, and there is no conductivity signal.
3/25 – Last transmission on 3/16/19 indicated that turbidity was 326 NTU. Sensors need cleaning.
3/15 – Last transmission on 3/13/19 indicated that turbidity was 139 NTU. Sensors need cleaning.
3/11 – Last transmission on 3/2/19 indicated that turbidity was elevated beyond natural levels. Has this site just lost cellular signal, or it is turned off or damaged?
3/4 – Last transmission on 3/2/19 indicated that turbidity was elevated beyond natural levels and sensors need cleaning.
3/1 – Though signal transmission is infrequent, turbidity is elevated persistently beyond natural levels, and sensors need to be cleaned.
2/22 – Last transmission was today and turbidity was 52 NTU, indicating that sensors need cleaning.
2/18 – Last transmission was 2/13/19.
2/15 – Last transmission was 2/13/19. Sensors need cleaning, as turbidity was 22 NTU.
2/9 –Last transmission was 2/9/19 at 3:15a, at which time turbidity was 26 NTU, and sensors need cleaning.
2/4 –Last transmission was 2/2/19. At that time turbidity was 73 NTU, battery was 3.93 v.
2/1 –Last transmission was 1/30/19. At that time turbidity was 72 NTU, battery was 3.94 v.
1/28 –Last transmission was 1/26/19 at 22:15. At that time turbidity had been highly elevated for a week. Sensors need cleaning. Battery was 3.93v.

1/21 –Last transmission was 1/19/19 at 1:06a. Frequency of signals has fallen off at this station. At that time water temp was above 0°C, turbidity was relatively low and battery was stable >3.7v.
1/18 –Base turbidity >6 NTU and sensors need cleaning. Battery is 3.74-3.78 v.
1/14 –Base turbidity remains mildly elevated (9-13 NTU), and sensors need cleaning. Battery is 3.73-3.78 v.
1/11 –Base turbidity remains mildly elevated, and sensors need cleaning. Battery is stable at
1/5 –Base turbidity has been mildly elevated for a month, and sensors need cleaning. Battery is stable at 3.64-3.73v, needs recharging.

2019

12/31 –Turbidity is mildly elevated after rain event, sensors need cleaning. Battery stable at 3.67-3.73v, should be recharged.
12/24 –Turbidity is >50 NTU, above storm level, sensors need cleaning. Battery 3.62-3.71v.
11/30 –Turbidity very flashy and highly elevated. Battery improved, now at 3.64-3.74v.
11/19 –Battery stable at 3.55-3.62v.
11/16 –Battery stable at 3.55-3.67v.
11/9 – Sensors are blocked, turbidity >200 NTU. Battery stable but 3.52-3.55v.
11/5 – Sensors were cleaned after storm of 11/3, but blocked again. At same time that sensors were cleaned, conductivity went from 163 to 399 uS/cm. However, cleaning of sensors appeared natural because turbidity went down to 8-9 NTU. Battery stable, 3.52-3.62 v.
10/29 – Sensors were either purposefully or naturally unblocked, but turbidity remains above natural level. Battery stable at 3.5-3.55v.
10/26 – Sensors were either purposefully or naturally unblocked, but turbidity remains around 9 NTU and may be algae on sensors. Battery stable at 3.5-3.55v.
10/22 – Sensors still blocked (turbidity ~1400 NTU), need cleaning. Battery stable at 3.5-3.55v.
10/19 – Sensors are blocked (turbidity ~1400 NTU), need cleaning. Battery at 3.49-3.5v.
10/15 – Sensors need cleaning. Battery at 3.5-3.53v.
10/8 – Turbidity sensor is blocked. Battery at base of 3.53-3.56v.
10/2 – Turbidity sensor is blocked (>575 NTU). Battery at base of 3.53-3.58v for past 9 days.
9/28 – Turbidity still extremely elevated; are conductivity measurements accurate? Steady decline in battery
9/24 – Turbidity still extremely elevated; are conductivity measurements accurate? Steady decline in battery since 8/7, now 3.55-3.58 v.
9/21 – Turbidity still extremely elevated. Steady decline in battery since 8/7, now 3.58 v.
9/17 – Turbidity now consistently above 675 NTU. Steady decline in battery since 8/7, now 3.59-3.64 v.
9/6 – Turbidity consistently >500 NTU. Steady decline in battery since 8/7, now 3.74-3.78 v.
8/27 – Turbidity consistently >450 NTU. Steady decline in battery since 8/7, now 3.82v.
8/23 – Turbidity consistently >600 NTU. Steady decline in battery since 8/7, now 3.85v.
8/20 – Turbidity consistently >450 NTU.
8/17 – Turbidity consistently >450 NTU.
8/10 – Turbidity sensor must be blocked, consistently >450 NTU.
8/6 – Turbidity highly elevated, needs cleaning.
8/3 – Turbidity highly elevated, needs cleaning.
7/30 – Turbidity mildly elevated, needs cleaning.
7/27 – Turbidity mildly elevated, needs cleaning. Does not appear to have been cleaned in past month.
7/23 – Turbidity remains elevated.
7/20 – Turbidity remains elevated, >17 NTU.
7/16 – Appears to have been cleaned at 8:25 EST today, but turbidity remains above base levels, and never came below: 13-15 NTU.
7/13 – Sensors do not appear to have been cleaned since early June or earlier, now >550 NTU.
7/9 – Sensors need cleaning.
7/6 – Needs cleaning.
7/1 – Material may be stuck on sensors, turbidity elevated 100-250 NTU.
6/28 – Material may be stuck on sensors, turbidity elevated.
6/18 – Turbidity ~80 NTU.
6/15 – Turbidity ~15 NTU.
6/11 – Turbidity high but after major increase in water discharge from storm last night.
6/8 – Strange fluctuations in water levels in June, and continuing. Needs cleaning, turbidity rising.

5/21 – Similar to many other sites, loss of signal as of 21:10 EST on 5/20/18. Signals regular beginning 12:10p EST.
5/14 – Something stuck on or under sensor, turbidity >1400 NTU.
5/11 – Needs cleaning.
4/16 – Needs cleaning.
4/11 – Extreme variability in conductivity from 4/9-4/10, temporally related to turbidity signal. This site has occasional gaps in signal.
3/30 – Needs cleaning.
3/19 – Sensors need cleaning.
3/16 – Sensors need cleaning.
2/26 - Turbidity/fouling usually above 1,000 NTU.
2/23 - Turbidity/fouling slightly slower, but remains above 1,000 NTU.
2/19 - Turbidity/fouling remains very high with very little change in level – ~ 1400 NTU. Perhaps something blocking the turbidity sensor.
2/16 - Turbidity/fouling remains very high – close to 1400 NTU. Strange drop in turb., rise, drop, and rise again in very short time.
2/12 - Peak depth delayed at this site compared to others but turbidity remains very high as depth is decreasing.
2018

SL132(Mill C-Hickory Hills) Shannon will revisit/troubleshoot, good cell signal. Baseline turbidity is <1 NTU.
5/19 – Turbidity is elevated above natural levels, >20 NTU, indicating sensors should be cleaned.
5/7 – Turbidity is elevated above natural levels and increasing.
4/8 – Turbidity remains high and flashy after rain event, and higher since last week.
3/30 – Turbidity is higher than natural levels, suggesting sensors are fouled.
3/2 – Turbidity has risen and is flashy suggesting sensors are fouled.
2/24 – Turbidity has risen and is flashy suggesting sensors are fouled. Major conductivity spike, change from 400 uS/cm to 1400 uS/cm in progress at 2pm today.
2/17 – Turbidity is elevated above base level while water depth is low, suggesting fouling. Battery has dropped to <3.7 v; consider recharging the battery.
2020
10/22 – Battery dropping quickly, now 3.5v. Turbidity is mildly elevated at base low suggesting sensors need cleaning.
10/1 – Data sent again beginning 9/27/19.
9/19 – Data stopped being sent on 9/15 to MMW, battery at 3.6v.
9/9 – Battery was recharged on 8/26 but began to drop immediately, now at 3.73v. This battery developed the problem of dropping after recharging about 8/1/19. Do you need to replace the battery or is there another reason?
8/20 – Battery may need to be recharged because it is persistently dropping and now 3.65 v.
6/19 – Turbidity has risen since last major rain events and is elevated beyond base levels indicating debris on sensors.
6/6 – Turbidity is elevated and sensors appear fouled.
5/13 – Unable to check site due to failure of visualization of data on MonMW. Is data backed up?
5/10 – Unable to check site due to failure of visualization of data on MonMW.
5/3 – Unable to check site due to inability to access Monitor My Watershed.
4/29 – Unable to check site due to inability to access Monitor My Watershed.
4/26 – Unable to check site due to inability to access Monitor My Watershed.
4/19 – Turbidity is elevated at a level that likely indicates debris on sensors.
3/30 – Turbidity has become more elevated, now >140 NTU, and sensors need cleaning.
3/25 – Turbidity has become more elevated since last storm event, now 50 NTU, and sensors need cleaning.
3/15 – Turbidity is elevated at baseflow and sensors need cleaning.
3/11 – Turbidity remains very elevated after depth recedes from last storm, and sensors need cleaning.
3/4 – Turbidity remains >50 NTU and sensors need cleaning.
3/1 – Turbidity has become very elevated >100 NTU and sensors are increasingly fouled after last two storm events.
2/22 – Turbidity has become very elevated since 2/15/19, and now 30-70 NTU regardless of changes in depth.
2/18 – Turbidity is elevated >20 NTU, and sensors need cleaning after 2/12/19 storm.

2/15 – Transmissions being sent to Monitor My Watershed. Visualized dataset gives data at future times, that is, as of 16:00 the data was being reported for 19:35.
2/4 – Transmissions being sent to Monitor My Watershed, but only given up to 1/31/19. At that time, turbidity was <0.2 NTU
1/28 – Transmissions being sent to Monitor My Watershed, but only given up to 1/21/19. On 1/21 turbidity was low/at natural level, and battery was ~4v.
1/21 – No transmissions since 1/18/19 at 11:55a. Transmission was very regular until that time. At that time water temperature was >0^{o}C. Were sensors removed? Station should be checked. At last signal turbidity was 45-55 NTU, and battery was stable >4v.
1/18 – Sensors need cleaning; turbidity is 35-60 NTU.
1/14 – Turbidity elevated and flashy, and sensors need cleaning.
1/11 – Turbidity elevated, and sensors need cleaning.
11/19 – Turbidity elevated since last storms, and sensors need cleaning.
11/9 – Turbidity mildly elevated and sensors need cleaning.
11/5 – Sensors may need cleaning because turbidity is above natural level for this site. This battery is fluctuating often, but remains >3.7v
8/20 – Turbidity appears blocked, >750 NTU.
8/17 – Turbidity appears blocked, remains >600 NTU.
8/10 – Turbidity appears blocked, remains extremely elevated.
8/6 – Turbidity remains very elevated: 600-1500 NTU.
8/3 – Turbidity remains very elevated: 600-1500 NTU.
7/30 – Looks like something stuck on sensors due to sudden change in turbidity: turbidity >1500 NTU.
7/1 – Turbidity elevated, needs cleaning.
6/28 – Turbidity elevated, needs cleaning.
5/21 – Similar to many other sites, loss of signal as of 21:15 EST on 5/20/18. Signals regular beginning 12:00p EST. Turbidity is mildly elevated ~10 NTU.
5/18 – Appears to have been cleaned by storm flow. Still inconsistent signal.
5/14 – Needs cleaning since rain event that produced historical high depth (since installation).
5/11 – Back on line.
5/7 – No signal since 4/21.
5/4 – No signal since 4/21.
4/30 – No signal since 4/21.
4/27 – No signal since 4/21. Last battery reading was 4.15 v.
4/23 – Irregular signal and no signal since 4/19 at 1p EST.
4/20 – Irregular signal and no signal since 4/19 at 1p EST; may be poor cellular coverage. Battery >4v.
4/16 – Irregular signal; may be poor cellular coverage.
4/11 – No signal since 4/8.
3/16 – Was cleaned on 3/14, but fouled again on 3/15, perhaps needs cleaning in area under sensors?
3/12 - Turbidity ~ 300 NTU, far above baseline, and needs cleaning. Battery showing large gradient changes.
3/5 - Turbidity above 200 NTU now 250 NTU since 3/2 storm event. Battery showing severe gradient changes, perhaps solar panel need cleaning?
2018

SL133(Upper Paulinskill-Sussex C) Kristine Rogers and Nature Conservancy. Shannon will visit week of 6/11-15 to replace the bad sensor. Baseline turbidity is 1.5-3 NTU. 5/28/19 Bressler: battery changes do not appear to represent actual voltage, and is a problem of the Mayfly logger per Hicks. 9/18/19; Bressler requests Damiano to add turbidity to MMW, and Hicks will check station in September. Kristine Rogers tried to resynchronize battery with no change in flashiness. The water comes out of a culvert here, and is about 2 feet deep.
5/19 – Turbidity mildly elevated beyond natural levels at base flow, indicating sensors should be cleaned.
4/28 – Turbidity has become very flashy indicating materials flapping on sensors.
4/8 – Turbidity is flashy and increased to 14-18 NTU indicating debris/sediment/algae on the sensors.
3/30 – Turbidity is flashy and slowly increasing (~8-9 NTU) indicating debris/sediment/algae on the sensors.
2/24 – Turbidity is very flashy indicating debris on the sensors.
2/10 – Turbidity is very flashy indicating debris on the sensors. Battery is 3.7-3.8 v, and could be charged.
1/20 – Turbidity is elevated beyond natural levels and very flashy. Battery is around 3.7 v.
1/6 – Turbidity is highly flashy. Battery is around 3.7 v.
2020

12/16 – Turbidity is extremely high and very flashy since 12/9 – clean sensors so no damage occurs.
12/9 – Turbidity is slowly increasing indicating fouling.
12/2 – Turbidity is elevated and very flashy indicating fouling of sensors.
11/22 – Turbidity is mildly elevated at base flow indicating need to clean sensors.
11/1 – Turbidity is very flashy as depth recedes after storm on 11/1, and sensors likely fouled.
10/7 – Turbidity is elevated and sensors need to be cleaned
10/1 – Turbidity has become very elevated and flashy indicating debris on the sensors. It might be affecting conductivity because it coincides with big increase of about 200 uS/cm, which seems unrelated to water depth change. Else, is there another source of increased conductivity?
9/19 – Battery still too flashy and low (see notes above).
9/3 – Turbidity is the only variable that does not appear on MMW – can it be added? Full history of data apparently overloads Dreamhoster, so cannot check history beyond current 48 hours. Battery continues to drop down to 3.6 v.
8/20 – Battery continues to drop down to 3.6 v.
8/14 – Resynchronizing the battery did not solve the problem, though the battery does not reach as low a level. However it continues to flag down to 3.6-3.7 v. Could the battery be slightly wet? It does not take much moisture to affect the battery.
8/4 – Battery flagging, as low as 2.9 v; extreme flagging is atypical for this site. Try resynchronizing battery and solar panel.
7/5 – Battery continues to give abnormal signals.
6/28 – Battery is giving abnormal signals. Per Hicks recommendation in Wikiwatershed on 6/6/19: "The easiest fix seems to be just turning off the Mayfly the next time someone makes a site visit. Swap out the memory card (because it's good to do that anytime you visit a station), and then unplug the battery and solar panel from the Mayfly and wait a few seconds. Plug the panel and battery back in (make sure to put them back in the correct sockets!) and turn the logger back on. The battery readings should stabilize and read normally for many months now."
6/19 – Problems with battery signals / Mayfly logger have been almost constant since 6/19 except for one hour during mid afternoon today.
6/6 – Problems with display or Mayfly logger continue.
5/31 – Is there a problem with the CTD sensor or the Mayfly logger?: Conductivity, usually around 400+ to 600+ uS/cm, went to 169,260 uS/cm on 5/30/19 between 13:21 EST to 19:20 EST (data points in that period missing from online transmissions). Depth declined abnormally during this same period. Battery readings continue to be abnormal.
5/27 – Although sensors were cleaned on 5/24, turbidity has arise to >10 NTU during baseflow and sensors need to be cleaned. Battery has frequent periods of going from 15 v to 0 v and need to be replaced.
5/17 – Turbidity remains mildly flashy.
5/13 – Turbidity has become very flashy indicating sensors are fouled.
4/26 – Battery dropped to 3.46v, but recovered to 4.05. Consider checking battery.
4/12 – Sensors have become fouled with debris, as giving natural low levels of NTU but highly flashy.
4/5 – Turbidity indicates that sensors are fouled; recent storm events have left sediment on many sensors.
3/25 – Turbidity is above 300 NTU and flashy; sensors need cleaning.
3/15 – Turbidity is above 250 NTU and flashy; sensors need cleaning.
3/11 – Turbidity is 200-600+ NTU. Sensors need to be cleaned.
3/4 – Turbidity remains highly elevated and is flashy. Sensors need to be cleaned.
3/1 – Turbidity is elevated after depth declined after last two storm events. Sensors need to be cleaned.
1/18 – Turbidity is low/normal without flashiness, so debris caught on sensors should be checked.
1/14 – Turbidity is flashy, and sensors should be checked.
12/31 – Turbidity is flashy again, these sensors require constant cleaning.
12/24 – Turbidity is extremely flashy and sensors need cleaning.
12/14 – Turbidity is flashing and sensor need cleaning.
11/30 – No CTD transmissions. Turbidity very flashy, and may have something flapping against it (1.7-300 NTU)?
11/19 – CTD failed – all signals at 0 while turbidity and battery appear to be working. Turbidity is highly elevated and sensors appear wrapped and material may be flapping on it.
11/16 – CTD appears to have failed – all signals at 0 while turbidity and battery appear normal. Kristine will check, and Shannon.

9/6 – New, very rapid fluctuations in depth, conductivity, and water temp. Depth going from 435mm to 0mm in 10 minutes. Turbidity still abnormally flat. Battery highly variable since August, going below 2.9v.
8/31 – All signals at good levels except turbidity sensor which seems abnormally low because turbidity high consistently below 0 NTU, and turbidity high consistently <1 NTU.
8/27 – Depth, conductivity, turbidity-low, and water temp. have flatlined though mayfly still sending signals. Battery fluctuating greatly, down to 2.87v.
8/23 – Battery changing rapidly, could be moisture in box.
8/17 – Battery dipping daily to 3.1-3.2v since 8/14/18, still recovers to at least 4v.
7/30 – Battery continues to dip <3.7v daily, recovers to at least 4v.
7/27 – Battery dipped to 3.15v on 7/27, still recovering.
7/6 – Battery dips to <3.7 v every day, recovers >4.0 v.
7/1 – Battery dips to <3.7 v every day, recovers >4.0 v.
6/18 –Conductivity and depth signals are bad.
6/15 – Turbidity mildly elevated. Conductivity signals bad. Battery still dips but remaining just >3.7v.
6/11 – Something is wrong with the conductivity signals. Turbidity remains above base level. Battery still dips but remaining just >3.7v.
6/8 – Something is wrong with the conductivity signals. Turbidity remains above base level. Battery <3.7v mid-day on June 6, 7, 8, which is new problem.
5/25 – Needs cleaning, although turbidity is lower and only 15-20 NTU, and may have been cleaned on May 23, it is not its base level.
5/21 – Similar to many other sites, loss of signal as of 21:15 EST on 5/20/18; signals regular again as of
5/18 – Needs cleaning.
5/14 – Needs cleaning.
5/11 – The sensors appear to have been cleaned, but only to a baseline of ~25 NTU. This is above the base-line levels seen after installation, but conductivity baseline is also very high at this site, ~1000 uS/cm.
5/7 – Needs cleaning.
5/4 – Needs cleaning.
4/30 – Needs cleaning.
4/27 – Though around 40 NTU and relatively low for this site, needs cleaning as baseline NTU is <5 NTU.
4/16 – Battery going below 3.7v since 4/14, down to 3.4 on 4/16 during daylight. Conductivity dropped to -2618.
4/11 – Base turbidity elevated since 4/3. Battery recovered and signals are regular.
3/16 - Signals have always been very regular at 5 min. intervals until 3/13/18 at 12noon. Signals are now variable. So unless cellular coverage changed since 3/13/18, the battery may be slowly failing. Conductivity consistently higher, now around 1300 us/cm.
3/12 - Conductivity consistently trending higher, now 1100 – 1250 us/cm. Turbidity high since 3/2 event, >300 NTU.
3/5 - Turbidity high since 3/2 event, >300 NTU.
3/2 - Turbidity high since 2/26 and not cleared by heightened depth since 3/2 event.
2/16 - Turbidity peaks frequent since 2/14.
2/5 - Historic high conductivity 3133 us/cm on 2/5/18. See other notes below.
2018

SL134(Mine Hole at Foordemoor Rd) Baseline turbidity is <1 NTU.
6/27 – Turbidity is mildly elevated above natural levels indicating need to clean sensors.
6/20 – Turbidity is mildly elevated above natural levels indicating need to clean sensors.
6/14 – Turbidity is mildly elevated above natural levels indicating fouled sensors.
6/6 – Stream flow appears to have naturally cleaned the sensors, but turbidity remains above natural levels (~17 NTU) indicating sensors should be cleaned.
5/30 – Turbidity is very high (50-60 NTU) and flashy at base flow, and sensors need cleaning.
5/19 – Turbidity is increasing and now ~40 NTU at base flow.
3/30 – Conductivity is 0 to 10 uS/cm – is this natural for this site?
1/13 – Battery dropped below 3.5v, recovers to 3.55v.
1/6 – Battery continues to be 3.5 v, which is the lowest it has been in the past year, and could destabilize the station.
2020
12/31 – Battery dropping during past week, now 3.5 v.

12/23 – Battery has risen to 3.7 v but consider recharging battery.
12/16 – Battery below 3.7 v.
11/1 – Battery is dropping since 10/16/19, now between 3.7v and 3.8v.
10/7 – Turbidity is typically in negative range (e.g., -25 to -15 NTU) since 9/27/19, sometimes during significant increases in water depth. Sometimes it goes into the positive range, such as for a half hour today, indicating fouling as water increase was only about 5-8 mm. Sensors should be closely examined.
9/19 – Turbidity is elevated at base flow indicating sensors need to be cleaned.
9/3 – Turbidity is mildly elevated at base flow above natural levels indicating sensors need to be cleaned.
8/27 – Turbidity is mildly elevated at base flow above natural levels.
8/20 – Turbidity is highly elevated and sensors need to be cleaned.
8/14 – Turbidity is elevated beyond natural levels as stream returned to base flow, and sensors need to be cleaned.
8/4 – Turbidity recently became highly elevated, indicating debris on sensors.
7/24 – Turbidity is mildly elevated, indicating sensors appear to need cleaning.
7/5 – Turbidity is highly elevated at base flow, indicating sensors are fouled.
6/28 – Turbidity has become persistently elevated at base flow, indicating sensors are fouled.
5/17 – Turbidity is continuously extremely elevated, and sensors should be cleaned. Are the very low conductivity measurements, which have been found since baseline, natural for this area?
5/13 – Turbidity varies between >1300 NTU and 15 NTU, suggesting that a lot of debris is packing onto, and falling off of, the sensors. Conductivity levels do not appear natural as it is flashy and going to 0 uS/cm when the depth is >750mm, and could indicate a problem with the CTD sensor. It would be helpful to check the station.
5/10 – Despite natural storm cleaning, the turbidity has not reached natural levels and sensors do not appear to have been cleaned.
5/3 – Turbidity remains highly elevated and flashy suggesting major fouling of sensors since April 21.
4/29 – Turbidity is 200-800 NTU and flashy suggesting major fouling of sensors since April 21.
4/26 – Turbidity is elevated and flashy suggesting the sensors may have debris on them.
4/19 – Turbidity is mildly elevated and flashy suggesting the sensors may have debris on them.
3/4 – Turbidity is elevated and very flashy. Sensors need to be cleaned.
2/9 – Turbidity is flashy and sensors should be cleaned.
1/21 – Turbidity is still >5 NTU and sensors should be cleaned. Water is at 0^{o}C.
1/18 – Appears sensors might have been cleaned, but turbidity is still >5 NTU and sensors should be scrubbed.
1/14 – Turbidity is flashy, and sensors should be checked. Battery better (3.82-3.96v).
11/30 – Battery stable at 3.67-3.74v.
11/19 – Battery stable at 3.64-3.74v.
11/16 – Battery declined, at base of 3.64-3.65v.
11/9 – Last signal was 11/6/18 during a big rain event.
10/19 – Sensors are fouled (need cleaning turbidity >500 NTU).
10/15 – Sensors need cleaning. Battery recovered.
10/8 – Battery went down to 1v on 10/7, returned to ~3.6v. Stroud aware of this.
9/28 – Conductivity became erratic, going to 0 uS/cm on 9/25 and 9/28.
9/6 – Turbidity keeps rising, up to 1400 NTU.
8/31 – Turbidity suddenly rose to >1200 NTU and plateaued, suggesting something stuck around sensors. Also may have algae on sensors.
8/27 – Sensors need cleaning.
8/23 – Turbidity very elevated after water depth declined, >60 NTU.
8/20 – Turbidity >50 NTU.
8/17 – Turbidity very elevated for this site, since last flooding on 8/14/18 and sensors appear fouled even though depth still greater than normal.
5/21 – Similar to many other sites, loss of signal as of 21:15 EST on 5/20/18; signals regular again as of 12:01 EST.
5/11 – Needs cleaning – maybe something stuck on sensor and flapping in the way of the optic window.
5/7 – Another extreme peak in conductivity on May 7, rising from the typical ~27 uS/cm to 685 uS/cm in 3.3 hrs. These two peaks are only extreme levels of conductivity since installation in Oct. 2017. Needs cleaning – turbidity >5 NTU to 13 NTU.

4/30 – Conductivity rose from 25 uS/cm to 150 uS/cm in two hours, then to 566 uS/cm in two hours, and then to historic level of 685 uS/cm in 30 minutes. Then it dropped to 24 uS/cm in 30 minutes.
4/20 – Conductivity dropping to 0 uS/cm frequently from 4/16-4/18. Battery consistently >3.7v.
3/16 – Mild fouling since 3/14, atypical of this site.
3/5 - Battery may have been replaced, now >4v. However, conductivity sensor still variable and dropping. Low turbidity sensor giving values typically between .8 to .9 NTU and only once as high as 1.3 NTU. High turbidity reading between -.2 to -.1 NTU. Do these indicate a problem?
3/2 - Battery range remains 3.5-3.65v, and might be affecting the stability of conductivity measurements, or there is another problem with the conductivity sensory because base and peak conductivity keeps lowering throughout the winter.
2/26 - Battery range 3.5-3.65v.
2/23 - Conductivity has been trending down since installation in October, sometimes at 0. Is there a problem with the sensor? Battery low but trending up. Per Shannon, this conductivity sensor is dead.
2/19 - Battery low but trending up.
2/16 - Battery low.
2/12 - Battery continues to decline, now below 3.5v in past 5 days.
2/9 - Battery continues to be consistently <3.7v. Is this causing the extreme variability in all other sensor measurement? Shannon thinks this is a problem with the sensor itself.
2/5 - Battery continues to be consistently <3.7v.
2/2 - Battery consistently <3.7v (all 24 hr) since 12/8/17.
2018

SL135(Pickering U, Montg. Sch.) Baseline turbidity is <2 NTU.
6/6 – Turbidity has become elevated since rain event on 6/4.
5/19– Turbidity has become very flashy and elevated at base flow.
5/7– Base turbidity remains low after cleaning on 5/3, and base turbidity remains low but is now very flashy.
4/28– Sensors were cleaned a week ago but have become flashy though returning to normal NTU, indicating material is flapping on sensors.
2/17, 2/24, 3/2 – Station offline. Data was saved on sd card. Armstrong brought in cellular board to Hicks. Data is being reliably saved on sd card.
2/10– Station went offline.
1/6– Battery is slowly dropping since last recharged to 4.14 v on 12/20; now ~3.9 v.
2020
11/1– Turbidity is flashy after water depth receded after major storm last night. Battery is dropping but >3.8v.
10/22– Turbidity is mildly elevated after the rain event on 10/20-21.
4/19– Turbidity has become elevated and sensors need cleaning.
2/18– Turbidity mildly elevated, and sensors need cleaning.
2/1– Turbidity mildly elevated after storm event, and sensors need cleaning.
1/5– Turbidity mildly elevated and sensors need cleaning.
2019
12/14 – Turbidity mildly elevated and needs cleaning.
11/16 – Turbidity became elevated during low flow (5-14 NTU), and sensors need cleaning.
10/29 – Turbidity mildly elevated.
10/15 – Sensors need cleaning.
10/8 – Sensors need cleaning.
10/1 – Turbidity mildly elevated (5-6 NTU), will clean. Battery dropped to 2.91, recovers to 3.8-3.9v; will check for moisture.
9/21 – Turbidity mildly elevated, may be algae and needs cleaning. Battery dropped to 3.1, recovers to 3.8-3.9v.
9/17 – Fewer incidents of spikes in conductivity, but another occurred on 9/16. Battery dropped to 2.9 on 9/17 and trend is recovery to <3.9v.
9/6 – Continuing spikes in conductivity. Battery dropped to 3.05v.
8/31 – Battery dropped to 3.0v. Still rapid elevations in conductivity since 8/14, conductivity peaks are less high, but still greater than 100 uS/cm in short periods of minutes.
8/27 – Battery dropped to 3.5v. Still rapid elevations since 8/14, conductivity now goes from base level of ~250 uS/cm, to 550

8/23 – Battery dropped to 3.5v. Still rapid elevations of conductivity from base level of ~250 uS/cm, as high as 550 uS/cm.
8/17 – Turbidity mildly elevated, needs cleaning. Was cleaned on 8/10, but elevated since storm on 8/13/18.
8/10 – Turbidity mildly elevated, needs cleaning.
7/23 – Needs cleaning.
7/1 – Needs cleaning.
6/28 – Needs cleaning.
6/18 – Turbidity mildly elevated.
6/15 – Turbidity mildly elevated. Battery went <3.7v once on 6/14/18,
5/25 – Battery often <3.7 v.
5/21 – Similar to many other sites, loss of signal as of 21:11 EST on 5/20/18; only two signals on 5/21, but most recent signal is current. Battery <3.7 v for a couple of hours on 5/20/18.
5/11 – Will check to see if battery benefits from recharging.
5/7 – Needs cleaning. Battery >3.7 v since May 4.
5/4 – Battery dropped <3.7 three times since May 1.
4/30 – Needs cleaning since 4/7. Battery unstable but >3.8v
4/11 – Needs cleaning since 4/7.
3/30 – Needs cleaning. Signals remain regular.
3/26 – Needs cleaning. Signals have been regular in past week.
3/12 - Drop-out of signal that David K. and Shannon noted, is still occurring.
2/26 - Station back on line since 2/23, but battery at range of 3.65-3.7v since then.
2/23 - Could the battery be dead? Battery suddenly dropped to 3.53v at 9am on 2/19.
2/19 - Battery suddenly dropped to 3.53v at 9am today, 3.74v at 10:15 – something on the solar cells? I'll follow this and let David know if it doesn't recover, though school is closed until 2/20/18.
2018

SL136(Hosensack C, Hwy 29) Stroud in communication with Jim about periods of loss of signal. Jim will get replacement battery and charger(10/8/18). Baseline turbidity is ~1 NTU. New volunteer assistance from Jacquiline Wolf Tice & Simon Molloy.
7/11 – Battery continues to drop, now 3.4-3.5 v. Turbidity was not responsive to changes in depth-?
6/27 – Battery continues to drop, now down to 3.6v; consider recharging the battery.
6/20 – Turbidity is still elevated after last storm and require cleaning of sensors. Battery dropping down to 3.75v.
6/14 – Turbidity became very elevated after last storm and sensors are likely.
5/30 – Turbidity remains very elevated unrelated to depth changes, and sensors should be cleaned.
5/19 – Turbidity is increasing and is highly elevated, almost 200 NTU, at base flow.
4/28 – Turbidity has gone as high as 700 NTU and is very flashy after storm, indicating sensors are fouled.
4/20 – Turbidity is mildly elevated above natural levels indicating sensors are fouled.
3/30 – Turbidity remains elevated and very flashy, and sensors are in need of cleaning and removal of debris .
3/30 – Turbidity is chronically mildly elevated including at base flow and sensors might be fouled.
3/2 – Turbidity is mildly elevated at base flow and higher than last week, and sensors may be fouled.
2/24 – Turbidity is mildly elevated at base flow and sensors may be fouled.
1/27 – Turbidity is significantly elevated and sensors are likely fouled.
1/20 – Turbidity is significantly elevated and very flashy indicating fouling at lower stream depth.
1/13 – Turbidity is significantly elevated indicating fouling after rain event.
2020
12/23 – Turbidity is flashy and indicates fouling.
12/9 – Turbidity is chronically elevated indicating fouling.
12/2 – Turbidity very elevated and flashy and sensors likely highly fouled.
11/22 – Signals began again on 11/17.
2019
11/16 – Last signal on 10/23.
11/2 – Last signal on 10/23.
10/29 – Last signal on 10/23.
10/26 – One signal on 10/23. Battery was 3.37. Turbidity was ~12 NTU.
10/22 – No signals (CTD, Turb, battery) since 10/12.
10/19 – No signals (CTD, Turb, battery) since 10/12.
10/15 – Signals became frequent again on 10/9, but no signals (CTD and Turb) since 10/12. Battery was recharged or replaced.

10/8 – Last signals midday on 10/4. Battery at 3.35v.
10/1 – Signals again on 9/30. Battery still at 3.35v.
9/28 – Last signal on 9/21 in morning.
9/24 – Last signal on 9/21 in morning, around same time that sensors were cleaned (4:50 EST). Last battery signal was as 3.34v.
9/17 – Turbidity highly elevated and sensors need cleaning. Battery at 3.4v for last 2-3 days.
8/27 – Extreme and rapid peaks of conductivity continue, and are higher than winter high peaks of conductivity. Battery stabilized at 3.81v.
8/23 – Extreme and rapid peaks of conductivity from ~250 uS/cm to 550 uS/cm. Battery on decline since late July, down to 3.79v.
8/17 – Battery on decline since late July, now >3.9v.
8/10 – Turbidity mildly elevated, needs cleaning.
7/30 – Turbidity elevated 20-60 NTU, needs cleaning.
7/27 – Turbidity remains very elevated.
7/23 – Turbidity remains very elevated though discharge cleaned.
7/20 – Turbidity 60-130 NTU.
7/16 – Turbidity 30-100 NTU after depth declined.
7/13 – Sensors need cleaning. Brief peaks in conductivity continue.
7/9 – Sensors need cleaning. Brief peaks in conductivity continue, with little change in depth.
7/6 – Turbidity elevated unrelated to increase in depth, needs cleaning. Historic, brief, peak in conductivity on 7/5, followed by another high peak on 7/5.
7/1 – Naturally cleaned, but may need algae cleaned.
6/28 – Needs cleaning.
6/18 – Turbidity mildly elevated.
5/21 – Similar to many other sites, loss of signal as of 21:15 EST on 5/20/18; signals regular again as of 12:15 EST.
5/14 – Needs cleaning.
5/7 – Needs cleaning.
5/4 – Needs cleaning.
4/30 – Needs cleaning.
4/27 – Needs cleaning, >100 NTU.
4/23 – Needs cleaning.
4/20 – Needs cleaning.
4/16 – Storm cleaned sensors, but still needs cleaning.
4/11 – Needs cleaning.
3/30 – Sensors chronically dirty (no big peaks) since mid March.
3/26 – Needs cleaning.
3/19 – Fouling.
2018

SL137(UT to Cobbs at Golf Club) Derron Labrake, Ann Jackson. Stream is completely piped upstream of sensors, so water volume changes quickly. The peaks are so sharp that they are changing significantly as you are making the measurements. The water depth changes almost inches over a few minutes. Baseline turbidity is 1-3 NTU. As of 9/9/19, this site only transmitting to MMW.
6/27 –Turbidity is 500-600 NTU and flashy, indicating fouled sensors.
6/20 –Turbidity highly elevated, now 140 NTU.
5/19 –Turbidity became highly elevated on 5/18, at base flow.
4/28 –Turbidity is elevated and flashy since last storm.
2/24 –Turbidity is currently very flashy indicating debris on sensors.
1/6 –Last transmission to MonMW was 12/30 when battery was > 4 v.
2020
12/31 –Turbidity is elevated indicating sensors are fouled.
12/2 –Turbidity is elevated as water recedes after rain event last night.
11/1 –Turbidity is elevated as water recedes after rain event last night.
10/22 –Turbidity is elevated and flashy after rain event on 10/20-21, and suggests sensors are fouled.
9/3 –Turbidity is mildly elevated at baseflow after rain event yesterday.
8/4 –Turbidity is highly elevated and flashy at base flow and sensors need cleaning.
6/28 –Turbidity is elevated and flashy at base flow and sensors need cleaning.

6/19 –Turbidity is elevated and flashy at base flow and sensors appear fouled.
6/6 –Turbidity is elevated at base flow and sensors appear fouled.
5/27 –Turbidity became elevated after rain event on 5/26, and sensors need to be cleaned.
5/13 –Sensors have become fouled, as turbidity is 10-35 NTU apparently not due to storm event.
5/10 –Sensors have become fouled, turbidity now 13-17 NTU.
4/26 –Sensors appear to be embedded in sediment/debris as turbidity is 1200-1400 NTU.
4/8 –Turbidity is elevated and sensors should be cleaned**.**
3/15 –Battery has become highly variable, and should be checked for moisture.
2/15 –Battery has become highly variable, and should be checked for moisture.
2/4 –Turbidity became elevated today, >10 NTU, sensors need cleaning at this well maintained station.
12/14 – Just cleaned today, and sensors fouled again.
11/30 – Turbidity became highly fouled beginning 11/28.
11/19 – Turbidity remains mildly elevated after storm events and return to base depth.
11/16 – Turbidity became mildly elevated before storm event and after natural cleaning remains at same mild elevation (>10NTU) and sensors need cleaning.
11/9 – Sensors suddenly fouled and need cleaning. Water temperature has been surprisingly stable (14.5^{o}-15.7^{o}c) over 48 hours, not always with expected diurnal changes – is it receiving warmed water?
10/26 – Turbidity elevated though cleaned this morning, became fouled again.
10/8 – Water depth and conductivity measurements may be abnormal, with a drop in depth of 45% in 10 minutes, and rapid changes in conductivity from 680 to 50 in 35 minutes concurrent with >300% increase in depth in same time frame. Depth almost constant for past week since the drop of 45%, with the exception of two rapid peaks and declines. Turbidity pattern follows this one. Could this be natural?
9/24 – Turbidity mildly elevated.
8/10 – Continues to have short but high spikes in water depth and simultaneous increases in water temperature (5^{o}f -20^{o}f, e.g., 65-78^{o}f). This is higher than the municipal water from the sprinklers unless it warms very quickly in the air.
7/20 – Turbidity mildly elevated, needs cleaning. Darren LaBrake found that a golf course sprinkler was placed too near the stream and was putting chlorinated water directly into the stream. Turning on of the sprinkler co-occurred with the peak in conductivity (one on-site observation). Darren's question is that the Mayfly is about 15 feet upstream from the sprinkler, and is it sensitive enough to measure the chlorination.
7/9 – Doubling or more of conductivity at this site continues following peaks in water depth, which is a new pattern beginning in July
7/1 – Atypical of this site, increases in conductivity to of +700-800 uS/cm today, 7/2 in 6-8am time period (golf course maintenance?)
6/1 – Sensors need cleaning as of today.
5/21 – Similar to many other sites, loss of signal as of 21:15 EST on 5/20/18; signals regular again as of 12:01 EST.
5/14– Conductivity levels do not look normal, varying from <50 uS/cm to 650 uS/cm. It will drop in two hours, and take several hours to increase. Turbidity correlates as expected with depth, and depth correlates as expected with conductivity, but the changes are so great.
4/27 – Water depth recorded at 7.3mm at 6:55 p EDT on 4/23. Battery dropped to 3.7 on 4/23 in early morning – first time since installation in Dec. Stable since then.
4/23 – Battery dropped to 3.7 on 4/23 in early morning – first time since installation in Dec.

2/26 - Huge variability in conductivity in this stream. Big flushes can be 18,000-30,000 us/cm. Currently, conductivity ranges 66->800 us/cm during baseline, still correlating with water depth. Water temperature often higher than logger temperature. Turbidity resolved.
2/16 - Turbidity high again.
2/12 - May be fouled; turbidity at new plateau (107NTU) after storm event, for past 20 hours.
2018

SL138(Lower Pickering) Foliage shade/solar charge may be cause of low signal rate and low battery performance. Sensors foul quickly from strong currents bringing leaves and other debris past sensors. Baseline turbidity is <1 NTU. Shannon will trouble shoot the uncoupling of turbidity-high and turbidity-low (August 2019)
6/20 –Turbidity mildly elevated possibly due to leaf debris on sensors. Conductivity fluctuating 40 uS/cm in 12 hr cycle.

6/6 –Turbidity has become mildly elevated since last rain event on 6/4.
4/20 –Turbidity has become very elevated and flashy; sensors need to be cleaned.
2/24 –Turbidity has become flashy; sensors need to be cleaned.
1/27 –Turbidity has become very elevated after storm event and indicates fouling.
1/20 –Turbidity has become elevated and flashy indicating sensor fouling.

2020

12/31 – Turbidity is very elevated indicating sensors are fouled from last rain event.
11/22 – Turbidity is elevated and sensors need to be cleaned.
11/1 – Turbidity is elevated after depth receded after rain event of 11/11, and sensors need to be cleaned.
10/22 – Turbidity is elevated and flashy after rain event of 10/20-21, and sensors need to be cleaned.
9/3 – Turbidity is elevated after rain event of 9/2, and sensors need to be cleaned.
8/20 – Turbidity readings are abnormal and do not reflect the effects of cleaning after major debris is removed from the sensors.
8/14 – Turbidity-low is mildly elevated beyond natural levels at base flow, and sensors need to be cleaned.
7/24 – Last cleaned on 7/21, the turbidity is mildly elevated above natural levels during base flow and sensors need to be cleaned.
7/5 – Though cleaned twice this week, including acid cleaning of turbidity window, the sensors are again fouled. Battery-solar panel resynchronization was very effective and battery is now stable.
6/28 – Battery is dropping very low, and needs to be checked for moisture, and to reconnect/resynchronize battery and solar panel connects, per Hicks.
6/6 – Turbidity low and turbidity high developed a trend of giving very different readings, 3-10+ NTU differences.
4/29 – Turbidity is very mildly elevated but above base levels and sensors need to be cleaned.
4/19 – Turbidity is 15-35 NTU and sensors need to be cleaned.
3/30 – Turbidity is 175-200 NTU and sensors need to be cleaned.
3/25 – Sensors became highly fouled after last storm event, and sensors need to be cleaned.
3/11 – Sensors become fouled by leaves very easily, and sensors need to be cleaned.
3/1 – Turbidity is elevated and sensors need cleaning.
2/22 – Turbidity is mildly elevated but now appears to be leaf wrapped and sensors need cleaning.
2/18 – Last signal was 2/15, and turbidity was 4.7 NTU, battery was 3.9v.
2/4 – Sensors fouled again, likely leaf wrapping which remains a frequent problem at this site. Battery went to 3.65 v and rebound to 3.85 v.
2/1 – Last signal was 1/27/19. Sensors were cleaned on 1/28/19. Data is being logged.
1/21 – Last signal was 1/20/19. Turbidity is mildly elevated (4-7 NTU).
1/18 – Last signal was 1/17/19. Sensors need leaves removed, turbidity mildly elevated (4-7 NTU).
1/14 – Sensors remaining cleared for 3-4 days at a time; have been cleaning frequently. Battery stable.
1/5 – Sensors remaining cleared for longer period of time since cleaned on 1/3/19, but became fouled today. Battery remains >3.7v.

2019

12/31 – Sensors are fouled with leaves and need cleaning.
12/24 – The sensors were cleaned on Friday and Saturday last week, and become fouled persistently and very quickly. Leaves wrap sensors almost constantly. Transmissions are very infrequent, usually several hours between signals. Battery seems stable, >3.7v.
12/14 – Turbidity mildly elevated and sensors need cleaning, though fouling is much reduced.
11/19 – Sensors were cleaned and immediately become fouled again and remain fouled, without natural cleaning.
11/16 – Sensors are fouled and need cleaning.
11/9 – Sensors last cleaned on 11/7 and immediately fouled again.
11/5 – Sensors blocked, and will clean today.
11/2 – Despite cleaning once or twice/week, sensors foul quickly and turbidity is elevated 10-50 NTU. Battery was replaced and level of charge is 3.8v but it remains much more stable around that.
10/29 – Sensors cleaned on 10/26, fouled again 10 minutes later.
10/22 – Sensors need cleaning; cleaned at 10 EST, fouled at 10:10 EST.
10/22 – Sensors need cleaning. These sensors foul every minute due to increased velocity and altered currents since rains in October, so that much debris is not traveling by the sensors and getting caught.
10/19 – Sensors need cleaning. These sensors foul every minute. Cell signal is steady at 2-3 bars.
10/15 – Sensors need cleaning.

10/8 – Sensors need cleaning. Signals still at reduced frequency, a pattern that began in July and then worsened August 25.
10/1 – Sensors are fouled; will clean.
8/31 – Material stuck on sensors. Battery fluctuating back to ~4v but down to 3.14v.
8/27 – Battery fluctuating back to ~4v but down to 3.56v.
8/20 – Cleaned but turbidity elevated again.
8/17 – Turbidity mildly elevated, needs cleaning.
7/30 – Battery went to a low of 2.97v, still rebounding to 3.9v or 4^{+}v.
7/27 – Battery went to a low of 3.08v, still rebounding to 3.9v or 4^{+}v. Dan Sylvan offered to purchase another battery later in the summer, so we will have back-up should the battery go bad.
7/13 – Battery daily below 3.7v, then rebounds to >4v.
6/18 – Battery often below 3.7v. Turbidity mildly elevated.
6/15 – Battery dropped below 3.7v several times on 6/12/18, as low as 3.53, now recovered. This occurred simultaneously with logger temperature rise to 36.3^{o} c. Does it make sense for turbidity low to remain at -0.4 NTU for 30 hours, unchanged?
5/21 – Similar to many other sites, loss of signal as of 21:15 EST on 5/20/18; signals regular again as of 12:01 EST.
5/14 - Needs cleaning, will clean today.
5/4 - Needs cleaning, will clean today.
4/20 - Needs cleaning, will clean today.
3/19 - Needs cleaning.
3/12 - Needs cleaning, will clean today.
2/16 - Needs cleaning, will clean today.
2/12 - Needs cleaning after storm event.
2018

SL139(Chester) Station damaged by logs and flood of 4/16; need replacing and repositioning. Baseline turbidity is 1-2 NTU.
8/3 – No signals since 5/30.
7/30 – No signals since 5/30.
7/27 – No signals since 5/30.
7/23 – No signals since 5/30.
7/20 – No signals since 5/30.
7/16 – No signals since 5/30.
7/13 – No signals since 5/30.
7/9 – No signals since 5/30.
7/6 – No signals.
7/1 – No signals.
6/28 – No signals.
6/18 – No signals.
6/15 – No signals.
6/11 – No signals.
6/8 – No signals; this sensor was pulled out of the stream and will be moved.
6/1 – Began sending regular signals on 5/29, but depth recorded at ~5mm. If signals are correct, then needs cleaning. Battery < 3.6v.
5/25 – No signal since 4/16.
5/21 – No signal since 4/16.
5/18 – No signal since 4/16.
5/14 – No signal since 4/16.
5/11 – No signal since 4/16.
5/7 – No signal since 4/16.
5/4 – No signal since 4/16.
4/30 – No signal since 4/16.
4/27 – No signal since 4/16.
4/23 – No signal since 4/16; battery had been >4.05v.
4/20 – No signal since 4/16.

4/11 – Needs cleaning.
3/30 – Turbidity very elevated.
3/26 – Cleaning done on 3/22. Turbidity began to go up again on 3/24, but I will report only if it exceeds it's historic interquartile range, where it currently is.
3/19 - Needs cleaning.
2/26 - Recent multi-day rain even brought turbidity down to low – 50-105 NTU.
2/23 - Turbidity trending up since 2/19.
2/19 - Turbidity still higher than at installation.
2/16 - Turbidity still higher than at installation.
2/12 - Needs cleaning, better after storm event but may have some material under/near the sensor.
2/9 - Needs cleaning.
2/5 - Turbidity gone higher (see 2/2/18).
2/2 - High amount of turbidity, without spikes, even though may be cleaned. Was about <1 NTU at installation on 12/18/17, and baseline remained <1-2 NTU until 12/22/17 and then going higher and higher. Above 50 NTU from 1/23/17 to 1/31/17, then average was 34-39 NTU, cleaned naturally or manually on 2/1/18, now at baseline of 14-22 NTU.

2018

SL149 (Marsh Creek U) Moore's Rd. Jim Moore. Beaver damage to CTD, and still water trapped inside vent tube in the cable that is connected to the back side of the pressure sensor and no way to draw the water out (Hicks). Turbidity at installation was 3-10 NTU. New CTD installed by Moore on 10/23/18. When Moore removes the sensors for cleaning, the depth and conductivity drop to 0. Baseline turbidity is 2-6 NTU.

6/27 – Turbidity is elevated and flashy at base flow, indicating fouling on sensors.
6/20 – Turbidity is elevated and flashy, indicating fouling on sensors.
6/14 – Turbidity is mildly elevated above natural levels.
6/6 – Turbidity was elevated before the recent rain event, indicating sensors are fouled.
5/30 – Turbidity is elevated above natural levels and sensors need cleaning.
5/19 – Turbidity is elevated above natural levels and flashy.
5/7 – Turbidity is mildly elevated above natural levels.
4/28 – Turbidity has increased, now 300-400 NTU.
4/20 – Turbidity is elevated above natural levels.
3/30 – Turbidity, conductivity, and depth all dropped simultaneously today at 1:10pm, while stream and logger temperatures were continuous. Were sensors repositioned today, and cleaned? Water depth dropped from ~500mm to 6mm. E-conductivity dropped from 148 uS/cm to ~8 uS/cm. Is there a cable problem?
3/2 – Turbidity is elevated and flashy, indicating need for maintenance.
2/24 – Turbidity remains very elevated at low flow, indicating sensors need to be cleaned.
2/17 – Turbidity remains very elevated at low flow, indicating sensors need to be cleaned.
2/10 – Turbidity remains elevated beyond natural levels ~50 NTU and sensors are likely fouled.
2/3 – Turbidity remains elevated beyond natural levels ~70 NTU and sensors are likely fouled.
1/27 – Turbidity is elevated beyond natural levels after storm ~80 NTU and sensors are likely fouled.
1/20 – Turbidity remains very elevated, >75 NTU, and flashy.
1/13 – Turbidity remains very elevated and flashy.
1/6 – Turbidity remains very elevated, ~70 NTU – indicating sensors are fouled.

2020

12/31 – Turbidity remains very elevated - ~50 NTU – indicating sensors are fouled.
12/23 – Turbidity has risen greatly as depth dropped to 12-13 centimeters; turbidity now >40 NTU and flashy indicates sensors are fouled.
12/16 – Turbidity is highly elevated at lower flow.
12/9 – Turbidity is highly elevated indicating sensors are fouled.
11/22 – Turbidity elevated at base flow and sensors need to be cleaned.
11/1 – Turbidity is >600 NTU after major storm event last night. Battery voltage is very unstable since 10/28, and should be resynchronized, checked for moisture, recharged, and evaluated. Battery became stable again from 11a to the afternoon of 11/1.
10/7 – Turbidity is elevated during base flow indicating sensors need to be cleaned.
10/1 – Although these sensors are frequently cleaned, debris commonly builds up. Turbidity is mildly elevated unrelated to changes in depth/rain event.
9/19 – Turbidity is elevated.

9/9 – Turbidity is elevated and flashy.
8/14 – Turbidity is has become elevated and sensors need to be cleaned.
7/5 – Turbidity is highly elevated and sensors need cleaning.
6/28 – Turbidity is elevated and sensors need cleaning. Signals are more frequent.
6/14 – Turbidity became elevated during strong rain event last night, but signals are infrequent.
6/6 – Turbidity is elevated and flashy and sensors appear fouled.
5/31 – Turbidity has become elevated since last heavy rain events.
5/10 – Turbidity has become elevated at base flow indicating sensors need to be cleaned.
4/29 – Turbidity has become elevated at base flow indicating sensors need to be cleaned.
4/19 – Turbidity has become mildly elevated at base flow indicating sensors need to be cleaned.
4/8 – Depth and conductivity signals became abnormal on 3/14, 3/15, 3/23, and 4/6, but temperature appears normal. Are sensors being taken out of stream to be cleaned, as turbidity seems to drop briefly at these times?
4/5 – Turbidity indicates sensors have become fouled, and sensors need to be cleaned.
3/30 – Turbidity has become elevated (10-35 NTU) and flashy, and sensors need to be cleaned.
3/11 – Turbidity is elevated and very flashy indicating debris is caught on them. Should be cleaned.
3/4 – Transmissions are still extremely infrequent. Turbidity is elevated beyond natural levels, and sensors need cleaning.
3/1 – Transmissions have become very infrequent. Turbidity is elevated beyond natural levels, and is elevated since four major storm events in February. Sensors need to be cleaned.
2/22 – Sensors were naturally cleaned but turbidity is above natural levels and sensors need to be cleaned.
2/18 – Turbidity elevated indicating sensors are fouled.
2/15 – Turbidity continues to increase, now >110 NTU - and sensors need cleaning.
2/4 – Turbidity remains elevated - >50 NTU - and sensors need cleaning.
2/1 – Turbidity remains elevated and sensors need cleaning.
1/28 – This very regularly transmitting site has no transmissions since today at 8:20 EST. At that time, turbidity was elevated >100 NTU, and battery was >4v. MoMW has data updated to 1/24/19.
1/21 – Sensors need cleaning, turbidity demonstrates natural cleaning but still elevated.
1/18 – Sensors need cleaning, turbidity continues to rise, now 145-175 NTU.
1/14 – Turbidity is 110-150 NTU, and sensors need cleaning.
1/11 – Sensors are fouled and need cleaning as turbidity is 50-135 NTU.
1/5 – Sensors are fouled and need cleaning as turbidity is chronically 40-135 NTU.

2019

12/31 – Sensors need cleaning, highly fouled.
12/24 – Sensors need cleaning, turbidity is 10-35 NTU, elevated beyond storm level.
12/14 – Sensors need cleaning, turbidity is 45-85 NTU.
12/7 – Sensors need cleaning, turbidity is 15-40 NTU.
11/30 – Sensors need cleaning.
11/19 –Turbidity remains elevated >35 NTU and sensors need cleaning.
11/16 –Sensors need cleaning.
11/9 –Turbidity >15 NTU, sensors need cleaning.
11/5 –Turbidity mildly elevated, sensors need cleaning.
11/2 –Sensors were cleaned when new CTD was installed, but turbidity has arisen since then and sensors need cleaning.
10/29 –Turbidity mildly elevated above natural level and sensors need cleaning.
10/22 –Sensors need cleaning. Jim received new CTD on 10/21.
10/19 –Sensors need cleaning. Jim will have new CTD this weekend.
10/15 –Sensors need cleaning. Jim will have new CTD next week.
10/8 – Replacement CTD is available. Sensors need cleaning.
10/1 – CTD sensor still damaged, though still giving conductivity and water temperature measurements. Jim Moore is discussing new sensor with SWRC; he tried to vacuum out water, but it did not resolve the problem. Jim has encased cables from Mayfly to sensors in heavy metal cable to protect from beaver damage. Turbidity remains elevated and fouled (>10 NTU).
9/28 – Depth readings remain below 0 mm. Turbidity elevated, may be algae.
9/24 – Depth readings remain below 0 mm. Turbidity elevated, may be algae.
9/21 – Depth readings remain below 0 mm.

9/17 – Depth readings remain below 0 mm. Sensors need cleaning.
9/6 – Depth readings remain below 0 mm. Sensors need cleaning.
8/31 – Depth readings remain below 0 mm. Sensors need cleaning.
8/27 – Depth readings remain below 0 mm. Sensors were cleaned on 8/24, but increasing turbidity.
8/23 – Depth readings below 0 mm persistently since 7/30. Turbidity elevated and needs cleaning.
8/20 – Depth readings below 0 mm persistently since 7/30. Turbidity elevated and needs cleaning.
8/10 – Same problems with depth readings.
8/6 – Same problems with depth readings. Turbidity elevated unrelated to depth, needs cleaning.
8/3 – Same problems with depth readings continue.
7/30 – Same problems with depth readings continue. Turbidity >15 NTU.
7/27 – Depth readings declined after rain event, as expected, but declined to the minus range as of 7/27, while conductivity rises. Turbidity is very high, plateaued >80 NTU.
7/20 – Depth readings remain -60 – -190 mm. Turbidity elevated and sensors need cleaning.
7/16 – Depth readings remain abnormal.
7/13 – Conductivity flat lined on 7/10, back online on 7/13, but depth is abnormal, and was reading <0mm. Sensors may have been removed and replaced, appear to have been cleaned around 11:10 EST today, and at this time depth rose from 0mm to 300mm, then dropped <0mm from 11:40 EST to 13:xx EST.
7/9 – Turbidity elevated, needs cleaning.
6/15 – Turbidity >100 NTU, need cleaning.
6/11 – Sensors are fouled and need cleaning.
6/1 – Sensors are fouled and need cleaning.
5/25 – Sensors are fouled.
5/21 – Similar to many other sites, loss of signal as of 21:15 EST on 5/20/18; signals regular again as of 12:10 EST.
5/14 – Needs cleaning.
4/30 – Needs cleaning.
4/23 – How can depth drop .15 m in 5 minutes and then return to base level in 5 min?
4/16 – Increasing fouling since 4/11, needs cleaning.
3/30 – Turbidity fouling has worsened, baseline elevated.
3/26 – Turbidity sensor fouled since 3/24.
2018

SL150 (Marsh Creek D) Fairview Rd. French&Pickering Conservation Trust; Will Macaluso Preserve mgr. Jim Moore. Turbidity sensor replaced 10/4/18. 4/14/19-GMI will take over maintenance of this station. Baseline turbidity is ~1-4 NTU. Lori Moore will take over QC of site and Tom Kalusky of sensor cleaning. Sensors were moved on 9/23 to deeper water. As of 10/7/19, Tom K will do maintenance *and* QC at this site. Jim states beaver damage to CTD on 5/27/20, and he spliced cable but depth measurements not correct.

6/6 – CTD sensor stopped reading and battery is also abnormal, as well as turbidity readings are abnormal.
5/30 – CTD sensor stopped reading/working on 5/27 at 4:50p (EDT).
4/28 – Turbidity has become very elevated and sensors need to be cleaned.
3/2 – Turbidity remains elevated and very flashy, suggesting debris on the sensors.
2/24 – Turbidity remains elevated and very flashy, suggesting debris on the sensors.
2/17 – Turbidity is elevated beyond natural levels (25-40 NTU) and flashy, suggesting sensors are fouled.
2/10 – Turbidity is elevated beyond natural levels (~40 NTU) and flashy, and sensors are fouled.
2/3 – Turbidity is highly elevated and flashy, and sensors are fouled.
1/20 – Sensors were naturally cleaned but turbidity remains elevated above natural levels.
1/13 – Turbidity is extremely elevated (100-600 NTU).
1/6 – Last transmission to MMW is 12/26/19.
2020
12/31 – Last transmission to MMW is 12/26/19. Battery was >4 v and no other signals appeared abnormal.
11/11 – Turbidity is mildly elevated.
11/1 – This site is fouling much more since it was moved into the main current of the stream. It is currently highly fouled.
10/2 – Turbidity suddenly became >1400 NTU during the rain event of 10/20-21, and though decreasing remains very high (>850 NTU) indicating the sensors are compacted in some way.
10/7 – Turbidity is elevated and sensors need to be cleaned

9/19 - Strange turbidity signals since 9/9/19. During water peaks, turbidity increases as expected from possible debris or blocking of light from optic window, but during the high water peak the turbidity reading drops to negative value then shoots back to prior level. Only occurring during high water peaks, and not all water peaks. Could there be something unusual sitting around the sensors? Or is it a sensor or board problem? Board was just replaced.

9/3 – Shannon replaced the Mayfly board and the battery. Turbidity is elevated above natural levels following the rain event on 9/2 indicating sensors need cleaning, but need to recheck because water depth is still very high. Battery flagging <3.5v.

8/27 – No change, station not recording data.

8/20 – No change, station not recording data.

8/14 – The station stopped sending data on 8/11/19 at 16:26, and stopped recording data on the sd card on that date at 17:00. Shannon will trouble shoot at the site.

8/4 – Turbidity is increasing and sensors need cleaning; algae may be a problem.

7/5 – Turbidity is highly elevated and sensors are fouled.

6/28 – Turbidity is highly elevated and sensors appear impacted.

5/17 – Turbidity is elevated and sensors may have sediment and/or algae on them.

5/10 – Turbidity has become mildly elevated and flashy at base flow indicating sensors need to be cleaned.

4/19 – Signals are regular again. Turbidity is 14-40 NTU during base flow and sensors need to be cleaned.

4/12 – Last signals were on 4/9/19 to either Dreamhoster or MonMW. Was the station turned off? (4/14/19- cellular contract ran out of money)

4/8 – Turbidity is very elevated indicating sensors are fouled and need to be cleaned.

4/5 – Turbidity is elevated indicating sensors are fouled and need to be cleaned.

3/30 – Turbidity 17-100 NTU, and sensors need to be cleaned.

3/25 – Turbidity has become very elevated, 20-100 NTU, and sensors need to be cleaned.

3/15 – Turbidity is mildly elevated, and sensors need to be cleaned.

3/11 – Turbidity is 40-120 NTU and flashy indicating debris is caught on them. Should be cleaned.

3/4 – Transmissions have become very infrequent. Turbidity is elevated beyond natural levels, and sensors need cleaning.

3/1 – Turbidity remains elevated and very flashy, and sensors need to be cleaned.

2/22 – Turbidity remains elevated and very flashy, and sensors are fouled.

2/15 – Turbidity remains elevated and very flashy, and sensors are fouled.

2/9 – Turbidity remains very elevated (60-140 NTU) and sensors need cleaning.

2/4 – Turbidity remains very elevated (>90 NTU) and sensors need cleaning.

2/1 – Turbidity remains very elevated (75+ NTU) and sensors need cleaning.

1/28 – Sensors need cleaning; turbidity remains elevated after some natural cleaning.

1/21 – Sensors need cleaning; turbidity is >20 NTU.

1/18 – Sensors need cleaning; turbidity is 11-20 NTU and flashy.

1/14 – Sensors are fouled and need cleaning as turbidity is 17-32 NTU.

1/11 – Sensors are fouled and need cleaning as turbidity is 20-55 NTU.

1/5 – Sensors need cleaning, are chronically fouled, turbidity 40-75 NTU.

2019

12/31 – Sensors need cleaning, highly fouled.

12/24 – Sensors need cleaning, turbidity is 80-160 NTU.

12/14 – Sensors need cleaning, turbidity is 45-110 NTU.

12/7 – Turbidity is 10-30 NTU, and sensors need cleaning.

11/30 – Turbidity is mildly elevated, and sensors need cleaning.

11/19 – Turbidity is 80-130 NTU, and sensors need cleaning.

11/16 – Turbidity is 70-120 NTU, and sensors need cleaning.

11/5 – Turbidity is 20-50 NTU, and sensors need cleaning.

11/2 – Turbidity is elevated and sensors need cleaning.

10/29 – Some natural cleaning, but turbidity never went to natural level, and now at lowest level of 20-25 NTU.

10/26 – Sensors highly fouled and turbidity is increasing, now >320 NTU.

10/22 – Sensors highly fouled and turbidity is increasing, now >290 NTU.

10/19 – Sensors highly fouled and turbidity is increasing, now >150 NTU.

10/15 – Turbidity giving normal signals, but needs cleaning and turbidity is increasing, now >60 NTU.

10/8 – Turbidity now increases at night, and drops during day – cyclical daily pattern since 10/4. Turbidity sensor will not be replaced at this time. Hicks will assess.
10/1 – Jim Moore thinks turbidity sensor is damaged resulting in stable NTU despite changes in water depth. He will investigate if there is damage to cable for turbidity sensor.
9/28 – Turbidity has been non credibly low (turbidity low at 0.06) persistently since 9/10.
7/16 – Turbidity remains elevated and highly variable.
7/13 – Is something catching on the sensors? Turbidity is elevated for many hours then self-cleans to ~4 NTU, then elevated again.
7/1 – For first time since installation, battery declined steadily over 13 days, now <3.7 v.
6/28 – Turbidity elevated, needs cleaning.
6/18 – Turbidity elevated, needs cleaning.
6/15 – Turbidity elevated, needs cleaning.
6/8 – Battery dropped to <3.7v on 6/2. Needs cleaning, as turbidity today ranging from 2 – 60 NTU.
5/21 – Similar to many other sites, loss of signal as of 21:15 EST on 5/20/18; signals regular again as of 12:15 EST.
5/4 – Needs cleaning.
4/30 – Needs cleaning.
4/27 – Needs cleaning.
4/11 – Turbidity elevated since 4/10, and baseline and ranges of NTU indicate sensor fouled and dirty.
3/30 – Baseline turbidity is elevated since 3/27.
2018

SL151 (Naylor's Run) Jamie Anderson manager; Heather Gosse MWS is assisting in management. Site becomes easily fouled. Baseline turbidity is 1-2 NTU.
6/14 – Turbidity is very elevated and flashy indicating fouled sensors.
6/6 – Turbidity is elevated indicating sensors need to be cleaned.
5/19– Turbidity is elevated and flashy and sensors need to be cleaned.
5/7– Turbidity is elevated and flashy.
4/20– Turbidity is elevated above natural levels.
1/13, 1/20, 1/27, 2/3, 2/10 – No data as Station was taken down by Anderson after vandalism.
1/6– Battery continues to drop, now at 3.58. Vandalism reported. Low battery could affect logger (see Hicks) All CTD signals dropped out on 12/27/19.
2020
12/31– Battery is rapidly dropping though still >3.7v. All CTD signals dropped out on 12/27/19.
12/2– Turbidity elevated since last precipitation event, but this site is cleaned regularly.
9/19– On 9/17/19, the depth jumped from 474mm to 498mm in five minutes, and then remained about 500mm. Heather noted other increases. Any idea about the area around the station that could be causing these sudden increases? The increases are not so great that they are completely implausible. The depth seems to come down after a rain event. Is there a facility nearby sending water directly into the stream?
8/27 – Has sensor station been stabilized? Data appears normal.
8/20 – Battery needs to be recharged.
8/14 – Turbidity is highly elevated and appears to be significant material wrapped on sensors. Battery is rapidly declining without significant recovery, now down to 3.62. Battery might need to be charged.
6/6 – Turbidity is mildly elevated after last rain event, and may have algae/sediment on them.
5/10 – Turbidity has become highly elevated (100-200 NTU) and sensors need cleaning.
4/26 – Turbidity has become highly elevated (60-100 NTU) and sensors need cleaning.
4/19 – Sensors were cleaned on 4/14, but turbidity has become mildly elevated during base flow and sensors need to be cleaned.
4/12 – Turbidity is very elevated 150-300 NTU), and sensors need to be cleaned.
4/8 – Turbidity is very elevated (<150 NTU), and sensors need to be cleaned.
4/5 – Turbidity is elevated, and sensors need to be cleaned.
3/25 – Turbidity has become unnaturally elevated since last storm, and sensors need to be cleaned.
2/22 – Turbidity is mildly elevated after storm event and sensors need to be cleaned.
2/9 – No data transmission since 1/25/19 at 13:40 EST. Not recorded on MoMW.
2/4 – No data transmission since 1/25/19 at 13:40 EST. Not recorded on MoMW.
2/1 – No data transmission since 1/25/19 at 13:40 EST. Not recorded on MoMW.

1/28 – No data transmission since 1/25/19 at 13:40 EST. MoMW has data updated to 1/24/19. As of last in-stream transmission on 1/25, turbidity was 87 NTU, and battery was 3.94 v.
1/21 – Sensors need cleaning, turbidity is 50-65 NTU.
1/18 – Sensors need cleaning, turbidity is 80-145 NTU.
1/14 – Baseline turbidity is highly elevated (>65 NTU); sensors need cleaning. Conductivity at second highest historic peak today (8054 uS/cm).
1/11 – Baseline turbidity is highly elevated (>75 NTU); sensors need cleaning. Battery 3.8-3.9 v.
12/31 – Baseline turbidity is highly elevated (20-30 NTU); Sensors need cleaning.
12/24 – Turbidity is elevated after recent rain event (was cleaned 12/20). Battery is stable at 3.68-3.74 v.
12/14 – Turbidity is mildly elevated and sensors need cleaning, turbidity is 45-110 NTU. Battery is stable at 3.68-3.7 v.
11/30 – Battery stable at 3.55-3.59v.
11/19 – Turbidity >9 NTU and sensors need cleaning. Battery stable at 3.53-3.56v.
11/9 – Turbidity >9 NTU and sensors need cleaning. Battery slowly declining, now 3.53-3.55v.
11/5 – Turbidity is elevated and sensors need cleaning. Battery slowly declining, now 3.61-3.62v.
11/2 – Turbidity is still mildly elevated and sensors need cleaning. Battery slowly declining, now 3.67-3.7v.
10/29 – Turbidity is elevated (>17 NTU) and sensors need cleaning. Battery slowly declining, now 3.71-3.73v.
10/26 – Turbidity is elevated (>30 NTU) and needs cleaning. Battery slowly declining, now 3.76-3.78 v.
10/22 – Turbidity is elevated (>25 NTU) and needs cleaning. Battery slowly declining, now ~3.8v.
10/19 – Turbidity is elevated (>25 NTU) and needs cleaning.
10/15 – Turbidity is elevated and needs cleaning.
10/8 – Turbidity is mildly elevated and needs cleaning.
10/1 – Turbidity is elevated and needs cleaning.
9/24 – Turbidity is highly elevated since increased depth increase and decrease.
9/21 – Sensors are fouled and may have algae.
9/6 – Turbidity mildly elevated, needs cleaning.
8/17 – Turbidity elevated, needs cleaning.
8/6 – May have been cleaned today but turbidity mildly elevated and above natural level: >6 NTU.
8/3 – Turbidity recently elevated.
7/30 – Turbidity mildly elevated since rain event, and sensors need cleaning.
6/28 – Needs cleaning.
6/11 – Storm cleaned sensors but turbidity still above base level - ~7NTU.
6/8 – Turbidity elevated, needs cleaning.
6/1 – Needs cleaning since early hours of discharge of June 1.
5/25 – Needs cleaning, turbidity >40 NTU.
5/21 – Similar to many other sites, loss of signal as of 21:10 EST on 5/20/18; signals regular again as of 12:10 EST. Sensors need cleaning – turbidity >35 NTU.
5/18 – No signal since May 15.
5/14 – This site has needed cleaning since beginning of April.
5/11 – This site has needed cleaning since beginning of April.
5/7 – Needs cleaning.
5/4 – Needs cleaning.
4/30 – Badly fouled, needs cleaning.
4/27 – Needs cleaning since 4/23.
4/20 – Turbidity not very high (~15 NTU) but higher than baseline in March and needs cleaning.
4/16 – Needs cleaning.
4/11 – Base turbidity elevated since 4/1 and increasing; cleaned 4/6, but problematic since 4/7; needs cleaning.
2018

sl152 (Buckwha CK U-Christman prop) TU Brodhead. Baseline turbidity is <2 NTU.
6/6 – Turbidity is elevated above natural levels at baseline and increasing indicating sensors should be cleaned.
5/19 – Turbidity is elevated above natural levels at baseline and flashy indicating sensors should be cleaned.
3/30 – Turbidity was highly elevated and flashy before the rain event today, and is higher since, indicating sensors are fouled.
3/30 – Turbidity is highly elevated (~200+ NTU) and very flashy indicating sensors are fouled.
2/24 – Turbidity is 40-50 NTU suggesting sensors are fouled. Strange dropout of turbidity on 2/22/20.

2/17 – Turbidity is >40 NTU and increasing while depth is decreasing, suggesting sensors are fouled.
2/10 – Turbidity still rising 40-50 NTU, and sensors are likely fouled.
2/3 – Turbidity has slowly risen over past month and is flashy, indicates fouling of sensors.
1/20 – Turbidity is has risen and is very flashy, now 100-200 NTU.
1/13 – Turbidity is highly elevated (~80-100 NTU) and very flashy indicating significant fouling of sensors.
1/6 – No signals since 12/30/19.

2020

12/31 – No signals since 12/30/19 during apparent peak in depth at 308 mm. Turbidity was highly elevated - ~150 NTU. Battery was >4v.
12/23 – Turbidity remains highly elevated and flashy – 140-160 NTU – and sensors have not been cleaned.
12/16 – Turbidity remains highly elevated and flashy and has not been cleaned.
12/9 – Turbidity has increased, now >350 NTU.
12/2 – Turbidity has become even more highly elevated and flashy at base flow, >100 NTU.
11/22 – Turbidity has become highly elevated and increasing over time, indicating major fouling.
11/11 – Turbidity is >40 NTU and flashy as depth returns to base flow, suggests sensors are fouled.
10/22 – Sensors are fouled and very flashy.
10/1 – Sensors are currently highly fouled.
9/19 – Turbidity mild elevated and very flashy at low flow; sensors need to be cleaned.
8/27 – Turbidity highly elevated and very flashy.
8/20 – Battery is showing too much variability, and should be checked for moisture. Consider recharging though it continues to recover to >4.1 v.
6/28 – Turbidity shows that sensors have only been naturally cleaned, and turbidity is mildly elevated and sensors need careful cleaning.
6/14 – Turbidity became elevated and flashy since rain event last night and sensors need to be cleaned.
6/6 – Turbidity is mildly elevated since last rain event and sensors appear to need cleaning during base flow.
5/31 – Turbidity has become elevated since last heavy rain event.
5/17 – Turbidity is elevated (30-70 NTU) and flashy and sensors need to be cleared and cleaned.
5/13 – Turbidity is mildly but significantly elevated beyond depth increase indicating sensors need to be cleaned.
5/10 – is elevated beyond natural levels, and does not return to baseline turbidity after natural current cleaning, indicating sensors need to be cleaned. Battery is in a pattern of flashiness and should be checked for moisture and station turned on/off or recharged.
4/29– Turbidity is increasing as depth decreases, now highly elevated indicating major fouling of sensors.
4/26– Turbidity has become elevated since last storm and during base flow, and sensors need cleaning.
4/8 – Turbidity has become elevated since last storm, and sensors need to be cleaned.
3/25 – Turbidity has become unnaturally though mildly elevated since last storm, and sensors need to be cleaned.
1/18 – Turbidity is climbing and sensors need cleaning.
1/14 – Turbidity is mildly elevated, ~5 NTU and a little flashy; sensors need cleaning.
12/7 – Turbidity is 90-180 NTU and fouled; sensors need cleaning.
11/30 – Turbidity is 60-110 NTU; sensors need cleaning, haven't been cleaned in over a month.
11/19 – Sensors are chronically highly fouled – >110 NTU.
11/16 – Sensors are chronically highly fouled – >100 NTU.
11/9 – Sensors are highly fouled – 100-200 NTU.
11/5 – Sensors are fouled.
11/2 – Turbidity elevated 100-200 NTU, sensors need cleaning.
10/29 – Turbidity elevated 50-100 NTU, sensors need cleaning.
10/26 – Turbidity elevated 20-40 NTU, sensors need cleaning.
10/22 – Turbidity elevated >10 NTU, sensors need cleaning.
10/1 – Turbidity remains elevated, 15-40 NTU.
9/28 – Turbidity remains elevated, >30 NTU.
9/24 – Turbidity remains elevated after depth increase and decrease, sensors fouled and need cleaning.
9/21 – Turbidity elevated, sensors fouled, need cleaning.
8/20 – Turbidity remains mildly elevated, need cleaning.
8/17 – Turbidity remains mildly elevated after storm and depth declined, need cleaning.
6/28 – Sensors need cleaning.
6/18 – Intermittent fouling, turbidity is uncharacteristically variable.

5/21 – Similar to many other sites, loss of signal as of 21:20 EST on 5/20/18; signals regular again as of 12:25 EST.
5/18 – Storm cleaned, but still ~8-14 NTU and needs cleaning.
5/14 – Needs cleaning.
5/11 – Reached historic low depth on May 11.
5/7 – Needs cleaning, turbidity >80 NTU.
5/4 – Needs cleaning.
2018

SL153 (Hunter Ck U-Strohl Valley) TU Brodhead. This sensor collects sediment under it. Baseline turbidity is <2 NTU. This site is suitable for 4G (Hicks), and eventually will be installed when supplies are available. ULHC3S is Hunter upstream of border property; now ULHC2S is Hunter Creek Stroll Valley. Upgraded 2/2020 to MMW code, and data is being saved. Will get new 2G modules when they arrive (2/24/20).

7/11 – Since 7/8/20 the water depth has been fluctuating frequently in 24 hour periods, and is this normal?
6/20 – Sensors have become fouled based on turbidity data.
5/7 –Site is back online.
2/17, 2/24, 3/2, 3/30, 4/8, 4/10, 4/20, 4/28 –Station is offline but recording data.
2/10 –Turbidity has slowly increased over past two weeks, appears above natural levels.
2/3 –Turbidity remains elevated beyond natural levels, and sensors are fouled.
1/20 –Not clear if sensors have been cleaned as there are >24 gaps between transmissions. Turbidity is around 6 NTU with lower flow, and sensors might not have been cleaned.
1/13 –Sensors have not been cleaned for past month, and turbidity is highly elevated beyond storm event levels.
1/6 –No signals being transmitted since 12/30.
2030
12/31 –Turbidity is highly elevated indicating sensors are fouled.
12/23 –Turbidity is highly elevated and seems flashy indicating that sensors need to be cleared and cleaned to prevent damage and for more accurate conductivity measurement.
12/16 –Turbidity is highly elevated at low water indicating debris on the sensors.
9/19 –Turbidity is highly elevated.
8/20 –Turbidity is mildly elevated beyond natural level and sensors need to be cleaned.
7/24 – Signals begin again on 7/15. Turbidity is mildly elevated beyond natural level.
7/5 – No signals transmitted to either portal from since 6/26.
6/28 – No signals transmitted to either portal from 6/13 to 6/26; last transmission was 11:45p UTC (7:45p EDT) on 6/26/19, and battery appears stable. Turbidity is mildly elevated indicated that sensors need to be cleaned. CTD signals appear within the normal range. It would be good to back up the data.
6/19 – No signals transmitted to either portal since 6/13/19 at 17:36 EST, when the battery was 4.08v.
6/6 – Turbidity is elevated after last rain event suggesting sensors need to be cleaned.
5/31 – Turbidity is elevated and flashy, and sensors need to be cleared and cleaned.
5/17 – Turbidity is elevated 45-90 NTU and flashy, and sensors need to be cleared and cleaned.
5/13 – Turbidity is elevated indicating sensors are fouled and need to be cleaned.
5/10 – Turbidity has risen to >60 NTU since last rain event on May 6.
4/29 – Turbidity has risen indicating sensors are fouled.
4/26 – Turbidity is 12-30 NTU and sensors need to be cleaned.
3/25 – Turbidity is highly elevated beyond natural levels (20-120 NTU) and sensors need to be cleaned.
3/15 – Data transmissions have become infrequent, but it appears that turbidity is elevated beyond natural levels, and sensors need to be cleaned. Battery is too varied, and should be checked, might have moisture that can be wiped to dry.
2/22 – Check battery for moisture.
2/15 – Battery is too variable, and should be checked for moisture; went down to 3.6v.
2/1 – No signals transmitted since 1/30/19; at that time battery was >4v.
1/28 – Turbidity elevated today to >30 NTU, sensors need cleaning.
1/14 – Turbidity remains mildly elevated, >10 NTU, and sensors need cleaning.
1/11 – Turbidity remains mildly elevated after drop in depth, >10 NTU, and sensors need cleaning.
1/5 – Turbidity is chronically mildly elevated, 10-25 NTU, and sensors need cleaning.
2019
12/7 – Turbidity is mildly elevated, 5-20 NTU, and sensors need cleaning. Battery dropped to <2.8v and rebounds t0 >4v.

11/30 – Turbidity 20-70 NTU, and sensors need cleaning. Battery has dropped to 2.85v and become very flashy, and perhaps logger box should be checked for moisture.
11/5 – Turbidity elevated and sensors need cleaning. Battery recovered.
11/2 – Turbidity elevated >20 NTU and sensors need cleaning. Battery dropping to low levels (<**2**.7v) but recovering to 4v.
10/29 – Turbidity elevated >20 NTU and sensors need cleaning. Battery dropping to <3.2v.
10/26 – Turbidity elevated and sensors need cleaning.
10/22 – Turbidity mildly elevated and sensors need cleaning. Battery dropped to 3.55v.
10/19 – Sensors need cleaning.
10/15 – Sensors need cleaning.
10/1 – Sensors remain fouled.
9/28 – Sensors have not been cleaned and remain fouled though at lower NTU.
9/24 – Sensors fouled, naturally cleaned but trending up again, now >10 NTU. Battery dipped to 2.82v, recovered to >4v.
9/21 – Sensors fouled, >17 NTU, need cleaning.
9/17 – Sensors mildly fouled and need cleaning. Battery recovers to >4v, but continues to dip daily <3.7v.
8/31 – Sensors very fouled and need cleaning. Battery recovers to >4v, but continues to dip daily <3.7v.
8/27 – Sensors need cleaning. Battery recovers to ~4v, but dipped to 3.4v.
8/23 – Turbidity 120-550 NTU.
8/20 – Turbidity 50-200 NTU.
8/17 – Turbidity mildly elevated after rain event and reduced depth, sensors need cleaning. A single drop in battery, since installation, on 8/16 to 3.3v, but recovered to 4v.
8/10 – Turbidity mildly elevated after rain event and reduced depth, sensors need cleaning.
7/30 – Turbidity elevated, sensors need cleaning.
6/1 – Sensors need cleaning.
5/25 – Fouled.
5/21 – Similar to many other sites, loss of signal as of 21:10 EST on 5/20/18; signals regular again as of 12:30 EST. Needs cleaning, turbidity >12 NTU, which is more than base level.
5/18 – Storm cleaned, but needs cleaning.
5/11 – Although signals are inconsistent from this site, there was loss of signal for ~14 hrs from May 9-11.
4/28 – Huge increases in conductivity over a 10-13 hr. interval, ranging from ~125 to 300-400 uS/cm. The increases in conductivity co-occurs with increases in depth of 40mm to 120mm
2018

SL155 (Ridley Ck U) Sewage treatment plant effluence affecting streams, closest to SL155; very high rates of conductivity. Baseline turbidity is 1-1.5 NTU.
6/6 – Turbidity became very elevated and flashy since last storm event, and sensors are fouled.
4/20 – Turbidity has been extremely elevated and flashy for extended period of time.
4/8 – Turbidity was very elevated and flashy before rain event today, and sensors appear fouled.
3/30 – Turbidity has become elevated beyond natural levels and flashy, indicating sensors are fouled.
3/2 – Turbidity is currently highly elevated (>100 NTU) and flashy at base flow.
2/24 – Looks like turbidity is cleaned every mid day, and then immediately becomes fouled. Appears to be drops in conductivity just preceding each drop in turbidity. If this is treated water entering the stream in flushes, why would turbidity drop so much, and then rise back to 20 NTU?
2/17 – Turbidity has become extremely flashy and 50-250 NTU.
2/10 – Turbidity is high, not related to storm flow, and sensors need to be cleaned.
2/3 – Turbidity has been increasing over the past month, is 40-60 NTU and flashy, and sensors need to be cleaned.
1/27 – Turbidity is elevated and flashy after storm event, and sensor should be cleaned.
1/20 – Turbidity remains elevated beyond natural levels.
1/13 – Turbidity remains elevated beyond natural levels.
1/6 – Turbidity is chronically elevated, now at >25 NTU indicating sensors are fouled.
2020
12/31 – Turbidity is chronically elevated, now at ~15 NTU and sensors have not been cleaned.
12/23 – Turbidity is chronically elevated at ~10 NTU and sensors have not been cleaned.
12/16 – Turbidity is chronically elevated at ~10 NTU.
12/9 – Turbidity is chronically elevated and though <10 NTU, it indicates fouling.

11/22 – Turbidity in increasing in past week, now >100 NTU, and sensors are likely fouled.
11/11 – Turbidity is mildly elevated after water depth recedes.
11/1 – Turbidity is very elevated and flashy after water depth recedes; turbidity has been flashy and between 15-45 NTU since October 1.
10/22 – Turbidity is more elevated and has become very flashy since the prior two October rain events, and sensors should be cleaned.
10/7 – Turbidity is elevated indicate fouling.
9/9 – Turbidity has risen mildly to unnatural level.
1/28 – Turbidity is elevated, sensors need cleaning.
2019
12/31 – Turbidity is mildly elevated beyond storm event, sensors need cleaning.
11/30 – Turbidity became highly elevated on 11/28.
11/5 – Sensors fouled since 11/3 storm.
9/28 – Continuing pulses of conductivity correlated with water depth, and with small pulses of turbidity. After major rain event and increase in depth, pulses continued though at lower uS/cm values.
9/24 – Continuing pulses of conductivity correlated with water depth, and with small pulses of turbidity.
9/17 – Continuing pulses of about 100 uS/cm in conductivity about every two hours
8/27 – Continuing pulses of about 100 uS/cm in conductivity about every two hours that coincide with pulses of turbidity.
8/17 – Pulses of about 100 uS/cm in conductivity about every two hours that coincide with pulses of turbidity. Epochs of pulses occur generally between noon and midnight.
8/10 - This site has 2-6 high peaks of conductivity/day, conductivity increases ~50-150 uS/cm.
6/11– Needs cleaning after storm.
5/21 – Similar to many other sites, loss of signal as of 20:55 EST on 5/20/18; signals regular again as of 12:20 EST.
2018

SL156 (Ridley Ck D) This site easily becomes fouled. Baseline turbidity is ~1 NTU.
7/11 – Turbidity is very elevated indicating fouled sensors as depth returns to baseline.
6/27 – Turbidity is very elevated and rising at base flow.
6/20 – Turbidity is elevated and flashy at base flow and indicates fouling.
6/14 – Turbidity is elevated at base flow and indicates fouling.
6/6 – Turbidity is extremely since storm event, and sensors are fouled.
5/19 – Turbidity is highly elevated (200-400 NTU) and flashy at base flow, and sensors need to be cleaned.
4/28 – Turbidity is highly elevated and flashy.
4/20 – Turbidity remains elevated above natural levels and indicates sensors need to be cleaned.
4/8 – Turbidity has not dropped since water depth decreased after today's rain event, and sensor are likely fouled.
3/30 – Turbidity is highly elevated as depth drops, indicating significant fouling of sensors.
3/2 – Turbidity keeps rising, now >100 NTU.
2/17 – Site fouls quickly and turbidity is elevated again beyond natural levels.
2/10 – Turbidity has risen and is flashy after last storm surge resided, and sensors are fouled.
2/3 – Turbidity is mildly elevated but above baseline and there may be sediment on the sensors.
1/6 – Sensors have become fouled as turbidity is flashy and 10-15 NTU.
2020
11/22 – Sensors are increasingly fouled as shown by increasing and flashy turbidity, now >200 NTU.
11/1 – Turbidity is still ~50 NTU after major storm event last night, and turbidity suggests sensors are fouled since 10/22 with three rain events following that date.
10/7 – Turbidity is ~30 NTU indicating major fouling of sensors.
9/9 – Turbidity is >30 NTU.
8/4 – Turbidity is > 350 NTU, and sensors need to be cleared and cleaned.
7/24 – Turbidity is ~100 NTU and sensors needs cleaning.
7/5 – Turbidity is highly elevated and sensors needs cleaning.
6/28 – Turbidity became mildly elevated at base flow since cleaning of yesterday.
6/19 – Turbidity is elevated after stream returned to base flow indicating debris on sensors.

5/31 – Although sensors were naturally cleaned after heavy rain event (turbidity did not drop to baseline after cleaning), turbidity is elevated above baseline and sensors need to be cleaned.
5/27 – Turbidity became very elevated after 5/26 rain event, and sensors need to be cleaned.
5/3 – Turbidity is elevated above natural levels at base flow, and sensor need to be cleaned.
4/19 – Turbidity has risen to >110 NTU during base flow, and sensors need to be cleaned.
4/12 – Sensors were cleaned but only to a turbidity level of 10 NTU, which is higher than the base level.
3/30 – Turbidity is increasingly elevated, ~15 NTU, and sensors need to be cleaned.
3/25 – Turbidity has become elevated (20-45 NTU) much beyond natural levels, and sensors need to be cleaned.
3/15 – Sensors were cleaned, but turbidity is slowly elevating beyond natural levels, and sensors need to be cleaned.
3/11 – Turbidity is >20 NTU and beyond depth increase, and sensors need to be cleaned.
3/4 – Turbidity is elevated and very flashy, indicating that sensors need to be cleaned.
2/22 – Sensors were cleaned prior to storm event on 2/21, but have become fouled again since storm.
2/18 – Turbidity is 10-35 NTU, and sensors need cleaning.
1/21 – Turbidity is mildly elevated and sensors need cleaning.
2019
12/31 – Turbidity is 50-250 NTU, sensors need cleaning.
12/24 – Turbidity elevated since major rain event (~10-20 NTU), and sensors need cleaning.
11/19 – Turbidity elevated (~15-40 NTU), and sensors need cleaning.
11/16 – Turbidity appears elevated above normal levels, and not fouled with debris; likely need cleaning.
11/5 – Sensors fouled since 11/3 storm.
10/29 – Sensors are fouled.
10/22 – Turbidity >20 NTU, sensors need cleaning.
10/8 – Sensors are fouled and need cleaning.
10/1 – Sensors are fouled and need cleaning.
9/28 – Sensors are fouled and need cleaning.
8/27 – Turbidity sensor fouled.
7/16 – Turbidity sensor fouled.
7/13 – Today at 8:50 EST conductivity dropped to 17 uS/cm with drop in depth to -4mm. Does not appear to have been cleaned at this time or any other unusual alteration in measurements.
7/9 – Needs cleaning, turbidity 100 NTU or more.
7/6 – Turbidity remains elevated.
7/1 – Turbidity remains elevated, >50 NTU.
6/18 – May have been cleaned at 8am today, but turbidity remains elevated, as high as 100 NTU.
6/15– Big drop in turbidity at 7am (EST) but still elevated above base, unlike some other sites after recent rain.
6/11– Needs cleaning.
5/25 – Needs cleaning.
5/21 – Similar to many other sites, loss of signal as of 21:10 EST on 5/20/18; signals regular again as of 12:00 EST.
5/18 – Needs cleaning.
5/14 – Needs cleaning.
2018

SL157 (UT Middle Run) This site has been filling in with sediment. Shane will replace battery (note of 10/8/18). Baseline turbidity is 1-1.5 NTU.
7/11 – Turbidity is flashy and elevated after major rain event indicating fouled sensors
5/30 – Turbidity is elevated above natural levels at base flow indicating sediment/algae or other fouling.
5/19 – Turbidity is highly elevated and flashy at base flow.
4/28 – Sensors need to be cleaned.
4/20 – Turbidity of 600-1000 NTU indicates sensors are packed or buried and need to be cleaned.
4/8 – Turbidity has increased and become more flashy, now ~300 NTU, indicating sensors need to be cleaned.
3/30 – Turbidity is significantly elevated beyond natural levels as depth decreases, suggesting sensors are fouled.
3/2 – Turbidity remains become mildly elevated and rising at baseflow.
2/24 – Turbidity has become mildly elevated again at baseflow; site easily fouls.
2/17 – Turbidity is mildly elevated above base level with low depth, suggesting sensors should be cleaned.

2020

12/31 – Turbidity dropped without cleaning, but turbidity is again ~1400 NTU, and sensors should be checked.
12/23 – Something happened during the rain event on 12/17 and turbidity jumped up to where it is now – 1300-1400 NTU. Sensors should be cleared and cleaned to prevent damage.
12/16 – Turbidity is elevated since 12/9 and indicates fouling.
11/1 – Major fouling since water receding after major storm event on 11/1.
10/2 – Battery is dropping since late September, now 3.68; the station has functioned on lower battery strength before, but will need to be recharged. Sensors very fouled and flashy - >100 NTU.
10/1 – Battery has been persistently 4.02v from 18:11 on 9/27 to the present on 10/1. Not previously seen at this station.
8/20 – Turbidity is mildly elevated at base flow and warm weather might result in algae on sensors.
8/4 – Turbidity is mildly elevated at base flow and warm weather might result in algae on sensors.
7/24 – Turbidity is mildly elevated at base flow indicating sensors need to be cleaned.
6/19 – Turbidity is highly elevated at base flow indicating much debris on sensors.
5/31 – Turbidity is mildly elevated above the natural level for this reach.
5/17 – Sediment might be a problem again as turbidity is 800-1400 NTU.
5/3 – Turbidity has risen and is flashy indicating debris has fouled the sensors.
4/19 – Turbidity has become very elevated (~75 NTU), sensors need to be cleaned.
3/4 – Turbidity is elevated and flashy, and sensors need to be cleaned.
2/4 – Turbidity is mildly elevated, might be coated with sediment, sensors need cleaning.
12/24 – Turbidity flashy since last major rain event on 12/21, and sensors need cleaning.
12/7 – Turbidity >300 NTU, sensors need cleaning.
11/16 – Turbidity >175 NTU, sensors need cleaning.
11/9 – Turbidity 50-80 NTU, sensors need cleaning.
10/8 – Conductivity went to 0 suddenly on 9/24, and since that time the average depth declined.
9/28 – Sensors were naturally cleaned but turbidity is still mildly elevated, and may be algae on sensors. Battery continues to decline, now down to 3.38-3.4
9/24 – Conductivity still peaked at historic high since 9/14. Turbidity is mildly elevated after depth increase and decrease. Battery continues to trend down, now 3.41-3.43 v.
9/21 – Conductivity still peaked at historic high since 9/14. Turbidity was cleaned by stormwater, but is still mildly elevated, may have algae, and need to be cleaned. Battery still trending down, betw 3.46-3.5v.
9/17 – Conductivity has peaked at historic high since 9/14. Turbidity >1300 NTU. Battery still trending down, now 3.5-3.52 v.
9/6 – Turbidity highly elevated, sensor seems blocked. Battery at 3.61-3.68 v.
8/31 – Battery stabilized at 3.65-3.70 v.
8/27 – Battery stabilized at 3.65-3.70 v.
8/23 – Battery still trending down to 3.65 v.
8/20 – Turbidity >250 NTU. Battery trending down over past month to 3.7 v.
8/17 – Turbidity >65 NTU. Battery declined, varies between 3.74 v-3.78 v.
8/10 – Turbidity mildly elevated, sensors need cleaning. Battery has varies only between 3.78v-3.81v since 8/3/18.
8/6 – Turbidity more elevated, sensors need cleaning. Battery has recovered only to 3.81v since 8/3/18.
8/3 – Turbidity elevated, sensors need cleaning. Battery has been declining steadily since 7/15/18, but remains >3.7v.
7/30 – Turbidity elevated, sensors need cleaning.
7/27 – Turbidity mildly elevated. Battery dropping its high level every day since 7/14, though still >3.7v.
7/13 – Turbidity gradually increasing, now elevated, may be algae.
6/8 – Sensors are fouled.
6/1 – Sensors need cleaning.
5/25 – Needs cleaning.
5/21 – Similar to many other sites, loss of signal as of 20:05 EST on 5/20/18; signals regular again as of 12:20 EST. Turbidity >11 NTU.
5/18 – Needs cleaning and fouled.
5/14 – Needs cleaning.
5/11 – Needs cleaning.
5/7 – Needs cleaning.

5/4 – Needs cleaning.
4/30 – Fouled and needs cleaning.
2018

SL158 (Primrose Ck U-Solebury School) Frequent gaps in signal due to low cell phone coverage. Francis Collins is checking it. Lack of water in stream - Quarry downstream of station, sinkholes (on Solebury Sch campus?) are attributed to water withdrawals from the quarry (currently being phased out). Upstream creek flows normally. Freezing in winter could be a problem; sensor was removed 12/4/18 for the winter. 5/28/19 Bressler: battery changes do not appear to represent actual voltage, and is a problem of the Mayfly logger per Hicks. Although depth is very low today: -50mm reading, per Stroud team, this stream goes dry and there is no need to fix or replace anything.

6/20 – Depth readings are not normal, dropping to ~ -80mm on 6/16 and 6/17
6/14 – Again depth went to -0 mm on 6/11. Abnormal pattern is a decline to -0mm, then returns to about 270 mm, and then declines persistently (not all data points can be viewed).
6/6 – Depth went to -22 mm on 6/2, and was persistently declining since 5/31 despite storm events. Today depth was 265.7mm; conductivity and temperature appear normal. There was a time gap between 6/2 and 6/6, when the water depth reading recovered.
1/6 – Last transmission to MonMW was 12/30/19.
2020
10/1 – Stream is dry and cannot determine if signals are correct except they are all consistent w dry stream.
8/27 – Although depth is very low today - -50mm reading, per Stroud team, this stream goes dry and there is no need to fix or replace anything.
5/31 – Stream depth and conductivity signals appear abnormal (e.g., stream depth is over two meters today). Does the water temperature get to >70^{o}F? Logger temperature of 102^{o}F seems high for the weather today, and is higher than other sites.
5/27 – Battery became abnormal on 5/20, and since 5/22 has been flashing between 15v and 0v.
4/12 – Both water depth and conductivity measurements became abnormal beginning the afternoon of 4/10/19, and appeared to be dysfunctional until 13:15 EST today. Was the sensor removed? Did not see problems with temperature, or battery.
4/8 – Battery was turned on on 4/6/19.
2019
12/14 – No signal transmissions since 12/4.
12/7 – No signal transmissions since 12/4.
11/30 – Can conductivity be measured at ~250 uS/cm when water drops to 4-5 mm in depth? Is the depth a valid measurement? If so, this is very well placed sensor.
8/31 – Depth <0mm since 8/26/18. Conductivity at 0 uS/cm since 8/28.
8/27 – Last depth (today) was -7 mm, still reading conductivity (337 uS/cm).
8/17 – No signal since 8/16/18; battery >4v.
8/10 – Three signals on 8/7, last is one signal on 8/8.
8/6 – Last signal on 8/2, battery >4v.
8/3 – Three signals since last check, last on 8/2.
7/30 – Last signal was 7/20.
7/27 – Last signal was 7/20.
7/23 – Last signal was 7/20. Battery was >4v.
7/20 – Conductivity signal back from last flatlining, as of 7/16. Depth remains abnormal from 7/9-7/16 with readings in negative range. Depth from 116mm to 219 mm on 7/18 and 7/19
7/16 – Last signal 7/14. Conductivity still flatlined since 7/9. Depth reading abnormal; went below 0mm on 7/9.
7/13 – Conductivity flatlined since 7/9. Depth today reading -20mm to -110mm; went below 0mm on 7/9.
7/9 – Same pattern: conductivity reads 0 uS/cm when depth goes to ~50mm.
7/6 – Is it normal for conductivity to read 0 uS/cm when depth goes to ~50mm? Water temperature readings are being taken but conductivity drops out.
7/1 – Depth declined over past 1-2 days to ~0.
5/21 – Similar to many other sites, loss of signal as of 20:35 EST on 5/20/18; signals regular again as of 12:05 EST.
5/18 – Signals always had gaps, but more infrequent since 5/6; 2 signals on 5/7 up to about 10a EST.
5/7 – Signals always had gaps, but more infrequent since 5/6; 2 signals on 5/7 up to about 10a EST.

SL159 (Primrose Ck D at Delaware R) This sensor is downstream from a quarry and the release schedule causes the drops in depth. This station is offline but data being saved to sd card. Station back on line.

2020

10/22 – Logger temperatures still most frequently lower than water temperature.

2019

10/29 – Logger temperatures still most frequently lower than water temperature.

10/26 – Is it possible that logger temperatures would be most frequently lower than water temperature at this site?- occurring since about 10/12/18. Battery is back up to ~4v.

10/19 – Battery dropped to 0 v on 10/17 but CTD signals still sending with very little voltage.

10/1 – Strange fluctuations and sudden drops in depth (to 100 mm) seen since installation. Historically low drops in water depth occurred on 9/19 and 10/1.

5/21 – Similar to many other sites, loss of signal as of 21:25 EST on 5/20/18; signals regular again as of 12:00 EST.

2018

SL167 (Angelica Ck-St. Bernadine) Berks Nature. Baseline turbidity is 1-2 NTU. No transmission but data saved on sd card. Sensors back online as of 9/18/19. St. Bernadine-battery keeps dying, and Hicks replaced twice in a month; will troubleshoot in November 2019. St. Bernadine site fouls at very high levels frequently.

7/11 – Turbidity is above 100 NTU; sensors need to be cleaned.

6/27 – Turbidity is high and flashy and sensors need to be cleaned.

6/20 – Turbidity is high and flashy and sensors need to be cleaned.

6/14 – Turbidity is persistently high and does not appear that sensors have been cleaned.

6/6 – Turbidity persists in being elevated above natural levels, indicating sensors need cleaning.

5/30 – Turbidity is elevated above natural levels at base flow and before recent rain event, indicating sediment/algae or other fouling on sensors.

1/6, 1/13, 1/20, 1/27, 2/3, 2/10, 2/17, 2/24, 3/2 – No transmissions.

2020

12/9, 12/16, 12/23, 12/31 – No transmissions.

12/2 – Transmission began again on 11/19, but last transmission is 11/25, battery was 3.95 v. Turbidity was 1400 NTU. Hicks asked 12/4 if sl167 was still logging to the sim card since it went offline. Griffith said he replaced the sim card, which worked for a few weeks. Might need a new cell board and sim card; "I can activate on my account then you can activate with the little box and we can try a 3rd."

11/11 – Last transmission was 11/4/19.

11/1 – Turbidity is >1400 NTU again after major storm event of 11/1.

10/22 – Turbidity is >1400 NTU and sensors have become compacted as of 10/20.

10/1 –Turbidity highly elevated. Because conductivity is one of the concerns at this site, don't want elevated turbidity to affect conductivity.

2019

9/28 –No signals since early on 9/18.

9/24 –No signals since early on 9/18 after major rain/increased water depth.

9/21 –No signals since early on 9/18 after major rain/increased water depth.

9/17 –Daily/twice daily pulses of conductivity continue

9/6 – Turbidity elevated, sensors need cleaning. Daily/twice daily pulses of conductivity continue

8/17 – Sensors are fouled, turbidity>90 NTU. Daily pulses of conductivity of 300-350 uS/cm that are not accompanied by increases in water temp.

8/10 – Daily pulses of conductivity of 300-350 uS/cm that are not accompanied by increases in water temperature.

7/13 – Depth and conductivity dropped abnormally for a single reading on 7/11 at 8:50 EST.

5/21 – Similar to many other sites, loss of signal as of 21:15 EST on 5/20/18; signals regular again as of 12:01 EST.

5/14 – Huge increases in turbidity (from <10 NTU to >165 NTU) with increases in water

SL168 (Punches Run) Berks Nature. Poor cell coverage**.** Battery seems to drain slowly but there has been some charging. Punches sends data every now and again so is probably draining because of unsuccessful multiple attempts (DB). In shady forest, needs bigger panel and battery; waiting for action by Berks Nature. Transmission is on and off. Baseline turbidity is 3-4 NTU. No transmission but data saved on sd card. Back online on 9/25/19. This site fouls easily. Station was repositioned. Shannon thinks 3.7-3.8 v during summer foliage is not a concern.

6/27 – Turbidity is stable but elevated above natural levels at base flow indicating fouling of sensors.

6/20 – Turbidity is significantly elevated indicating fouled sensors.

6/14 – Turbidity remains mildly elevated above natural levels indicating fouled sensors. Battery continues to drop, now low at 3.68v and high at 3.79 v. Discussion re poss reasons solar panel not being light exposed.
6/6 – Turbidity is mildly elevated above natural levels indicating need for cleaning. Battery has been dropping since 5/28, now as low as 3.75v , recovered as high as 3.84v.
5/30 – Turbidity is elevated above natural levels at base flow; sediment/algae or other fouling on sensors.
5/19 – Turbidity is elevated at base flow; 17 NTU is above base level of 3-4 NTU.
5/7 – Turbidity is elevated above natural levels as water depth goes to baseline.
4/28 – Turbidity has become extreme and flashy.
4/20 – Turbidity is mildly elevated above natural levels, indicating sensors need to be cleaned.
4/8 – Though turbidity appears chronically flashy at this site, it is now elevated since rain event today.
3/30 – Turbidity is elevated and extremely flashy at base flow indicating sensors are fouled and might have debris around them.
2/17 – Turbidity is elevated above natural levels (80-120 NTU), and sensors are fouled
2/10 – Turbidity is elevated above natural levels (80-120 NTU), and sensors are fouled
2/3 – Turbidity is flashy and is often >1000 NTU, but even lowest levels are elevated indicating sensors are fouled.
1/27 – Sensors are fouled after storm as indicated by high and flashy turbidity.
1/20 – This site fouls the sensors quickly, and the sensors are significantly fouled.
1/13 – Was the station repositioned today? Turbidity is down to natural levels and battery appears recharged. However, water level increased about 40+ cm; was it reset at the correct height or was the height change necessitated by moving it to deeper water?
1/6 –Turbidity still ~1000 NTU, site has not been repositioned. Battery remains around 3.45 v.
2020
12/31 –Turbidity still >1100 NTU, site has not been repositioned.
12/23 –Battery is still 3.45-3.5 v. Turbidity increased on 12/19, and now >1100 NTU.
12/16 –Battery is ~ 3.45 v. Turbidity remains at ~600 NTU since 12/3/19. Turbidity remains high because stations needs to be repositioned
12/9 –Battery slightly lower, now 3.5-3.6 v. Turbidity is higher, ~600 NTU.
12/2 –Battery is slightly lower, now 3.61 v. Turbidity is very elevated (50-70 NTU) and could affect conductivity readings.
11/22 –Turbidity is elevated again at this easily fouled site, now >60 NTU. Battery stable at 3.67-3.8 v.
11/11 –Turbidity is >1400 NTU.
11/1 –This site fouls easily. Now >25 NTU after major storm event last night.
10/22 –Battery was recharged on 10/11 but dropping again, now at 3.53v. Turbidity is almost 1400 NTU.
10/7 –Battery is persistently dropping, now down to 3.47v. Although turbidity is lower, it is still above natural levels indicating sensors need to be cleaned.
10/1 – Turbidity is very elevated. Battery is persistently dropping, now down to 3.79v.
2019
12/7 – No signals transmitted from this site since 11/21/18.
11/30 – No signals from this site since 11/21.
11/19 – This site might have been cleaned on 11/18, but turbidity is still elevated beyond natural levels (>12 NTU) and water depth has returned to baseline. Battery stable at 3.62-3.67 v.
11/16 – Turbidity remains elevated (15-250 NTU) and sensors need cleaning. Battery stable at 3.59-3.67 v.
11/9 – Turbidity at 1400 NTU, and conductivity. Battery is draining and now 3.59-3.64 v.
11/5 – Turbidity elevated since 11/3 storm. Battery <3.7v.
11/2 – Battery <3.7v, declining.
10/26 – Turbidity mildly elevated, needs cleaning.
10/22 – Turbidity mildly elevated, needs cleaning.
10/19 – Turbidity mildly elevated, needs cleaning.
10/15 – Highest conductivity levels since installation, beginning 10/11.
9/24 – Battery down to 3.53 v, not recovering, trending down.
9/21 – Battery down to 3.58 v, not recovering, trending down.
7/16 – Signals still very infrequent. Battery recharged on 7/14, but only one signal on 7/14, one on 7/16.
7/13 – One signal on 7/8, one signal on 7/12. Battery at these two signals was 3.56v.
7/9 – Battery remains at 3.5v - 3.6v.
7/6 – Battery remains low, 3.5-3.6 v.
7/1 – Battery remains low, 3.5-3.6 v. Last signal 7/1/18.

6/28 –Battery still low, < 3.6 v since 6/22. Depth returned to ~200 mm.
6/18 – Depth has increased by 70+ mm since 6/10/19. Battery still low, ~3.6 v.
6/15 – Battery still low, 3.59v.
6/11 – Long gaps in signals, and no signals since June 6. Battery continues to decline, last signal 3.6v.
6/8 – Long gaps in signals, and no signals since June 6. Battery continues to decline, last signals ~3.7v.
6/1 – One signal on 5/27, one on 5/29, one on 5/30 and one on 5/31. Battery continues to decline, last signal was 3.79 on 5/31.
5/25 – Battery continues to go lower, <3.9 since May 22 and decreasing as low as 3.87.
5/21 – Long gaps between signals. Battery continues to drain slowly, now ~3.9 v.
5/14 – Long gaps between signals (6 to 20+ hrs).
5/18 – Signals vary greatly from day to day, but had been frequent on May 15, then only three on May 16, two on May 17, and two today. Turbidity not high, but needs clean as above base level since major storm event.

2018

SL169 (Cherry Ck-pourpoint) Turbidity sensor appears ok, just fouls easily. Baseline turbidity is 3-4 NTU.
6/20 – Turbidity is highly elevated.
6/14 – Turbidity is >150 NTU.
5/30 – Turbidity remains elevated, indicating sensors are fouled.
5/19 – Turbidity is above natural levels and flashy, indicating sensors are fouled.
5/7 – Turbidity is elevated above natural levels.
4/28 – Turbidity has increased indicating material on sensors.
4/20 – Turbidity is elevated above natural levels.
4/8 – Turbidity has risen to >400 NTU and sensors may have material on them or be buried; increase in water depth cleaned them but turbidity is still >400 NTU.
3/30 – Turbidity is elevated above natural level even post storm as it is flashy, indicating fouling.
3/2 – Turbidity is flashy, suggesting debris on sensors.
1/27 – Turbidity >1200 NTU since storm and very flashy indicating major fouling.
1/13 – Sensors have been cleaned but battery should be recharged.
1/6 – Battery is below 3.7 v, and should be recharged. Turbidity is rising and is ~200 NTU.

2020

12/31 – Turbidity is highly elevated. Battery is low, ~ 3.65-3.75 v.
12/23 – Turbidity is highly elevated and flashy indicating sensor are fouled. Battery is low, around 3.65-3.8 v, and recharging should be considered.
12/16 – Turbidity remains very elevated since 12/5.
12/9 – Turbidity became elevated regardless of depth.
11/11 – Turbidity is elevated and increasing and depth drops, suggesting sensors are fouled.
10/7 – Turbidity is elevated and sensors need to be cleaned.
10/1 – Turbidity is heavily fouled since 9/27/19, 200-1000+ NTU.
9/19 – Turbidity is highly elevated, 100-200+ NTU.
9/9 – Turbidity now >300 NTU and very flashy.
9/3 – Turbidity is lower than last week but remains very elevated and sensors have not been cleaned.
8/27 – Turbidity is 500-1400 NTU and sensors need to be unpacked and cleaned.
8/20 – Turbidity is very elevated and sensors need to be cleaned.
8/14 – Turbidity has become very elevated and sensors need to be cleaned.
6/19 – Turbidity is elevated and increasing and depth decreases after major rain event of today, indicating that sensors are likely fouled.
5/31 – Turbidity is elevated and sensors need to be cleaned.
5/17 – Turbidity is elevated and might have sediment and algae on them.
5/10 – Turbidity has risen above natural levels, now 15-20 NTU and flashy indicating fouling.
4/29 – Sensors remain packed, with turbidity above 1200 NTU. No indication that sensors have been cleared.
4/26 – Sensors are packed again, with turbidity above 1200 NTU.
4/19 – Sensors were well cleaned on 4/13, but after the big rain event of 4/14, sensors have become fouled again, and turbidity is currently >25 NTU.
4/12 – Turbidity is >1200 NTU.
4/8 – Sensors have become severely fouled again possibly from sediment – 300-800 NTU.

4/5 – Site was cleaned but needs to be cleaned frequently, as sensors have become fouled again: turbidity is almost 150 NTU.
3/11 – In a 10-minute period on 3/7/19, turbidity went from 3.7 NTU to 1325 NTU, and has remained >1300 NTU. Something has packed the sensors in; should be checked and cleaned.
2/18 – Turbidity is 300-500 NTU, and sensors are fouled.
2/15 – Sensors are not being cleaned, and turbidity is reading as high as 1300 NTU.
2/9 – Turbidity is highly elevated (600-1200 NTU), sensors are blocked and need to be cleaned.
2/4 – Turbidity is mildly elevated and sensors need to be cleaned.
1/21 – Water temperature is 0.1^{o}C, and temperature will drop tonight.
12/7 – Sensors remained blocked, >1200 NTU.
11/30 – Turbidity is 1200 NTU, sensors blocked.
11/19 – Turbidity is very elevated, >6000 NTU, sensors blocked.
11/16 – Turbidity is very elevated, >1000 NTU, sensors blocked.
11/2 – Please check if turbidity values appear the result of cleaning and then fouling, or if it is indicating damage to the sensor. This is because turbidity at installation this summer were 2-3 NTU, but periods of low values now are ≤1 NTU.
10/22 – Sensors blocked, turbidity >1200 NTU.
10/15 – Turbidity so high, suggests sensors might be wrapped in debris.
9/28 – Turbidity varies from a minimum of 17 NTU to >1380 NTU.
9/21 – Turbidity steadily elevated, may be a lot of algae.
9/17 – Sensors have material on them, and even when naturally cleared, turbidity is elevated >17 NTU.
8/3 – Turbidity very elevated: 20-100 NTU.
6/11 – Turbidity at elevated plateau and may be fouled.
6/1 – no transmission.
2018

SL170 (Chestnut Run) Base turbidity is ab. 7 NTU. 11/2/18-Shannon and Rachel will check turbidity sensor. Shannon suggested 11/16 to check if sensors are buried in mud. Sarah and Michelle will check on the sensors and found sensors were buried in mud, and will clean. Baseline turbidity is 2-3 NTU.

6/6,6/14,6/20,6/27,7/11 - Last observation was 5/16. Hicks: It's a 2G board failure, which causes the battery power to drop. It will need a new 2G board or a more expensive hardware upgrade and Mayfly reprogramming to convert it to AT&T 4G LTE. It's still working fine, just recording data to the mem card, but the 2G board should be unplugged so it won't cause excessive battery draw in the meantime.

3/30 – Turbidity is consistently elevated beyond natural levels, suggesting sensors are fouled.
2/24 – Turbidity is increasing, now >200 NTU during base flow.
2/17 – Turbidity remains very high and do not appear to have been cleaned.
2/10 – Turbidity remains very high, >400 NTU, and sensors are fouled and need to be cleared and cleaned.
2/3 – Turbidity data became extremely high on 1/28, and is >400 NTU unrelated to rise in stream depth.
1/27 – Turbidity data does not look normal, and did not increase at all during 1/26 storm event.
1/6 – Last signal on MonMW was 12/30/19.
2020
12/31 – Last signal on MonMW was more than 24 hrs ago, on 12/30/19. Battery was >4v.
11/1 – Turbidity is 200-300 NTU.
10/22 – Turbidity is very elevated and flashy, suggesting sensors need to be cleaned after rain event on 10/20-21 as after natural cleaning at base flow turbidity is still ~35 NTU.
10/7 – Turbidity is extremely elevated and flashy, sensors fouled.
10/1 – Turbidity is highly elevated, sensors likely fouled and possibly covered with sediment and algae.
9/19 – Turbidity is elevated.
9/9 – Turbidity is elevated beyond natural levels.
9/3 – Turbidity is elevated beyond natural levels and sensors need to be cleaned.
8/27 – Turbidity is mildly elevated at base flow, but appears to be normal readings – Johnson visited site on 8/26.
8/14 – Turbidity reached floor level (~1 NTU) on 7/22/19 and has not changed significantly since then even during events of high depth. Could this be normal at this site?
7/5 – Turbidity continues to be extremely high and sensors need to be cleaned.
6/28 – Turbidity suddenly increased by 400-450 NTU indicating sensors are blocked/packed and need to be cleared and cleaned.

6/19 – Turbidity is highly elevated indicating much debris on sensors.
6/14 – Turbidity is persistently highly elevated, and sensors need to be cleared and cleaned.
6/6 – Turbidity is persistently highly elevated during base flow, and sensors need to be cleared and cleaned.
5/31 – Turbidity is elevated >80 NTU and sensors need to be cleaned.
5/27 – Turbidity is elevated, ~40 NTU, and sensors need to be cleaned. It appears only natural cleaning occurred overnight on 5/20.
5/17 – Turbidity is now 400-1500 NTU and indicated packing of sensors, which need to be cleared and cleaned.
5/13 – Turbidity 50-100 NTU and flashy, and sensors need to be cleaned.
5/10 – Turbidity has risen to >50 NTU and sensors need to be cleaned.
5/3 – Sensors remain fouled and need to be cleaned.
4/29 – These sensors have not been cleaned since November, and sensors are highly fouled.
4/26 – These sensors have not been cleaned since November, and sensors are highly fouled. Turbidity is currently 200-400 NTU.
4/19 – Turbidity is >200 NTU; sensors need to be cleaned.
4/12 – Turbidity is >400 NTU; sensors need to be cleaned.
4/8 – Turbidity is >400 NTU; sensors are enclosed in debris/sediment and need to be cleaned.
4/5 – Turbidity is >450 NTU; sensors are enclosed in debris/sediment and need to be cleaned.
3/30 – Turbidity is 160-300 NTU; sensors need to be cleaned.
3/25 – Turbidity is 160-280 NTU; sensors need to be cleaned.
3/15 – Turbidity is >250 NTU; sensors need to be cleaned.
3/11 – Turbidity is 50-150 NTU and flashy; sensors need to be cleaned.
3/4 – Turbidity remains elevated and sensors need to be cleaned.
3/1 – Turbidity is increasing, >500 NTU. Sensors need to be cleaned.
2/22 – Turbidity remains highly elevated, 200-300 NTU. Sensors are fouled.
2/18 – Turbidity remains highly elevated. Sensors are fouled.
2/15 – Turbidity remains highly elevated. Sensors need to be checked.
2/9 – Turbidity remains highly elevated, now >200 NTU. Sensors need to be checked.
2/4 – Turbidity is extremely elevated, now >450 NTU. Sensors need to be checked.
2/1 – Turbidity is highly elevated, now 280-400 NTU. Sensors need cleaning.
1/28 – Turbidity is highly elevated since 1/24 storm receded, now 190-300 NTU. Sensors need cleaning.
1/21 – Sensors were naturally cleaned but turbidity remains >20 NTU.
1/18 – Sensors appear buried, turbidity climbed to 650-700 NTU.
1/14 – Turbidity rose further unrelated to storm event, now >350 NTU, sensors need to be checked if buried.
1/11 – Turbidity rose further unrelated to storm event, now >200 NTU, sensors need cleaning.
1/5 – Turbidity has risen further unrelated to storm event, now 80-130 NTU, sensors need cleaning.

2019

12/31 – Turbidity has risen since storm water receded, now ~50 NTU.
12/24 – Turbidity 80-100 NTU, sensors not cleaned. Fouling began 11/24.
12/14 – Turbidity ~800 NTU, sensors not cleaned. Fouling began 11/24.
12/7 – Turbidity ~700 NTU, sensors not cleaned.
11/30 – Turbidity now >1400 NTU; what was outcome of sensor check by Sarah and Michelle?
11/19 – Turbidity sensor remains bottomed out and unaffected by storm events. Battery stable at 3.65-3.74v.
11/16 – Turbidity sensor remains bottomed out and unaffected by storm events.
11/9 – Turbidity sensor bottomed out.
11/5 – Turbidity has run very low, appears not probable levels of NTU.
11/2 – Turbidity has run very low, appears not probable levels of NTU, and much lower than at installation.
10/19 – Conductivity is very flashy at this site, and is now at a historically low level since 10/12.
10/15 – Conductivity is very flashy at this site, and went from high of ~570 uS/cm to 145 uS/cm in a little over one hour on 10/11.
10/8 – Conductivity has been steadily increasing since 9/30 and reached historic levels since installation, which suggests a new source of conductivity, however prior periods of lesser increase returned to mean levels. Turbidity remains steady through big rain events.
10/1 – Turbidity remains steady at 0.05 since 9/19, through big rain events.
9/28 – Turbidity has been strangely steady at 0.05 since 9/19, through big rain events. Is this normal?
9/17 – Turbidity remains highly elevated, and sensors need cleaning.
9/6 – Turbidity remains highly elevated, and sensors need cleaning.

8/31 – Sensors need cleaning.
8/27 – Sensors need cleaning.
8/23 – Turbidity very elevated, >650 NTU.
8/20 – Turbidity very elevated.
8/17 – Turbidity elevated, >50 NTU.
8/10 – Turbidity remains mildly elevated, and cleaning is not apparent.
8/6 – Turbidity elevated: >30 NTU.
8/3 – Turbidity elevated: >25 NTU.
7/23 – Turbidity elevated beyond storm, needs cleaning.
7/20 – Turbidity elevated ~>15 NTU), needs cleaning.
7/16 – Turbidity elevated (~ 35-100 NTU), needs cleaning.
7/13 – Turbidity elevated (17-20 NTU), needs cleaning.
7/6 – Turbidity mildly elevated (>10 NTU), needs cleaning.
6/15 – Turbidity >10 NTU, needs cleaning.
6/1 – Base turbidity slightly high, ~7 NTU.
2018

SL171 (Loper Run) Was Sarah Johnson; don't know current station manager at Am Littoral Soc. Re changes in conductivity, let it run as-is for a little longer but keep an eye on it and see if it continues to have unexplained rapid changes (Hicks). Shannon suggested 11/16/18 to check if sensors are buried in mud. Sarah and Michelle will check on the sensors, and found they were buried in mud and will clean. Baseline turbidity is 3-4 NTU.

7/11 – Turbidity is/has been so high that sensor fouling might be affecting e-conductivity and depth measurements because it is flatlined at 0 µS/cm since 10:25p on 7/10, while water depth is reading 2.4-2.7 meters.
6/27 – Turbidity is still >1200 NTU and water depth reading is almost 3 meters. CTD is broken.
6/20 – Turbidity is still >1200 NTU and sensors should be checked. Water depth almost 3 m.
6/14 – Turbidity is >1200 NTU and sensors should be checked. Water depth is reading so high that it may indicate a sensor problem - about 2.25 to >3 meters in depth. Depth has increased over time. Increasing depth began in February 2020 and has been in a persistent positive gradient.
6/6 – Turbidity has risen to >250 NTU indicating fouling.
5/30 – Turbidity is elevated at base flow indicating sensors are fouled.
5/7 – Turbidity is >100 NTU.
4/28 – Turbidity is chronically rising, and sensors need to be cleaned.
4/20 – Nice cleaning, but sensors have become fouled and flashy again.
4/8 – Turbidity has increased even more and flashiness indicates sensors are very fouled and need to be cleared and cleaned. There are surprising changes in depth at this site, of 0.2 meters each day.
3/30 – Turbidity is increasing (>600 NTU), extremely high, and flashy, unrelated to depth. This indicates sensors are fouled and could affect e-conductivity measurements.
3/2 – Turbidity sensor might be packed in something as it has remained at 2.62 NTU since 2/18. If so, it could affect conductivity measurements.
2/24 – Turbidity is rising and very flashy, now 300-500 NTU.
2/17 – Turbidity continues to be very flashy and rising, now 200-400 NTU.
2/10 – Turbidity is very flashy and rising, and sensors need to be cleared and cleaned.
2/3 – Turbidity is rising since last storm and very flashy, ranging from 200 NTU to 600 NTU, and sensors need to be cleared and cleaned.
1/27 – Storm event cleared sensors, but turbidity remains unnaturally high and sensors need to be checked and cleaned.
1/20 – Turbidity continues to be extremely high, up to 1,000 NTU, for past three weeks.
1/13 – Turbidity is extremely high, and was naturally cleaned from 1100 NTU to 600 NTU during the last rain event. Excessive debris on sensors could cause damage such as pull at cables or bend metal and staff gauge, and can alter conductivity values.
1/6 – Last transmission to MonMW was 12/30/19.
2020
12/31 – No signals for past 24+ hours, since 12/30/19, however, could be problem with MonMW. Battery was ~4v. Turbidity is extremely elevated - >300 NTU – and flashy, indicating sensors are fouled.
12/23 – Turbidity has been rising since 12/14, and is now 440 NTU.
12/16 – Turbidity is significantly elevated and rising, now ~100 NTU and sensors have not been cleaned in about a month.

12/9 – Turbidity is significantly elevated, though were naturally cleaned today, and sensors need thorough cleaning.
12/2 – Turbidity is lower but remains significantly elevated and sensors need cleaning.
11/22 – Turbidity is highly elevated, ~90 NTU.
11/1 – Turbidity is highly elevated, with no return to baseline turbidity since early October.
10/22 – Turbidity is highly elevated at base flow after last rain event on 10/20-21, ~55-60 NTU.
10/7 – Turbidity is highly elevated beyond changes in water levels, and sensors likely fouled.
10/1 – Turbidity is highly elevated and flashy.
9/19 – Turbidity is highly elevated.
9/9 – Turbidity is highly elevated.
9/3 – Turbidity is highly elevated beyond natural levels and sensors need to be cleaned.
8/27 – Turbidity is rising, now 100-150 NTU.
8/20 – Turbidity is highly elevated and sensors need to be cleaned.
8/14 – Turbidity is highly elevated and sensors need to be cleaned.
8/4 – Turbidity is highly elevated and sensors need to be cleared and cleaned.
7/24 - Turbidity is highly elevated and sensors need to be cleared and cleaned.
6/19 – Turbidity is highly elevated indicating much debris or sediment on sensors.
6/14 – Turbidity remains elevated and sensors need to be cleared and cleaned.
6/6 – Turbidity remains highly elevated and sensors need to be cleared and cleaned.
5/31 – Turbidity is >95 NTU and sensors need to be cleared and cleaned.
5/27 – Turbidity is >80 NTU after last rain event, and sensors need to be cleared and cleaned.
5/17 – Sensors are only naturally cleaned and do not reach baseline; might have sediment and/or algae on them.
5/3 – The sensors do not appear to have been cleaned and turbidity remains elevated above natural levels at base flow.
4/29 – Although turbidity has returned to near base levels, these sensors do not appear to have been cleaned.
4/26 – Turbidity is 500-800 NTU and sensors need to be cleared and cleaned.
4/19 – Turbidity is 100-400 NTU and highly variable; sensors need to be cleared and cleaned.
4/12 – Turbidity extremely elevated and highly variable NTU; sensors need to be cleared and cleaned.
4/8 – Turbidity now 300-800 NTU; sensors need to be cleared and cleaned.
4/5 – Turbidity has risen and now >180 NTU; sensors need to be cleared and cleaned.
3/30 – Sensors have been cleared out, but turbidity remains elevated beyond natural levels, 20-40 NTU.
3/25 – Sensors appear buried based on turbidity of 900-1200 NTU.
3/15 – Turbidity is ~30 NTU, and sensors need to be cleaned.
3/11 – Sensors were naturally cleaned in the last storm, but turbidity is still ~70 NTU and sensors need to be cleaned.
3/4 – Turbidity remains very high and sensors need to be cleaned.
3/1 – Turbidity remains very high since depth declined after storms. Sensors are fouled.
2/22 – Turbidity remains highly elevated, >140 NTU. Sensors are fouled.
2/18 – Turbidity is 145-165 NTU, sensors are fouled.
2/15 – Turbidity is highly elevated, sensors need to be checked and cleaned.
2/9 – Turbidity is 350-585 NTU, sensors need to be checked and cleaned.
2/4 – Turbidity is still extremely high, sensors need to be checked and cleaned.
2/1 – Turbidity is still extremely high, sensors may be blocked, which can affect conductivity measurements.
1/28 – Turbidity is >400 NTU, sensors need cleaning.
1/21 – Sensors were naturally cleaned but turbidity remains >380 NTU.
1/18 – Sensors need to be checked and cleaned, as turbidity has varied between a base level of 200 NTU to 1134 NTU.
1/14 – Turbidity very high and flashy (115 to >400 NTU, sensors need to be checked and cleaned.
1/11 – Turbidity very high, sensors need to be checked and cleaned. Battery stable >3.9 v.
1/5 – Turbidity now >1000 NTU, sensors need to be checked and cleaned. Battery stable >3.75 v.

2019

12/31 – Turbidity not as elevated but is 25-50 NTU, sensors need cleaning. Battery >3.7v.
12/24 – Turbidity extremely elevated, sensors need cleaning. Battery >3.7v.
12/14 – Something fell away from the sensors on 12/12 and turbidity dropped to ~30 NTU, but blocked again as of 12/13, turbidity >1400 NTU. Battery stable.

12/7 – Turbidity functioning is >1400 NTU. Battery stable, >3.8v.
11/30 – Turbidity functioning again but is >1300 NTU. Battery improved, now >3.7v.
11/19 – Turbidity bottomed out and is unchanged through storm events. Battery stable at <3.65-3.74v.
11/16 – Turbidity bottomed out and is unchanged through all storm events. Battery stable at <3.64-3.7v.
11/9 – Battery declining, now <3.62-3.64v.
11/5 – Battery declining, now <3.7v.
10/8 – Turbidity sensors steady at ~0.05 through major rain events.
10/1 – Turbidity sensors steady at ~0.05 through major rain events.
9/28 – Turbidity sensors again reading at low of ~0.05 through major rain events.
9/17 – Turbidity sensors appear to have crashed and reading <0.1 despite large changes in depth, since 9/8/18.
8/23 – Turbidity elevated, >250 NTU.
8/17 – Period of elevated conductivity was 8/3 to 8/13. Turbidity low ranges from 0.4-0.5 consistently despite changes in depth, but biggest increase in depth was only ~40 mm.
8/10 – No rapid changes in conductivity, but it continues to trend higher, now >1030-1069 uS/cm since Aug 6. Turbidity sensor may be damaged because turbidity low readings have been consistently between 0-1 NTU since July 16, despite big rain events.
8/6 – Conductivity trending higher since mid July, now >1000 uS/cm; should this be checked?
7/9 – Turbidity elevated (>100 NTU), needs cleaning.
7/6 – Turbidity elevated (60-100 NTU), needs cleaning.
6/18 – Turbidity extremely elevated.
6/15 – Turbidity >650 NTU, needs cleaning.
6/11 – Turbidity still elevated, 70-90 NTU.
6/8 – Although base level of turbidity is a little high in this location (4-10 NTU), current levels are >60 NTU.
6/1 – Turbidity very high - 200-1300 NTU - needs cleaning.
2018

SL172 (Indian Field Br) Was Sarah Johnson; don't know current station manager at Am Littoral Soc. Baseline turbidity is ~5 NTU.
7/11 – Battery is slowing but persistently dropping, now at 3.68v. Turbidity is elevated as storm depth levels subside, and flashy.
6/27 – Depth is going daily from ~100mm to ~200mm (sometimes less) and returning to 100 mm in the span of a few hours. Is this expected based on daily discharges to this site? Daily fluctuations are often found but the degree of fluctuation has increased. Turbidity remains 100-400 NTU indicating fouled sensors.
6/20 – Turbidity is now >400 NTU indicating fouled sensors.
6/14 – Turbidity is highly elevated and risen, now ~175 NTU.
6/6 – Turbidity is highly elevated and risen since last storm event, now 60 NTU.
5/30 – Turbidity is highly elevated at baseflow indicating sensors need to be cleaned.
5/19 – Turbidity is very elevated, 38-48 NTU, indicating sensors need to be cleaned.
5/7 – Turbidity is gradually increasing, now 20 NTU, and indicates sensors are fouled.
4/28 – Turbidity is gradually increasing and indicates sensors are fouled.
4/20 – Great cleaning, but sensors are becoming fouled again, and turbidity is above natural levels.
4/8 – Sensors have not been cleared and cleaned and turbidity is high and does not change with rain events unless the current clears them partially, but turbidity always is >200 NTU.
3/30 – Turbidity is increasing again, sensors do not appear to have been cleaned. Turbidity now almost 300 NTU indicating sensors are highly fouled, which can affect e-conductivity measurements.
3/2 – Turbidity has remained at ~265 NTU since station is reprogrammed for replaced 2G board 2/12/20.
2/24 – Turbidity ~300 NTU during base flow.
2/17 – Station transmitting again but gave abnormal turbidity sensor readings on 2/17/20 when turbidity fluctuated between >600 NTU and 1 NTU over about one hour.
1/6, 1/13, 1/20, 1/27, 2/3, 2/10 – Last transmission was on 12/24/19.
2020
12/31 – Last transmission was on 12/24/19. Battery was 4.03v. Turbidity was extremely elevated, ~1100-1200 NTU.
12/23 – Site began transmitting again on 12/22, with very elevated and flashy turbidity, which is 1100-1200 NTU.
12/9 – Site not transmitting to MonMW.
12/2 – Site not transmitting to MonMW.
11/22 – Site not transmitting to MonMW. Battery dropped too low.
11/11 – Turbidity is highly elevated at 160 NTU. Battery continues around 3.4v.

11/1 – Turbidity became >1000 NTU on 10/27 and has not cleared since then. Battery plateaued at 3.38-3.4v.

10/22 – Last transmission was 10/19. At that time battery has leveled off 3.38-3.4 v. This is prior to rain event of 10/20-21, and on 10/19 the turbidity was very elevated beyond natural levels, at ~650 NTU.

10/7 – Battery is very low and could cause station functioning problems, but it stable between 3.38v and 3.44v . Sensors appear to have been naturally cleaned by last storm, but turbidity appears too high at this time post storm (30-35 NTU).

10/1 – Sensors are compacted, with turbidity at 800 to >1400 NTU. Battery stable at 3.4v.

9/19 – Transmissions recommenced on 9/16. Turbidity highly elevated. Battery stable at 3.38v. Can it be re-charged?

9/9 – Transmissions stopped on 9/8/19 at 17:36 when battery flatlined at 3.38 v. Turbidity was highly elevated.

9/3 – Turbidity is elevated and flashy, and has increased. Battery is declining and now 3.40.

8/27 – Turbidity is elevated and flashy. Battery is declining and now 3.47.

8/20 – Turbidity is highly elevated and sensors need to be cleaned. Battery is declining and now 3.55; consider recharging the battery.

8/14 – Turbidity is extreme - ~1000 NTU – and sensors might be embedded in sediment or wrapped. Battery is declining rapidly and now <3.7 v.

8/4 – Turbidity remains elevated and sensors need to be cleaned.

7/24 – This site fouled after July 12 rain event and turbidity is very high (~150-350 NTU).

7/5 – Turbidity rose to 1100 NTU very suddenly on 6/29, now 800 NTU: check the site in case something major is covering the sensors.

6/19 – Turbidity is rising (now 170 NTU) as depth decreases after rain events, and much debris or sediment is likely on sensors.

6/14 – Turbidity is mildly elevated and sensors need to be cleaned.

6/6 – Turbidity is elevated and flashy; sensors need to be cleared and cleaned.

5/31 – Turbidity is elevated; sensors need to be cleared and cleaned.

5/27 – Turbidity is very elevated since 5/26 rain event; sensors need to be cleared and cleaned.

5/17 – Turbidity is elevated now 15-30 NTU and flashy; sensors need to be cleared and cleaned; might have sediment and/or algae on them.

5/10 – Turbidity is elevated above natural levels, now 15 NTU; sensors need to be cleaned.

4/19 – Sensors were naturally cleaned but turbidity remains elevated >35 NTU and need to be cleaned.

4/12 – Turbidity is consistently ~1200 NTU again.

4/8 – Turbidity is ~1000 NTU indicated sensors are covered.

4/5 – Sensors were fouled again today, and turbidity is >200 NTU indicated sensors are covered.

3/30 – Sensors were well cleaned. This site becomes very easily fouled and turbidity is now ~100-200 NTU.

3/25 – Sensor station and sensors should be checked; turbidity remains ~1400 NTU. Conductivity levels might be incorrect due to compacted sensors.

3/15 – Sensor station and sensors should be checked; turbidity is ~1400 NTU. Conductivity levels might be altered by buried sensors.

3/11 – Sensor station and sensors should be checked; turbidity is 1200-1400 NTU.

3/4 – Sensor station and sensors should be checked; turbidity is >1400 NTU.

3/1 – Sensor station and sensors should be checked; turbidity is >1400 NTU.

2/22 – Sensors should be checked; turbidity is ~1400 NTU, and turbidity has been extreme since mid December 2018. There is no way to know if turbidity levels are problematic at this site because sensors are buried or completely fouled.

2/18 – Sensors should be checked; turbidity is ~1400 NTU.

2/15 – Sensors should be checked; turbidity is ~1400 NTU.

2/9 – Sensors should be checked; turbidity is ~1400 NTU.

2/4 – Sensors should be checked; turbidity is ~1400 NTU.

2/1 – Sensors should be checked; turbidity remains >1000 NTU.

1/28 – Sensors should be checked; turbidity remains >1000 NTU. Blocked sensors can cause incorrect conductivity readings.

1/21 – Sensors must be checked; turbidity is >1000 NTU.

1/18 – Sensors must be checked; turbidity is almost 1200 NTU.

1/14 – Turbidity is >1000 NTU. Sensors should be checked.

1/11 – Turbidity is 1000-1200 NTU. Sensors should be checked.

1/5 – Turbidity is >1200 NTU. Station should be checked.

2019

12/31 – Turbidity is >1000 NTU.
12/24 – Sensors are fouled again, turbidity is 800-1000 NTU.
12/14 – Sensors were cleaned but became blocked again 16 hrs later, turbidity is ~1400 NTU.
12/7 – Sensors are blocked, turbidity > 1000 NTU. Battery recovered.
11/30 – Sensors are blocked, turbidity is 1000-1200 NTU. Battery recovered.
11/19 – Sensors are blocked. Battery is recovering, now >3.7v.
11/16 – Sensors are blocked. Battery is stable around 3.6-3.76v.
11/9 – Sensors are blocked. Battery is stable around 3.6v.
11/5 – Sensors are blocked, turbidity >1200 NTU. Battery is ~3.55v but not declining.
11/2 – Turbidity 700-1100 NTU. Battery is ~3.55v.
10/29 – Turbidity sensor blocked (>500 NTU). Battery is ~3.5v.
10/26 – Turbidity sensor blocked (>1200 NTU), sensors need cleaning. Battery slowly recovering, now 3.53-3.65v.
10/22 – Turbidity highly elevated (400-600 NTU), sensors need cleaning. Battery ~3.5v.
10/19 – Turbidity highly elevated (>1400 NTU), sensors need to be unblocked and cleaned. Battery still low.
10/15 – Turbidity highly elevated, sensors need to be unblocked and cleaned. Battery drained to 3.41-3.43v.
10/8 – Turbidity highly elevated, sensors need to be unblocked and cleaned. Battery slowly lower, now at 3.49-3.53 v.
10/1 – Turbidity >200 NTU. Battery slowly lower, now at 3.53-3.58 v.
10/1 – Turbidity >200 NTU. Battery slowly lower, now at 3.53-3.58 v.
9/28 – Materials wrapped around sensors; turbidity very elevated (>200 NTU). Battery slowly lower, now at 3.55-3.58v
9/24 – Turbidity elevated since 9/21; partially cleaned by huge flow, but turbidity elevated further. Battery has trended down, now at 3.56-3.58 v.
9/21 – Sensors cleaned on 9/18, but now turbidity is mildly elevated. Battery has trended down, now at 3.59v.
9/17 – Sensors remain highly fouled and need cleaning. Battery has trended down, now at plateau of 3.62-3.7v, since 9/13.
9/6 – Sensors remain highly fouled and need cleaning.
8/31 – Sensors remain highly fouled and need cleaning.
8/27 – Sensors need cleaning.
8/23 – Turbidity naturally cleaned but still elevated >30 NTU.
8/20 – Turbidity highly elevated.
8/17 – Turbidity ~125-250 NTU.
8/10 – Turbidity still very elevated >250 NTU. This site has not been cleaned since early-mid June.
8/6 – Turbidity still very elevated >300 NTU. This site has not been cleaned since early-mid June.
8/3 – Turbidity still very elevated and variable. This site has not been cleaned since early-mid June.
7/30 – Turbidity still very elevated and variable.
7/27 – Turbidity still very elevated, persistently >100 NTU. Turbidity has never been below 64 NTU since 6/14/18.
7/23 – Turbidity still very elevated after storm, >600 NTU.
7/20 – Turbidity still very elevated, >600 NTU.
7/16 – Turbidity extremely elevated (> 1000 NTU). Big pulses in conductivity both with and without increases in depth.
7/13 – Turbidity >350 NTU, needs cleaning. Conductivity demonstrates sudden increases and drops, with duration of ~ 4-6 hours, sometime co-occurring with depth changes and sometimes with little depth change..
7/9 – Turbidity >500 NTU, needs cleaning.
7/6 – Turbidity >300-350 NTU, needs cleaning.
7/1 – Turbidity >300-350 NTU, needs cleaning.
6/28 – Turbidity >300 NTU.
6/18 – Turbidity very elevated.
6/15 – Turbidity increased since 6/14/18, now >600 NTU. Pulses of water into the stream with seemingly little effect on conductivity.
6/11 – Conductivity reading 0-10 uS/cm.

2018

SL176 (Schuylkill River-Bartram's Garden) Abnormal signals from 1/21 were due to unusually low tides and the sensors were out of water. Baseline turbidity is ~2-5 NTU. Beth Iannelli will be trained on maintenance and QC, who will help Chloe. This site lost cell coverage 7/19/19 Back online as of 9/24/19. 4G was installed on 4/28/20. Hicks will need to test problem with DO sensors: "the occasional -9999 reading is due to a communication problem between the DO sensor and the Mayfly". Will require building a new complete copy of the station with all sensors and cell board and then testing to discover problem. Ongoing Zebra-Tech DO pbms discovered due to programming problems; Hicks brought DO sensor back to SWRC to deal with programming.

7/11 – Turbidity is highly elevated; might be showing downstream effects of major storm event on 7/10. E-conductivity went down to 215-230 µS/cm!

6/27 – DO sensors appear to be reprogrammed, but giving improbable DO p/m and %sat values.

6/20 – Turbidity is flashy and elevated indicating fouled sensors. Waiting for reprogramming of DO sensors.

6/14 – Turbidity is highly flashy and elevated indicating fouled sensors. Ongoing Zebra-Tech DO pbms.

6/6 – Sensors were naturally cleaned but not to baseline, and now turbidity has risen to ~50 NTU.

5/30 – Turbidity is highly elevated and flashy at base flow (~60+ NTU). Ongoing DO pbm (see note above)

5/19 – Turbidity is highly elevated and flashy at base flow. Ongoing DO pbm (see note above)

5/7 – Turbidity is highly elevated and flashy, and sensors need to be cleaned. Ongoing DO pbm (see note above)

4/28 – Turbidity is highly elevated and sensors need to be cleaned. DO sensors appear to be normal.

2/24, 3/2, 3/30, 4/8, 4/20 – Station stopped transmitting on 2/19/20 at 11:10 pm.

2/17 – Turbidity has become elevated and flashy, and sensors appear to need cleaning. Zebra-Tech DO and temp sensor signals still abnormal.

2/10 – Turbidity has become elevated and sensors appear to need cleaning. Zebra-Tech DO and temp sensors still giving abnormal signals.

1/20, 1/27, 2/3 – Zebra-Tech oxygen and temperature sensors still giving abnormal signals.

1/13 – Turbidity is still highly elevated and flashy indicating fouling of sensors –20-50 NTU. Zebra-Tech sensor still giving abnormal signals.

1/6 – Turbidity is highly elevated and flashy indicating fouling of sensors – 40-60 NTU. Zebra-Tech sensor still giving abnormal signals.

2020

12/31 – Turbidity is highly elevated and flashy indicating fouling of sensors. Zebra-Tech sensor still giving abnormal signals.

12/23 – Turbidity is highly elevated and flashy indicating fouling of sensors. DO sensors not functioning correctly.

12/16 – Turbidity is highly elevated and flashy indicating fouling of sensors. DO sensor including temperature is not functioning correctly.

12/9 – Both DO values do not appear correct and are unstable. Turbidity is elevated and flashy indicating fouling.

12/2 – Turbidity is elevated and flashy indicating fouling.

11/1 – Turbidity has become persistently elevated above natural levels since 10/28.

10/7 – Turbidity is persistently rising since is highly elevated since 9/27, and highly elevated, indicating fouled sensors.

10/1 – Turbidity became elevated today. DO% dropping, now down to ~60%.

8/27 – No transmissions appearing on MMW or Dreamhoster since 7/19. Per Stroud team, Mayfly is still collecting data on sd card.

8/20 – No transmissions appearing on MMW or Dreamhoster since 7/19.

8/14 – Turbidity became mildly elevated beyond natural levels and sensors need to be cleaned. On MMW, both DO measurements are labeled as percent of saturation, but isn't the second one actually DO ppm? The labels are identical and the data is not. Previously both % and ppm were reported.

7/24 – Turbidity is elevated beyond natural levels and sensors need to be cleaned.

7/5 – Turbidity is mildly elevated and sensors need to be cleaned.

6/19 – Turbidity is elevated and algae, sediment, or debris likely on sensors.

6/14 – Turbidity is elevated and sensors need to be cleaned.

6/6 – Turbidity is highly elevated and flashy, indicating sensors are fouled.

5/31 – Turbidity has become highly elevated and sensors need to be cleaned. Fluctuations in DO% and DOppm from April 1-4, 2019 do not appear normal, e.g., DOppm went as high as 31.64 ppm. Fluctuations also appeared rapid in March. What caused this?

5/17 – Turbidity remains elevated and sensors need to be cleaned.

5/13 – Turbidity is elevated and flashy indicating sensors are fouled and need to be cleaned.

5/10 – Turbidity is highly elevated (30-70 NTU) and flashy indicating sensors are fouled.

4/29 – Turbidity is elevated and flashy indicating sensors are fouled.
4/19 – Turbidity is 60-100 NTU and sensors need to be cleaned.
4/5 – Turbidity is 25-50 NTU and sensors need to be cleaned.
3/30 – Turbidity is 25-75 NTU and very flashy; sensors should be cleaned.
3/25 – Turbidity is elevated above natural levels and highly flashy; sensors need to be cleaned.
3/15 – Turbidity is mildly elevated but not giving natural levels, so that sensors should be cleaned.
3/11 – Sensors became fouled after last storm and need to be cleaned. DO remains >14 ppm.
2/22 – Turbidity is above natural levels and flashy (10-20 NTU), indicating sensors are fouled. DO above 14 ppm in February.
2/18 – Turbidity is above natural levels and flashy, indicating sensors are fouled.
2/15 – Turbidity has slowly risen and is elevated so that sensors need cleaning.
2/1 – Turbidity is only mildly elevated, but sensors do not appear to have been cleaned in a long time. Sensors out of water again on 1/31/19 due to low tide. DO >15 ppm, as high as 16+ ppm.
1/28 – Turbidity is mildly elevated, above natural level; sensors need cleaning. DO >15 ppm since 1/25.
1/21 – CTD signals were all abnormal today from about 7:30a to about 9:10-9:30a. The DO sensor also gave abnormal signals at that time.
1/5 – Turbidity is increasing beyond storm event, now 30-90 NTU and sensors need cleaning. DO continues to be >13 ppm.

2019

12/31 – Turbidity is 15-20 NTU and sensors need cleaning. DO continues to be >13 ppm.
12/24 – Turbidity elevated since last rain even p 12/22, sensors need cleaning. DO is >13 ppm since 11/10.
11/30 – Turbidity is 50-200 NTU and increasing since 11/16. DO is consistently >10 ppm in November.
11/19 – Sensors appear to have been cleaned on 11/16, but they have fouled again. Also, sensors were cleaned only to 8 NTU. DO is 14-17ppm.
11/16 – Turbidity is >90 NTU, and sensors need cleaning. DO is 11-14ppm, water temp. dropping.
11/9 – Turbidity is >50 NTU. DO ~12ppm.
11/5 – Turbidity mildly elevated and sensors need cleaning. DO 10-12 ppm
10/15 – Turbidity seems to indicate material stuck on them. DO% is 94-100%.
10/8 – Turbidity has increased and seems to indicate material stuck on them. DO% has dropped below 100%.
10/1 – Turbidity remains elevated, ~25 NTU. DO% at historic high.
9/28 – Conductivity at historic high on 9/25: 561 uS/cm in water depth of 2045 mm, with second peak on 9/26. Turbidity elevated >40 NTU, sensors need cleaning. Dissolved 02% is high.
9/24 – Turbidity elevated >20 NTU, sensors need cleaning. Dissolved 02 is 91-105%.
9/21 – Turbidity elevated, sensors need cleaning. Dissolved 02 is 96-106%.
9/17 – Turbidity elevated, sensors need cleaning.
9/6 – Turbidity elevated, sensors need cleaning. Dissolved O2 dropped during heat of 9/5 and 9/6 as low as ~98%.
8/31 – Turbidity mildly elevated, needs cleaning. Dissolved O2 remains >100%.
8/27 – Turbidity mildly elevated, needs cleaning. Dissolved O2 remains high.
8/23 – Turbidity elevated, needs cleaning. Dissolved O2 remains high.
8/20 – Turbidity elevated, needs cleaning. Dissolved O2 remains high.
8/17 – Turbidity elevated, >30 NTU, needs cleaning. Dissolved O2 remains high.
8/10 – Dissolved O2 % and ppm high have risen (>105% and 9-10 ppm) despite recent heat wave.
8/6 – Turbidity levels still very elevated, needs cleaning.
8/3 – Turbidity levels still very elevated, >100 NTU, and has been fouled since mid July.
7/30 – Turbidity levels still very elevated, >100 NTU. DO>100%
7/27 – Turbidity levels still very elevated, >200 NTU. DO 84% - >100%
7/23 – Turbidity levels still very elevated, seems unrelated to changes in depth. DO >100%.
7/20 – Turbidity sensor still above baseline (>50 NTU). DO also low (70-80%) in some mid-late afternoons.
7/16 – Turbidity sensor still above baseline (10-20 NTU). DO lowest (70-95%) after midnight to pre-dawn.
7/13 – Turbidity may have been cleaned this morning, but still elevated above baseline.
7/9 – Turbidity elevated (>20-40 NTU), needs cleaning.
7/6 – Turbidity mildly elevated (>~10 NTU), needs cleaning.
6/28 – Water fluctuates by about 2 meters a few times each day since installation on 6/27. Turbidity elevated as of this afternoon.

2018

SL177 (Broad Run upstream of Somerset) 10/19-David will check with Bill Ward if the 2G reception dropped out. Sensors were removed to prevent winter freezing. Baseline turbidity is ~3 NTU. Reinstalled sensors and logger but not online. Needs a new cellular board, but either 2G or bad 2G.

1/6, 1/13, 1/20,1/27, 2/3, 2/10, 2/17, 2/24, 3/2, 3/30, 4/8, 4/20, 4/28, 5/7, 5/19, 5/30, 6/6, 6/14,6/20,6/27,7/11 – Offline.

2020

12/16, 12/23, 12/31 – No transmissions.

12/9 – Bill Ward dropped off the logger on 12/5/19 and Hicks will reprogram and new battery.

5/27 – Signals became rare on 5/21, and no transmission since 5/24 (to either portal).

5/17 – Turbidity is highly flashy and sensors should be cleared and cleaned.

5/13 – Sensors may be fouled.

5/10 – Turbidity returns to baseline but is flashy indicating the sensors may be fouled.

5/3 – Although turbidity is lower, the flashiness suggests that the sensors may be fouled.

4/29 – Turbidity has become flashy indicating fouling of sensors.

4/12 – Base turbidity is good but turbidity is very flashy indicating something on sensors.

4/8 – Turbidity is elevated beyond natural base flow levels, and sensors should be cleaned.

2019

12/14 – No transmission since 12/3.

12/7 – No transmission since 12/3, and last transmission was when sensors were cleaned.

11/30 – Turbidity 10-30 NTU and sensors need cleaning.

11/19 – Turbidity >70 NTU and sensors need cleaning.

11/16 – Turbidity >110 NTU.

11/9 – Turbidity 15-16 NTU.

11/5 – Turbidity became elevated in 11/3 storm and sensors need cleaning.

10/22 – Signals regular again since 10/22.

10/19 – Signals decreased drastically in frequency, and no signals since early 10/18. This site typically sent signals relatively frequently until 10/9. Last battery reading was ~4v.

10/15 – Turbidity mildly elevated and might have debris stuck on it.

10/8 – Battery has dropped to 3.5-3.6v, but rebounds to 4v.

9/24 – Something became stuck on the sensors in the past rain event and depth increase, remains >140

9/28 – Historic high in conductivity.

9/21 – Turbidity highly elevated after last big rain event, sensors need cleaning.

8/31 – Sensors remain highly fouled and need cleaning.

8/27 – Sensors need cleaning.

8/20 – Turbidity elevated well above natural level, needs cleaning.

8/6 – Turbidity mildly elevated, above natural level, needs cleaning.

7/30 – On 7/29, depth went to -20 mm, then normalized.

7/27 – Turbidity levels elevated, >25 NTU, not explained by water depth/discharge.

2018

SL179 (Lubbers Run) Managed by Nancy Lawler, Musconetcong WA, and Cole Baldino of TU (no longer associated as of October 2019). Baseline turbidity is 1-1.5 NTU. Bressler inquiring if Nancy/Christa could maintain Lubbers, West Portal, and Merrill/Trout/Unkn until replacement found for Baldino.

1/6, 1/13, 1/20, 1/27, 2/3, 2/10, 2/17, 2/24, 3/2, 3/30, 4/8, 4/20, 4/28, 5/7, 5/19, 5/30, 6/6, 6/14,6/20,6/27,7/11 –Offline.

2020

12/16, 12/23, 12/31 –No transmissions.

12/9 –This site is not transmitting data to MonMW. Needs to be upgraded to 4G

12/2 –This site is not transmitting data to MonMW.

11/22 –This site is not transmitting data to MonMW.

11/11 –Battery plateaued ~3.4v. Turbidity is elevated above natural levels; 35-40 NTU.

11/1 –Battery has plateaued ~3.4v. Turbidity is elevated above natural levels.

10/7 –Battery continues to drop, now 3.38v, and could cause problem with station functioning. Turbidity is

10/22 –Battery is 3.37- 3.38v. Turbidity is elevated beyond natural levels, >15NTU.

10/1 –Battery is persistently declining, now at 3.43v.

9/19 – Turbidity is high elevated. Battery is persistently declining, now at 3.59v.

9/9 – Turbidity is high elevated and water is abnormally low.

8/20 – Turbidity is elevated and sensors need to be cleaned.

8/14 – Turbidity is highly elevated and sensors need to be cleaned.

8/4 – Turbidity is increasingly elevated and sensors need to be cleaned.
7/24 – Turbidity is elevated beyond natural levels and sensors need to be cleaned.
5/31 – Turbidity is elevated and sensors need to be cleaned.
5/27 – Turbidity is 10-20 NTU since last rain event, and sensors need to be cleaned.
5/17 – Turbidity is increasing and beyond baseline level; sensors might have sediment/algae on them.
5/13 – Turbidity is elevated and flashy indicating sensors are fouled.
5/10 – Turbidity has become elevated and flashy indicating sensors are fouled.
4/19 – Turbidity is >25 NTU, and sensors should be cleaned.
3/15 – Turbidity is 30-150 NTU, and sensors should be cleaned.
3/11 – Turbidity was naturally cleaned in last storm but remains elevated (>11 NTU) and sensors should be cleaned. Battery has recovered to above its highest level since installation, now 3.6v.
3/1 – Sensors have not been cleaned, and turbidity is very elevated (>100 NTU since end of January). Bat
3/4 – Sensors have not been cleaned, and turbidity is very elevated. Battery has recharged to its baseline of 3.5v, but is unusually flashy and should be checked for moisture.
2/22 – Turbidity remains elevated (120-130 NTU) and sensors are fouled. Battery is between 3.31-3.37 v.
2/18 – Turbidity is highly elevated, >100 NTU and sensors are fouled. Battery is between 3.35-3.43 v.
2/15 – Turbidity is highly elevated, >100 NTU. Battery is down to 3.34 v.
2/9 – Turbidity is very elevated, always >80 NTU. Battery is low, down to 3.23 v.
2/4 – Turbidity is very elevated, typically >100 NTU. Battery is a little erratic, down to 3.23 v today, and probably should be recharged.
2/1 – No signals transmitted since 1/29/19; at that time, turbidity was 112 NTU and battery was 3.34 v. Battery should be recharged.
1/28 – Turbidity is >100 NTU, sensors need cleaning. Battery is 3.32-3.37 v. Battery could be recharged.
1/21 – Sensors need to be cleaned, turbidity is 70-90 NTU. Battery surged then back to ~3.37v.
1/18 – Sensors need to be cleaned, turbidity is 70-85 NTU. Battery dropped to 3.29v, back to 3.37v.
1/14 – Turbidity is >75 NTU, sensors need cleaning. Battery is stable at 3.32-3.37 v.
1/11 – Turbidity is elevated, now 50-64 NTU, sensors need cleaning. Does it need a bigger battery? stable at 3.34-3.37v.
1/5 – Turbidity is chronically elevated, now >200 NTU, sensors need cleaning. Battery needs to be recharged or replaced with a bigger battery, however, low level (<3.4 v) has been stable

2019

12/31 – Turbidity is chronically elevated and sensors need cleaning. Battery needs to be recharged, has been as low as 3.27v recharges to 3.35v.
12/24 – Sensors do not appear to have been cleaned for months, need cleaning. Battery down to 3.31v; battery should be recharged
12/14 – Turbidity is elevated and sensors need cleaning. Battery stable at 3.34-3.35v. Big gaps in transmissions.
12/7 – Turbidity is 13-38 NTU and sensors need cleaning. Battery stable at 3.32-3.35v. Big gaps in transmission.
11/30 – Sensors mildly elevated (>12 NTU) and need cleaning. Battery stable at 3.32-3.35v. Should this battery be recharged?
11/16 – Sensors might have been cleaned on 11/18 but only to ~6 NTU, and turbidity has risen to 8 NTU. Battery stable at 3.32-3.35v.
11/9 – Turbidity mildly elevated, 10-12 NTU. Battery is 3.27-3.37v.
11/5 – Turbidity naturally cleaned during storm of 11/3 but fouled, >160 NTU. Battery stable at 3.32-3.38v.
11/2 – Turbidity >200 NTU. Battery stable at 3.32-3.38v.
10/29 – Turbidity mildly elevated, sensors do not appear to have been cleaned. Battery stable at 3.32-3.38v.
10/26 – Turbidity elevated, sensors need cleaning. Battery stable at 3.32-3.38v.
10/22 – Turbidity mildly elevated, sensors need cleaning. Battery stable at 3.32-3.38v.
10/19 – Turbidity mildly elevated, and sensors need cleaning. Battery slowly declines, at 3.32-3.35v.
10/15 – Flashy turbidity suggests debris may be flapping against sensors. Battery at 3.34-3.35v.
10/8 – Turbidity mildly elevated, appears to need cleaning. Battery stable at 3.34-3.35v.
10/1 –Battery stable at 3.34-3.35v.
9/28 –Battery plateaued at 3.34-3.35v.
9/24 – Conductivity at historic high. Turbidity elevated unrelated to water depth or flow. Battery has reached a floor of 3.34 v since late August, though began at 3.53 v.

9/21 – Last signal was 8/27.
9/17 – Last signal was 8/27.
9/6 – Last signal was 8/27.
8/31 – Last signal was 8/27. Last battery signal was 3.34v. Turbidity was elevated.
8/27 – Battery dropping continuously, down to 3.32v. Turbidity mildly elevated, sensors need cleaning.
8/23 – Battery dropping continuously, down to 3.37v.
8/20 – Battery began on 8/15/18 only at 3.53v, and declining, now to 3.4-3.44v.
2018

SL188 (UT to Muddy run, Sheep Pen Rd, NJ) Sensors were relocated 5/20/19. Conductivity is way off, CTD sensor should be under warranty, internal circuit error, and Shannon/Rachel will replace when they can. Plan to put online 4G.
1/6,1/13,1/20,1/27,2/3,2/10,2/17,2/24,3/2,3/30,4/8,4/20,4/28,5/7,5/19,5/30,6/6,6/14,6/20,6/27,7/11 – Offline since 12/6.
2020
12/16, 12/23, 12/31 – No transmissions.
12/9 – Conductivity measures are extreme and implausible.

SL189 (Independence School-UT to Pike Ck) Sensors were relocated 5/20/19.
1/6, 1/13 – No transmissions since 12/6.
2020
12/16, 12/23, 12/31 – No transmissions since 12/9.
11/22 – Site is not transmitting to MonMW.
7/5 – Battery continues to be too flashy. Has the re-synchronization method been tried? (see 6/28 note)
6/28 – Battery is changing rapidly, and it might help to follow Hicks' recommendation in Wikiwatershed on 6/6/19: "The easiest fix seems to be just turning off the Mayfly the next time someone makes a site it. Swap out the memory card (because it's good to do that anytime you visit a station), and then unplug the battery and solar panel from the Mayfly and wait a few seconds. Plug the panel and battery back in (make sure to put them back in the correct sockets!) and turn the logger back on. The battery readings should stabilize and read normally for many months now."
5/17 – Battery remains very flashy, as low as 3.53 v, and should be checked for moisture, reset, and possibly recharged.
5/10 – Battery still very flashy, as low as 3.53 v, and should be checked for moisture, and possibly recharged or reset the logger.
5/3 – Battery has become very flashy and should be checked for moisture and dried, and possibly recharged or reset the logger.
4/5 – Battery continues to be too flashy and should be checked for moisture, and possibly recharged.
3/30 – Battery is dropping rapidly and recovers, which is not its previous pattern. Battery may be moist and should be checked.
2019

SL190 (Independence School-Pike Creek) Logger pole damaged during Thanksgiving '18 storm, replaced on 12/10. Hicks cleaned sediment-buried sensors on 12/10.
2020
11/1, 11/11, 11/22– No transmissions since 10/28/19 9:40a.
8/27 – Water depth dropped 59 mm in five minutes – what could cause this? Water was steady at around 160mm and then dropped to 104mm at 09:41 (EST) and remained at this level the rest of the day today. This is an historic low for this site, except one abnormal signal last December.
2/4 – Logger box went to 34.5°c (94°f) at 12p today. Water is a few degrees warmer here than at other sites. Is this site so sun exposed that the logger could heat to 94° F?
1/14 – Logger box went to 28°c (82°f) at 12p today.
2019
12/14 – Conductivity and water depth dropped out on 12/10 for 10 min, but not apparently water temperature. Battery recharged. Shannon cleaned sediment-buried sensor on 12/10, CTD briefly out of water.
12/7 – Battery is declining, currently at 3.74v, and likely to continue to decline from what was a stable level.
2018

SL191 (Schuylkill Greenways) Water depth was unusually high at installation. Battery is slowing draining 11/7/18. Tim Fenchel indicated the battery voltage was improving 12/4/18. Baseline turbidity is 2-4 NTU. Ongoing Zebra-Tech DO pbms discovered due to programming problems; Hicks brought DO sensor back to SWRC to deal with programming.

6/27 – Conductivity began to read 0 µS/cm on 6/22 for 12-24+ hrs at a time. CTD temperature rising to ~33°C; is that possible at this site? Depth is very low, reaching 100mm only during rain event. Ongoing Zebra-Tech DO problems.

6/14 – Turbidity is mildly elevated and flashy at baseflow indicating sensors need to be cleaned.

5/19 – Turbidity is elevated and flashy at baseflow indicating sensors need to be cleaned.

2/10, 2/17, 2/24, 3/2, 3/30, 4/8, 4/20, 4/28 to 6/15 –Zebra-Tech Oxygen DO and temp signals still abnormal.

1/27 – Turbidity seems too elevated but stream depth remains high and may clear. Zebra-Tech Oxygen signals still abnormal.

1/20 – All signals from this station have become intermittent, with gaps of several hours. Zebra-Tech Oxygen and temperature signals still abnormal.

1/6 – Battery stable at 3.47-3.59 v. Turbidity is mildly elevated unrelated to changes in depth, and sensors need to be cleaned.

2020

12/31 – Battery no longer dropping but still low. Zebra-Tech sensors still giving abnormal signals.

12/16 – Battery no longer dropping but still low; consider recharging, now at 3.53-3.6 v. DO sensors showing same problems with abnormal functioning

12/23 – Battery continues to drop, now at 3.5 v. DO sensors showing same problems with abnormal functioning.

12/9 – Battery has dropped <3.7 v and needs to be checked and possibly recharged. Depth remains too low.

12/2 – Battery is persistently dropping, now at 3.75v. Turbidity is significantly elevated, indicating fouling.

11/22 – Stream appears dry at sensor site.

11/11 – Turbidity is highly elevated and flashy and depth near base flow.

10/22 – Data stopped transmitting on 10/10. Was sensor station removed for redeployment? Citsci notes indicates Stroud will move it on 10/28/19.

10/1 – Depth remains low, ~5mm. Sensors have not been submerged since 8/10/19.

9/19 – Depth remains low. Stroud waiting to see if remains low for month or two.

9/9 – Depth remains low for one month. Stroud waiting to see if remains low for month or two. August was dry.

8/27 – Turbidity, depth readings, and DO readings are strange, and sensors may be out of the water. Out of water readings since 8/24.

8/14 – Conductivity and depth became very abnormal on 8/10. Turbidity also became very stable and low on 8/11. Temperature of the water and logger box merged on 8/12. DO continues to be measured but lost its cyclical patterns on 8/10. Appears that this large stream went dry? If so, this is the first time this has happened since installation, and could explain the abnormal signals.

7/24 – Turbidity is elevated beyond natural levels and sensors need to be cleaned.

7/5 – Turbidity is currently low but sensors have not been cleaned and turbidity is somewhat flashy.

6/28 – Turbidity has been mildly elevated and flashy since water depth resided after storm event and sensors need to be cleaned.

6/19 – Turbidity has risen more than usual during the rain event today that elevated stream depth, suggesting that sensors are significantly fouled. While DO is sensitive to temperature and there is generally an inverse relationship of temperature and DO, at this site, DO increases with warmer temperature.

5/17 – Turbidity remains mildly elevated, and sensors might have sediment/algae on them.

5/3 – Turbidity is mildly elevated, and does not appear that sensors have been cleaned in April and possibly before.

4/29 – Turbidity is elevated, and sensors need cleaning.

4/26 – Turbidity is mildly elevated, and sensor need cleaning.

4/19 – Although turbidity is only mildly elevated, the sensors have not been cleaned. Although sensors appear to have been cleaned since installation, there are no site visit forms recorded since installation.

4/12 – Turbidity is too elevated (>20 NTU) at base flow and sensors need to be cleaned.

4/8 – Turbidity is too elevated (>25 NTU) and sensors need to be cleaned.

4/5 – Turbidity indicates sensors have become fouled (20-30 NTU) and need to be cleaned.

3/30 – Turbidity indicates sensors have become fouled and need to be cleaned.

3/25 – Turbidity is improved by natural storm cleaning, but are still above natural levels (10-25 NTU), and sensors need to be cleaned.

3/15 – Turbidity 40-200 NTU, and sensors need to be cleaned.

3/11 – Turbidity is above 25 NTU, and sensors need to be cleaned.

3/4 – Turbidity is elevated and very flashy, and sensors need to be cleaned.
3/1 – Sensors are fouled.
2/9 – Turbidity remains mildly elevated and sensors need cleaning.
2/4 – Turbidity continues to indicate that sensors need cleaning.
2/1 – No change, sensors need cleaning, turbidity is flashy, and typically 7-100 NTU; sensors should be cleaned. DO fluctuates greatly, >12 ppm.
1/28 – Turbidity is flashy, and typically 7-40 NTU; sensors should be cleaned. DO changed rapidly today, and is typically >12 ppm.
1/21 – Sensors need cleaning, turbidity is 10-30 NTU. DO is as low as 11.5 ppm and as high as 17.5 ppm.
1/18 – Sensors need cleaning. DO > 12ppm.
1/14 – Turbidity is flashy (4-10 NTU), and likely need cleaning. DO > 11.8 ppm.
1/11 – Turbidity remains mildly elevated (12-26 NTU) and sensors need cleaning. DO>11.8 ppm.
1/5 – Turbidity remains mildly elevated and sensors need cleaning. Battery is stable, >3.7v.
2019
12/31 – Turbidity is mildly elevated (6-16 NTU), and sensors need cleaning. Battery is >3.7v.
12/24 – Turbidity is mildly elevated (10-13 NTU), and sensors need cleaning. Battery is 3.73-3.79v, and perhaps should be recharged.
12/14 – Turbidity is mildly elevated (8-16 NTU), and sensors need cleaning
12/7 – Turbidity is mildly elevated (5-6 NTU), does not appear to have been clean, and sensors need cleaning. DO is 12-13 ppm.
11/30 – Turbidity is mildly elevated (7-8 NTU) and sensors need cleaning. DO is 9-13 ppm in November.
11/16 – Signals are regular at this site with few exceptions, but no signals in > last 1.5 hour. Battery was at 3.76v. With colder water, DO is ~11-12 ppm.
11/9 – Turbidity is mildly elevated (>9 NTU) and sensors need cleaning. DO is ~10 ppm. Battery continues to drain, >3.7 v.
11/5 – Turbidity is mildly elevated (>12 NTU) and sensors need cleaning. DO is 9-10 ppm.
11/2 – Water depth dropped from 400mm at installation to 80-85mm currently. Is something drawing water from upstream?
10/29 – Sensors are blocked, turbidity ~200-600 NTU.
10/22 – This stream looks fairly wide from the sensor site pictures, yet depth has declined from ~400 mm at installation to 80-87 mm currently – is this accurate for this stream?
2018

SL246 (Mill Creek - Silver Lake Nature Center) Base turbidity is 2-3 NTU.
7/11 – Turbidity is rising as depth decreases after major storm event, now ~40 NTU.
5/19 – Turbidity is mildly elevated above natural levels at base flow.
5/7 – Turbidity remains highly elevated indicating sensors need to be cleaned.
4/28 – Turbidity is highly elevated even after natural cleaning and sensors need to be cleaned.
4/20 – Turbidity has become very highly elevated, >200 NTU; sensors need to be cleared and cleaned.
4/8 – Turbidity was elevated for week before the rain event today, and remains high, indicating sensors are fouled.
3/30 – Turbidity remains very elevated since last big rain event, and sensors are likely very fouled.
3/2 – Drop in turbidity is from natural cleaning only, and turbidity still elevated significantly above baseline turbidity of 2-3 NTU.
2/24 – Turbidity is >120 NTU indicating sensors have debris on them..
2/17 – Turbidity remains very high (~90 NTU) and sensors do not appear to have been cleaned.
2/10 – Turbidity is very high (~90 NTU) and increasing. Sensors have not been cleaned.
2/3 – Turbidity has remained high and only sensor cleaning has been by stream flow. Sensor appear fouled.
1/27 – Turbidity is ~90 NTU and showed much debris on sensors during storm, and sensors are likely fouled.
1/20 – Turbidity remains unnaturally elevated after snow/ice event, turbidity is >15 NTU.
1/13 – Turbidity remains unnaturally elevated.
1/6 – Last signal on MonMW was 12/30/19.
2020
12/31 – Last signal on MonMW was 12/30/19, > 24 hrs ago. Turbidity was very elevated and flashy - >100 NTU. Battery was >4v.
12/23 – Turbidity remains very elevated and sensors have not been cleaned – turbidity is ~80 NTU.

12/16 – Turbidity is increasing, now >300 NTU, indicating sensors need to be cleaned.
12/9 – Turbidity is 60-70 NTU, and sensors are fouled and should be checked.
12/2 – Turbidity is again >40 NTU, and sensors were at this level before increase in depth from today's precipitation event.
11/22 – Turbidity is increasing, now ~40 NTU.
11/11 – Turbidity is mildly elevated without rain event.
10/22 – Sensors have not been cleaned. Turbidity is highly elevated (>60 NTU) not caused by rain event.
10/7 – Turbidity is highly elevated (45-50 NTU) and very flashy, and sensors need to be cleaned.
10/1 – Turbidity is persistently very elevated and flashy.
9/19 – Turbidity is very elevated and flashy.
9/9 – Turbidity is very elevated and flashy.
9/3 – Turbidity is very elevated and flashy.
8/27 – Turbidity is very elevated and flashy.
8/20 – Turbidity is elevated and flashy, and sensors need to be cleared and cleaned.
8/4 – Turbidity is highly elevated and sensors need to be cleaned.
7/24 – Turbidity is elevated and sensors need to be cleaned.
7/5 – Turbidity is elevated and flashy and sensors need to be cleared and cleaned.
6/28 – Turbidity is mildly elevated and flashy after significant rain event on 6/22-23, and return to base flow.
2019

SL248 (Ridley Creek – Garrett Mill) Base turbidity is 1-2 NTU.
6/27 – Turbidity indicates sensors need cleaning.
6/6 – Turbidity increased after last storm event and sensors are fouled.
5/30 – Turbidity is elevated indicating sediment and/or algae or some other fouling while at base flow.
5/19 – turbidity began to rise on 5/15 and is now very elevated at base flow, and flashy.
4/28 –Although sensors were naturally cleaned, turbidity remains above natural levels and sensors should be cleaned.
4/8 –Turbidity was rising before rain event today, and has not declined since depth receded, suggesting sensors are fouled.
3/30 –Turbidity is highly elevated even with low depth, and flashy, indicating sensors are fouled.
2/24 –Turbidity is elevated and increasing, suggesting sensors are fouled.
2020

SL249 (UT to Plum Run) Base turbidity is <1 NTU. Hicks installed a larger solar panel and battery. Shannon will activate the new sim card, owner needs to reactivate the hologram account (Natalie).
6/27 –Turbidity is mildly elevated and flashy during base flow, indicating fouled sensors.
6/6 –Turbidity is highly elevated after storm event.
5/30 –Turbidity is >200 NTU at base flow and as high as 700 NTU and sensors needs to be cleared.
5/19 –Turbidity is >200 NTU at base flow.
5/7 –Turbidity is still highly elevated and flashy while water depth goes to baseline.
4/28 –Turbidity is highly elevated and flashy.
4/20 –Turbidity is increasing and is very elevated above natural levels, depth is decreasing.
4/8 –Turbidity remains very elevated above natural levels and sensors need to be cleaned and check for sediment below sensors.
3/30 –Turbidity has been elevated before and after big rain events. 15 NTU is above natural levels.
2/24 –Turbidity continues to increase, indicating sensors are fouled.
2/17 –Turbidity remains elevated and increasing, and sensors should be cleaned. Battery should be recharged.
2/10 –Turbidity is highly elevated above natural levels and sensors seem fouled. Battery is dropping, fell below 3.7 v.
1/27 –Turbidity is becoming increasing elevated as stream depth decreases after storm, suggesting that sensors are fouled.
1/13 –Turbidity is elevated beyond natural levels, 25-40 NTU.
1/6 – Battery was recharged but sensors were not cleaned. Turbidity is elevated beyond natural levels, 20-25 NTU.
2020
12/31 – Battery only recovering to 3.5v, and needs recharging. Turbidity is elevated above natural levels and sensors need cleaning.

12/23 – Battery went as low as 3.4 v and recovered as high as 3.6. Consider recharging the battery.
12/16 – Battery continues to drop, now at 3.44-3.5 v.
12/9 – Battery continues to drop.
12/2 – Battery slightly lower at 3.5v.
11/22 – Battery stable around 3.5 – 3.6 v. Site fouls very easily and turbidity is elevated.
11/1 – Battery dropped to 3.44v, dropping since 10/11/19.
2019

SL276(Angelica Ck – Berks Nature) Base turbidity is <1 NTU.
7/11 – Turbidity is above 175NTU after last rain event and return to base depth.
6/27 – Turbidity is elevated above natural levels indicating sensor fouling.
6/20 – Turbidity is very elevated indicating sensor fouling.
6/14 – Turbidity is elevated above natural levels indicating sensor fouling. 10 NTU is above baseline for this site when it was installed, so it indicating some fouling.
5/7 – Turbidity has become elevated beyond natural levels indicating fouling.
3/30 – Turbidity is >1000 NTU, and it appears sensors are packed with debris or buried since last big rain event.
2/17 – Turbidity is mildly elevated above baseline turbidity while water level dropped.
2020

SL279(Valley Creek – Ecology Park) Base turbidity is <1 NTU. Hicks installed a larger solar panel and battery on 10/25/19.
7/11 – Battery is declining past three weeks, now at 3.64v.
4/8 – Turbidity is elevated and very flashy after rain event with decrease in depth, suggesting sensors need to be cleaned.
3/2 – Turbidity is very elevated and flashy at base flow.
2/24 – Turbidity is very flashy, indicating fouling of sensors.
1/13 – Turbidity is elevated and very flashy, indicating significant fouling of sensors.
2020
12/31 – Turbidity is mildly elevated after rain event.
11/22 – Turbidity is elevated at base flow and sensors need cleaning. Battery is stable.
11/1 – Turbidity is elevated.
2019

SL286(Valley Creek – Valley Ck Park)
7/11 – Turbidity is >1100 NTU since 7/6/20 indicating sensors might be buried
2020

Notes about low depth readings

(Hicks) "The only time we've ever seen negative depth readings was when the outer jacket of the sensor cable gets cut or chewed, which allows moisture into the airspace inside the cable, which disrupts the normal atmospheric reference pressure on the back side of the sensor. When this happens, the only way to fix it is to replace the cable. However, because of all the PVC pipe 90-degree elbows in the vicinity of the logger box, it's going to be nearly impossible to run a new sensor cable through them without cutting them off and re-gluing them."

When depth is low, warmer temperatures can cause what appears to be increases in depth (but are not), but conductivity is the true indicator of low depth.

Turbidity, when there is no water, may show false values at night. During day turbidity optic sensor picks up light from all over but can't at night.

Other notes about conductivity:

SL112(Pennypack Ck D) - As of Dec. 10 2017 conductivity reached new high *only partially related to water depth,* trend continuing to present; trend changed from ~800 us/cm to 1600-2600 us/cm. Peaks in conductivity to >3300 uS/cm. Extremely high conductivity above 1000 us/cm since December. On Feb 4, 1" of rain diluted ions, and on Feb 7, 0.93" greatly increased ions.

Huge peaks in water depth every few days or more, with increase of 1.5 m. in three hours, and then slow draw down. Increased depth accompanied by increased turbidity, sometimes extreme. The apparent man-made peaks occur in warm months of the year.

SL111(Pennpack U) Conductivity is very high in summer and winter

SL113(Pickering T East) – Since 1/14/18 conductivity ~+300 us/cm outside range of this site since installation on 6/8/17. Turbidity problem already discussed between Bullard and Bressler.

SL115(Merrill) High surges of conductivity occur unrelated to water depth??

SL116(W Portal Bk) – since December, huge spikes in conductivity unrelated to increases in water depth. Peaks to >8000 uS/cm. In summer, sudden and short term drops in conductivity unrelated to depth.

SL103 and SL104, Cherry Creek downstream and upstream seem to have big flushings into them, with high water spikes. Relationship of conductivity to water depth is usually as expected in the winter, except occasionally a high conductivity spike precedes a depth spike or is temporally unrelated. Conductivity spikes often 300-700 uS/cm, and most often take 1-2 hours to elevate and return to baseline. Many more conductivity spikes on SL104-upstream. During rain event on 2/11, natural depth increase was not accompanied by conductivity spike, so releasing agent did not release at that time.

SL105(Paulinskill) Why is base conductivity so high, even in summer? Fluctuations to >1200 uS/cm.

SL137(UT Cobbs Ck), good example of spikes in conductivity that are unrelated to increased stream flow, and thus due to other discharges into stream. Only stream where logger temperature never reaches water temperature.

SL120(Lopatcong) Conductivity spike occurred 20 hours before the storm event water depth peaked, then diluted. What is near this site that conductivity rises quickly when water level just begins to increase?

SL122(Buckwha) – Conductivity relatively stable since installation in August.

SL127(Jacobs Creek U) Why does battery fluctuate so much?

SL131(Little Lehigh) – Conductivity baseline is >500 us/cm – why is this?

SL133(Upper Paulinskill) - Conductivity often fluctuates very highly, and winter range is ~800-1700 us/cm. This site seems to have the highest level of base conductivity, 1000-2000 uS/cm.

SL134(Mine Hole) What causes the frequent changes in conductivity, often 5 us/cm in 5 minutes? Values change almost every 5 minutes. More variable than any other site.

SL119(Aquashicola) – This site has lower conductivity in winter than in summer and fall – highest in October-Nov. Associated with higher water depth.

SL 153 (Hunter Ck U) – This site has huge frequent fluctuations in conductivity, >400 uS/cm.

SL 155 (Hunter Ck U) – This site has 2-6 high peaks of conductivity/day, conductivity increases ~50-150 uS/cm.

SL158 (Primrose Ck U) – High conductivity at this site.

SL157 (Primrose Ck D) – High conductivity at this site.

SL167(Angelica Ck) – strong increases in turbidity with rises in depth.

SL169 (Cherry Ck) – Extreme peaks of conductivity.

SL171(Loper Run) – had summer peak in conductivity up to 880 uS/cm.

SL191 (Schuylkill Greenways) – DO% varies at this site: 89%-99% over three hours today. 87%-104% is range since installation. DO% range is greater in Schuylkill River.

2019	12/23	12/31	**2020**	1/6	1/13	1/20	1/27	2/3	2/10	2/17	2/24	3/2	3/30	4/8	4/20	4/28	5/7	5/19	5/30	6/6	6/14	6/20
sl103	√*	√*		√*	√*	--	--	--	--	--	--	--	--	--	--	--	√*	√*	√*	√	√*	√*
sl104	√*	--		--	√	√*	√*	√	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√	√	√
sl101	√	√		√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	
sl102	√	√		√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√*	√	√*	
sl111	--	--		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
sl112	√	√		√	√*	√*	√	√	√	√	√	√	√	√*	√*	√*	√*	√*	√	√*	√*	√
sl113	√*	√*		√*	√*	√	√	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*
sl114	√	√		√*	√*	√	√*	√*	√*	√	√	√	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*
sl105	√*	√*		√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*
sl116	--	--		--	--	--	--	--	--	--	√*	--	--	--	--	--	--	--	--	--	--	--
sl117	--	--		--	--			--	√	√	√	√*	√	√	√	√	√	√	√	√	√*	√
sl118	√	√		√*	√	√	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√	√	√*	√	√
sl119	√	√		--	√	√	√	√	√	√	√	√	√	√*	√*	√*	√	√*	√*	√*	√*	√
sl120	√*	√		--	√	√*	√*	√	√*	√*	√	√*	√*	√*	√*	√*	√	√*	√*	√*	√*	√*
sl121	√*	√*		--	√*	√*	√	√*	√*	√*	√*	√	√*	√*	√*	√	√	√*	√*	√*	√*	√*
sl122	--	--		--	--	--	--	√	√	√*	√*	√	√*	√*	√*	√*	√	√*	√*	√	√	√
sl123	--	--		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
sl124	--	--		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

sl127																							
sl128																							
sl130	√*	√		√*	√	√*	√	√*	√	√*	√	√*	--	--	√*	√	√	√	√*	√*	√*	--	
sl131	--	--		--	--	--	--	--	--	--	--	--	--	--	--	--	√*	√*	√*	√*	√*	√*	
sl132	√	√		√	√	√	√	√	√	√*	√*	√*	√*	√*	√	√	√*	√*	√	√	√	√	
sl133	√	√		√*	√	√*	√	√	√*	√	√*	√	√*	√*	√	√*	√	√*	√	√	√	√	
sl134	√*	√*		√*	√*	√	√	√	√	√	√	√	√	√	√	√	√	√*	√*	√*	√*	√*	
sl135	√	√		√	√	√	√	√	--	--	--	--	√	√	√	√*	√*	√*	√	√*	√	√	
sl136	√*	√		√	√*	√*	√*	√	√	√	√*	√*	√*	√*	√*	√*	√	√*	√*	√	√*	√*	
sl137	√	√*		--	√	√	√	√	√	√	√*	√	√	√	√	√*	√	√*	√	√	√	√*	
sl138	√	√*		√	√	√*	√*	√	√	√	√*	√	√	√	√*	√	√	√	√	√*	√	√*	
sl149	√*	√*		√*	√*	√*	√*	√*	√*	√*	√*	√*	√	√*	√*	√*	√*	√*	√*	√*	√*	√*	
Sl150	√	--		--	√*	√*	√	√*	√*	√*	√*	√*	√	√	√	√*	√	√	√*--	√*--	√	√	
sl151	√	√*		√*						√	√	√	√	√	√*	√	√*	√*	√	√*	√*	√	
sl152	√*	--		--	√*	√*	√	√*	√*	√*	√*	√	√*	√*	√	√	√	√*	√	√*	√	√	
sl153	√*	√*		--	√*	√*	√	√*	√*	--	--	--	--	--	--	--	√	√	√	√	√	√*	
sl155	√*	√*		√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√	√	√	√	√*	√	√		
sl156	√	√		√*	√	√	√	√*	√*	√*	√	√*	√*	√*	√*	√*	√	√*	√	√*	√*	√*	
sl157	√*	√*		√	√	√	√	√	√	√*	√*	√*	√*	√*	√*	√	√	√*	√*	√	√	√	
Sl158	√	√		--	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√*	√*	√*	
sl159	√	√		√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	
sl167	--	--		--	--	--	--	--	--	--	--	--	√	√	√	√	√	√	√*	√*	√*	√*	
sl168	√*	√*		√*	√	√*	√*	√*	√*	√	√	√	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	
sl169	√*	√*		√*	√*	√	√*	√	√	√	√	√	√*	√*	√*	√*	√*	√*	√*	√	√*	√*	
sl170	√	√*		--	√	√	√*	√*	√*	√*	√	√*	√	√	√	√	√	√	√	--	--	--	
sl171	√*	√*		--	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√	√*	√*	√*	√*	√*	
sl172	√*	--		--	--	--	--	--	--	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	
sl176	√*	√*		√*	√*	√*	√*	√*	√*	√*	--	--	--	--	--	√*	√*	√*	√*	√*	√*	√*	
sl177	--	--		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
sl179	--	--		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Sl188	--	--		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
sl189	--	--		--	--	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	
sl190	√	√		√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	
sl191	√*	√*		√*	√	√*	√*	√	√*	√*	√*	√*	√*	√*	√*	√*	√	√*	√	√	√*	√*	
sl246	√*	√*		--	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√	√	√	√	
sl248									√	√	√*	√	√*	√*	√	√*	√	√*	√*	√*	√	√	
Sl249	√*	√*		√*	√*	√	√*	√	√*	√*	√*	√	√*	√*	√*	√*	√*	√*	√*	√*	√	√	
Sl276										√*	√	√	√*	√	√	√	√*	√	√	√	√*	√*	
Sl279	√	√*		√	√*	√	√	√	√	√	√*	√*	√	√*	√	√	√	√	√	√	√	√	

2019	6/6	6/14	6/19	6/28	7/5	7/24	8/4	8/14	8/20	8/27	9/3	9/9	9/19	10/2	10/7	10/22	11/1	11/11	11/22	12/2	12/9	12/16
sl103	√	√	√	√	√*	√	√*	√	√*	√*	√*	√	√*	√*	√*	√	√	√*	√	√	√*	√*
sl104	√	√*	√*	√	√	√	√*	√	√*	√*	√	√	√	√	√*	√*	√	√*	√	√*	√*	√*
sl101	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
sl102	√	√	√	√	√	√	√	√	√	√*	√*	√	√	√	√	√*	√*	√	√	√	√	√
sl111	√*	√	√*	√	√*	√	√	√*	√*	√	√*	√*	√	√*	√*	√*	√*	√				
sl112	√*	√*	√*	√	√	√*	√	√*	√	√	√	√	√	√	√	√	√	√	√*	√*	√*	√
sl113	√*	√*	√	√*	√*	√*	√*	√*	√	√*	√*	√	√	√	√*	√	√*	√	√*	√	√*	√*
sl114	√*	√	√	√*	√*	√	√*	√	√	√*	√	√	√	√	√	√	√	√	√	√	√	√
sl105	√*	√*	√	√*	√*	√	√*	√	√	√*	√	√*	√*	√	√	√*	√	√*	√	√*	√*	√*
sl115																						
sl116	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*												
sl117					√	√*	√	√	√	√*	√*	√*	√*	√	√	√	√	√*	√*			
sl118	√*	√*	√*	√*	√*	√*	√*	√	√	√*	√*	√	√*	√	√	√*	√*	√	√*	√*	√*	√
sl119	√*	√*	√*	√	√	√*	√*	√*	√	√*	√	√	√	√	√*	√	√*	√*	√	√	√	√
sl120	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√	√*	√	√*	√*	√	√	√*	√*	√*
sl121	√*	√*	√*	√*	√*	√*	√	√*	√	√*	√*	√	√	√	√*	√*	√	√*	√*	√*	√*	√*
sl122	√	√	√	√*	√	√	√	√*									√*					
sl123																						
sl124																						
sl127																						
sl128																						
sl130	√*	√	√*	√	√*		√*										√	√*	√	√*	√	√

sl131																√*		√*	√*	√*		
sl132	√*	√	√*	√	√	√	√	√	√*	√	√	√*	√*	√	√	√*	√	√	√	√	√	√
sl133	√*	√	√*	√*	√*	√	√*	√*	√*	√	√	√	√	√*	√*	√	√*	√	√*	√*	√*	√*
sl134	√	√	√	√*	√*	√*	√*	√*	√*	√*	√*	√	√*	√	√*	√	√*	√	√	√	√	√*
sl135	√	√	√	√	√	√	√	√	√	√	√	√	√*	√	√	√*	√*	√	√	√	√	√
sl136																			√	√*	√*	√
sl137	√*	√	√*	√*	√	√	√*	√	√	√	√*	√	√	√	√	√*	√*	√	√	√*	√	√
sl138	√	√	√	√*	√*	√*	√	√*	√*	√	√*	√	√	√	√	√*	√*	√	√*	√	√	√
sl139																						
sl149	√*	√*	√	√*	√*	√	√	√*	√	√	√*	√*	√*	√*	√*	√	√*	√	√*	√	√*	√*
sl150	√	√	√	√*	√*	√	√*	√*	√*	√*	√*	√*	√*	√	√*	√*	√*	√*	√	√	√	√
sl151	√*	√	√	√	√	√	√	√*	√*	√	√	√	√*	√	√	√	√	√	√	√*	√	√
sl152	√*	√*	√	√*	√	√	√	√	√*	√*	√	√	√*	√*	√	√*	√	√*	√*	√*	√*	√*
sl153	√*	√	√*	√*		√*	√	√	√*	√	√	√	√*	√	√	√	√	√	√	√	√	√*
sl155	√	√	√	√	√	√	√	√	√	√	√	√*	√*	√	√*	√*	√*	√*	√*	√*	√*	√*
sl156	√	√	√*	√*	√*	√*	√*	√	√	√	√	√*	√	√	√*	√	√*	√	√*	√	√	√
sl157	√	√	√*	√	√	√*	√*	√	√*	√	√	√	√	√	√	√*	√*	√	√	√	√	√*
sl158	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
sl159	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
sl167														√*	√	√*	√*	√*	√	√*		
sl168														√*	√*	√*	√*	√*	√*	√*	√*	√*
sl169	√	√	√*	√	√	√	√	√*	√*	√*	√*	√*	√*	√*	√*	√	√	√*	√	√	√*	√*
sl170	√*	√*	√*	√*	√*	√	√	√*	√	√*	√*	√*	√*	√*	√*	√*	√*	√	√	√	√	√
sl171	√*	√*	√*	√	√	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√	√*	√*	√*	√*
sl172	√*	√*	√*	√	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*			
sl176	√*	√*	√*	√	√*	√*	√*	√*	√					√*	√*	√	√*	√	√	√*	√*	√*
sl177	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√		
sl179	√	√	√	√	√	√*	√*	√*	√*	√	√	√*	√*	√*	√*	√*	√*	√*	√*			
Sl188																					√*	
sl189	√	√	√	√*	√*	√	√	√	√	√	√	√	√	√	√	√	√	√	√*	√	√	√*
sl190	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√*	√*	√*	√	√	√
sl191	√	√	√*	√*	√*	√*	√	√*	√	√*	√	√*	√	√*	√*	√*	√	√*	√*	√*	√*	√*
sl246				√*	√*	√*	√*	√	√*	√*	√*	√*	√*	√*	√*	√*	√	√*	√*	√*	√*	√*
Sl249																	√*	√	√*	√	√*	√*
Sl279																				√	√	√

2019	2/18	2/22	3/1	3/4	3/11	3/15	3/25	3/30	4/5	4/8	4/12	4/19	4/26	4/29	5/3	5/10	5/13	5/17	5/27	5/31
sl103	√*	√	√	√*	√*	√	√*	√*	√	√*	√	√	√*	√*	√*	√	√	√*	√*	√*
sl104	√	√	√	√	√*	√	√*	√*	√	√	√	√	√*	√*	√*	√	√	√*	√	√*
sl101	√*	√*	√*	√*	√*	√*	√	√	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*
sl102	√*	√*	√*	√*	√*	√*	√*	√*	√	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*
sl111	√	√	√	√*	√*	√	√	√*	√	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*
sl112	√	√	√	√*	√*	√	√*	√*	√	√	√	√	√	√	√	√	√*	√	√*	√*
sl113	√*	√*	√	√*	√*	√*	√*	√*	√*	√*	√*	√	√*	√	√*	√*	√*	√*	√*	√*
sl114	√*	√*	√	√	√	√*	√*	√*	√*	√*	√*	√	√*	√	√*	√*	√	√	√*	√*
sl105	√*	√*	√*	√*	√*	√*	√*	√*	√*	√	√*	√*	√*	√*	√*	√	√	√*	√*	√*
sl115																				
sl116	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*
sl117	√	√	√*	√*	√*	√*	√	√	√*	√*	√*	√	√	√*	√*	√*	√*	√*	√*	
sl118	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*
sl119	√*	√	√	√*	√*	√*	√	√	√*	√	√	√	√	√	√	√	√	√*	√*	√*
sl120	√*	√*	√*	√*	√*	√*	√*	√*	√	√	√*	√*	√*	√*	√	√*	√*	√*	√*	√*
sl121	√	√	√*	√	√*	√*	√*	√*	√*	√*	√	√*	√*	√*	√	√*	√*	√*	√*	√*
sl122	√*	√	√*	√*	√*	√*	√*	√	√	√	√*	√	√*	√*	√	√*	√*	√*	√	√*
sl123																				
sl124																				
sl127																				
sl128				√*															√*	
sl130	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√	√	√*	√*	√
sl131	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	---	---	---	---	---		√*	
sl132	√*	√*	√*	√*	√*	√*	√*	√*	√	√	√	√*	---	---	---	---	---		√	√

sl133	√	√	√*	√*	√*	√*	√*	√	√*	√	√*	√	√*	√	√	√	√*	√*	√*	√*
sl134	√	√	√	√*	√	√	√	√	√	√	√	√*	√*	√*	√*	√*	√*	√*	√	√
sl135	√*	√	√	√	√	√	√	√	√	√	√	√*	√	√	√	√	√	√	√	√
sl136																				
sl137	√	√	√	√	√	√*	√	√	√	√*	√	√	√*	√	√	√*	√*	√	√*	√
sl138	√	√*	√*	√	√*	√	√*	√*	√	√	√	√*	√	√*	√	√	√	√	√	√
sl139																				
sl149	√*	√*	√*	√*	√*	√	√	√*	√*	√*	√	√*	√	√*	√	√*	√	√	√	√*
sl150	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√	√	√	√*	√	√*	√	√
sl151	√	√*	√	√	√	√	√*	√	√*	√*	√*	√*	√*	√	√	√*	√	√	√	√
sl152	√	√	√	√	√	√	√*	√	√	√*	√	√	√*	√*	√	√*	√*	√*	√	√*
sl153	√	√*	√	√	√	√*	√*	√	√	√	√	√	√*	√*	√	√*	√*	√*	√	√*
sl155	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
sl156	√*	√*	√	√*	√*	√*	√*	√*	√	√	√*	√*	√	√	√*	√	√	√	√*	√*
sl157	√	√	√	√*	√	√	√	√	√	√	√	√*	√	√	√*	√	√	√*	√	√*
sl158										√*	√*	√	√	√	√	√	√	√	√*	√*
sl159	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
sl167																				
sl168																				
sl169	√*	√	√	√	√*	√	√	√	√*	√*	√*	√*	√*	√*	√	√*	√	√*	√	√*
sl170	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*
sl171	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√	√	√*	√*	√*
sl172	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√	√	√	√*	√	√*	√*	√*
sl176	√*	√*	√	√	√*	√*	√*	√*	√*	√	√	√*	√	√*	√	√*	√*	√*	√	√*
sl177									√	√*	√*	√	√	√*	√*	√*	√*	√*	√*	√
sl179	√*	√*	√*	√*	√*	√*	√	√	√	√	√	√*	√	√	√	√*	√*	√*	√*	√*
sl189	√	√	√	√	√	√	√	√*	√*	√	√	√	√	√	√*	√*	√	√*	√	√
sl190	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Sl191	√	√	√*	√*	√*	√*	√*	√*	√*	√*	√*	√	√*	√*	√*	√	√	√*	√	√

2018	11/2	11/5	11/9	11/16	11/19	11/30	12/7	12/14	12/24	12/31	**2019**	1/5	1/11	1/14	1/18	1/21	1/28	2/1	2/4	2/9	2/15
sl103	√	√	√	√	√	√	√	√	√	√		√	√	√	√*	√*	√*	√	√*	√*	√*
sl104	√	√	√*	√*	√*	√	√*	√	√	√		√	√	√	√	√	√	√	√*	√*	√*
sl101	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*		√*	√*	√*	√*	√*	√*	√*	√*	√*	√*
sl102	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*		√*	√*	√*	√*	√*	√*	√*	√*	√*	√*
sl111	√	√*	√*	√*	√*	√	√	√*	√	√		√	√*	√*	√	√	√	√	√	√	√*
sl112	√	√	√*	√	√	√*	√	√*	√	√		√	√	√	√	√	√	√	√*	√	√
sl113	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*		√*	√*	√*	√*	√*	√*	√*	√*	√*	√*
sl114	√*	√*	√*	√*	√	√*	√	√	√	√		√	√*	√*	√*	√	√*	√*	√*	√*	√*
sl105	√	√	√	√	√*	√	√	√	√	√		√	√	√	√	√	√	√	√	√	√*
sl115																					
sl116	√*	√	√	√	√*	√	√*	√*	√	√*		√*	√*	√*	√*	√*	√*	√*	√*	√*	√*
sl117	√*	√*	√	√	√	√	√*	√*	√*	√*		√*	√*	√*	√*		√*	√*	√*	√	√
sl118	√*	√*	√	√*	√*	√*	√*	√*	√*	√*		√*	√*	√*	√*	√*	√*	√*	√*	√*	√*
sl119	√*	√	√	√	√*	√*	√*	√*	√*	√*		√*	√*	√*	√*	√*	√*	√*	√*	√*	√*
sl120	√*	√*	√	√*	√*		√*	√*	√*	√*		√*	√*	√*	√*	√*	√*	√*	√*	√*	√*
sl121	√*	√*	√*	√*	√*	√*	√*	√	√	√*		√*	√*	√*	√*	√	√*	√*	√*	√	√
sl122	√*	√*	√*	√*	√*	√*	√*	√	√	√*		√*	√*	√*	√*	√*	√	√	√	√	√
sl123																					
sl124																					
sl127																					
sl128	√	√*	√*																		
sl130	√*	√*	√	√	√*	√*	√*	√*	√*	√*		√*	√*	√*	√*	√*	√*	√*	√*	√*	√*
sl131	√	√*	√*	√	√	√*	√	√	√*	√*		√*	√*	√*	√*	√*	√*	√*	√*	√*	√*
sl132	√	√*	√*	√	√*	√	√	√	√	√		√	√*	√*	√*	√*	√*	√	√	√	√*
sl133	√	√	√	√*	√*	√*	√	√*	√*	√*		√	√	√*	√*	√	√	√	√	√	√
sl134	√	√	√*	√*	√	√	√	√	√	√		√	√	√*	√*	√*	√	√	√	√*	√
sl135	√	√	√	√*	√	√	√	√*	√	√		√*	√	√	√	√	√	√*	√	√	√
sl136																					
sl137	√	√	√*	√*	√*	√*	√	√*	√	√		√	√	√	√	√	√	√	√*	√	√*
sl138	√*	√*	√*	√*	√*	√*	√	√*	√*	√*		√*	√	√	√*	√*	√	√	√*	√	√
sl139																					

sl149	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*		√*	√*	√*	√*	√*	√*	√*	√*	√*	√*
sl150	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*		√*	√*	√*	√*	√*	√*	√*	√*	√*	√*
sl151	√*	√*	√*	√*	√*	√	√	√*	√*	√*		√*	√*	√*	√*	√*	√*	√*	√*		√
sl152	√*	√*	√*	√*	√*	√*	√*	√	√	√		√	√	√*	√*	√	√	√	√	√	√
sl153	√*	√*	√	√	√	√*	√*	√	√	√		√*	√*	√*	√	√	√*	√*	√	√	√*
sl155	√	√*	√	√	√	√*	√	√	√	√*		√	√	√	√	√	√*	√	√	√	√
sl156	√	√*	√	√*	√*	√	√	√	√*	√*		√	√	√	√	√*	√	√	√	√	√
sl157	√	√	√*	√*	√*	√	√*	√	√*	√		√	√	√	√	√	√	√	√*	√	√
sl158	√	√	√	√	√	√															
sl159	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√	√
sl167																					
sl168	√*	√*	√*	√*	√*																
sl169	√*	√	√	√*	√*	√*	√*	√	√	√		√	√	√	√	√	√	√	√*	√*	√*
sl170	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*		√*	√*	√*	√*	√*	√*	√*	√*	√*	√*
sl171	√	√*	√*	√*	√*	√*	√*	√*	√*	√*		√*	√*	√*	√*	√*	√*	√*	√*	√*	√*
sl172	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*		√*	√*	√*	√*	√*	√*	√*	√*	√*	√*
sl176	√	√*	√*	√*	√*	√*	√	√	√*	√*		√*	√	√	√	√*	√*	√*	√	√	√*
sl177	√	√*	√*	√*	√*	√*	√*														
sl179	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*		√*	√*	√*	√*	√*	√*	√*	√*	√*	√*
sl189	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√	√
sl190	√	√	√	√	√	√	√*	√*	√	√		√	√	√*	√	√	√	√	√*	√	√
Sl191	√	√*	√*	√*	√	√*	√*	√*	√*	√*		√*	√*	√*	√*	√*	√*	√*	√*	√*	√

2018	2/2	2/5	2/9	2/12	2/16	2/19	2/23	2/26	3/2	3/5	3/12	3/16	3/19	3/26	3/30	4/11	4/16	4/20	4/23	4/27	4/30	
sl103	√	√	√*	√	√	√	√	√	√	√	√	√	√	√	√	√*	√	√	√	√	√*	
sl104	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√*	
sl101	√*	√	√	√*	√*	√*	√*	√*	√*	√*	√*	√**	√*	√*	√*	√*	√**	√*	√**	√**	√*	
sl102	√*	√*	√*	√*	√*	√*	√*	√*	√*	√	√*	√*	√*	√*	√*	√*	√*	√*	√**	√*	√*	
sl111	√*	√*	√*	√	√	√	√	√	√	√*	√*	√*	√*	√	√	√	√	√	√	√	√*	
sl112	√	√	√	√	√	√*	√	√	√	√	√*	√	√*	√*	√**	√**	√**	√*	√	√	√	
sl113	√	√	√	√	√	√	√	√*	√	√	√*	√*	√*	√*	√*	√	√	√	√*	√*	√*	
sl114	√	√	√	√	√	√	√	√	√	√	√	√	√	√*	√*	√	√	√*	√*	√	√*	
sl105	√	√*	√*	√	√*	√	√	√	√	√	√*	√	√*	√*	√*	√	√	√	√	√	√	
sl115	√	√	√	√	√*	√	√	√	√	√	√*	√*	√	√	√	√*	√	√*	√*	√*	√*	
sl116	√*	√*	√*	√	√*	√*	√*	√	√*	√*	√*	√*	√*	√*	√*	√*	√	√*	√*	√*	√*	
sl117	√*	√*	√	√	√	√*	√*	√	√	√	√*	√*	√*	√*	√*	√*	√	√*	√**	√**	√*	
sl118	√*	√*	√	√	√	√	√	√*	√*	√*	√*	√	√	√*	√	√	√	√	√	√	√*	
sl119	√	√	√	√*	√	√	√	√*	√	√	√	√	√	√	√	√	√	√	√	?	√*	
sl120	√	√	√*	√	√	√	√	√	√	√	√	√	√	√*	√	√*	√*	√*	√*	√*	√*	
sl121	√	√	√	√	√*	√	√	√	√	√*	√	√	√	√*	√	√	√	√	√	√	√	
sl122	√	√	√	√	√	√	√*	√	√	√*	√*	√*	√*	√	√	√	√*	√	√*	√	√**	
sl123	√	√*	√	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√**	√*	√**	
sl124	√*	√*	√	√	√	√	√*	√	√	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	
sl127	√*	√*	√*	√*	√*	√*	√	√*	√*	√*	√*	√**	√*	√*	√	√	√	√	√*	√*	√*	
sl128	√	√	√*	√*	√*	√*	√*	√*	√*	√	√	√	√	√*	√	√	√*	√*	√*	√*	√**	
sl130	√*	√	√	√	√	√	√	√	√	√*	√*	√*	√	√*	√*	√*	√*	√*	√*	√*	√*	
sl131	√	√	√	√*	√*	√*	√*	√*	√	√	√	√*	√*	√*	√*	√**	√*	√	√	√	√	
sl132	√	√	√	√	√	√	√	√	√	√*	√*	√*	√	√	√	√**	√	√*	√*	√**	√*	
sl133	√	√*	√	√	√*	√	√	√	√*	√*	√*	√**	√	√	√	√*	√*	√*	√	√*	√*	
sl134	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√	√*	√	√	√	√	√	√*	√	√	√**	
sl135	√	√	√	√	√	√*	√*	√*	√	√	√*	√	√	√*	√*	√*	√	√	√	√	√*	
sl136	√	√	√	√	√	√	√	√	√	√	√	√	√*	√*	√*	√*	√*	√*	√*	√*	√*	
sl137	√	√	√	√*	√*	√	√	√*	√	√	√	√	√	√	√	√	√	√	√*	√*	√	
sl138	√	√	√	√*	√*	√	√	√	√	√	√*	√	√*	√	√	√	√	√*	√	√	√	
sl139	√*	√*	√*	√*	√*	√*	√*	√*	√	√	√	√	√*	√*	√*	√*	√	√**	√*	√**	√*	
sl149														√*	√*	√	√*	√	√*	√	√*	
sl150														√	√*	√*	√	√	√	√*	√*	
sl151														√	√	√*	√*	√*	√	√*	√*	
SL152																				√	√	
SL153																				√*	√	
SL155																				√	√	

SL156																				√	√	
SL157																				√	√*	

2018	5/4	5/7	5/11	5/14	5/18	5/21	5/25	6/1	6/8	6/11	6/15	6/18	6/28	7/2	7/6	7/9	7/13	7/16	7/20	7/23	7/27	7/30
sl103	√	√	√*	√*	√	√	√	√	√	√	√	√*	√	√*	√*	√*	√*	√*	√*	√*	√	√*
sl104	√	√	√*	√*	√	√	√*	√*	√	√*	√	√	√*	√*	√*	√	√	√	√	√	√	√*
sl101	√*	√*	√*		√*	√*	√*	√*	√*		√*	√*	√*	√*	√*	√*	√*	√*	√	√*	√	√*
sl102	√**	√**	√**	√*	√*	√**	√**	√**	√**	√*	√*	√**	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*
sl111	√	√*	√	√*	√	√	√	√*	√	√	√	√	√*	√*	√*	√*	√*	√	√*	√	√*	√
sl112	√	√	√	√*	√	√	√	√*	√	√*	√*	√	√*	√	√	√	√	√	√	√	√	√
sl113	√**	√*	√	√*	√*	√*	√*	√	√	√	√*	√*	√	√*	√*	√*	√*	√*	√*	√*	√*	√*
sl114	√*	√**	√*	√*	√*	√*	√*	√*	√	√	√	√	√	√*	√*	√*	√*	√*	√*	√*	√*	√*
sl105	√	√*	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√*	√*
sl115	√*	√*	√	√*	√	√	√*	√*	√*	√*	√*	√*	√*	√*	√	√*	√*	√	√*	√*		
sl116	√**	√*	√	√	√	√	√	√	√	√	√*	√	√	√	√	√	√	√	√	√	√	√
sl117	√**	√**													√	√	√	√				
sl118	√*	√	√	√*	√*	√*	√	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*
sl119	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√*	√	√	√
sl120	√*	√**	√*	√	√*	√	√*	√*	√*	√*	√*	√*	√*	√	√	√*	√*	√	√	√	√	√
sl121	√	√	√	√	√*	√*	√*	√*	√	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√
sl122	√*	√**		√	√*	√	√	√	√	√	√	√	√*	√	√	√	√*	√*	√	√	√	√*
sl123	√**	√**																				
sl124	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√	√	√*	√*								
sl127	√*	√*	√*	√*	√*	√*	√*	√	√*	√*	√	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*
sl128	√*	√*	√*	√*	√*	√*	√*	√**	√**	√*	√*	√*	√*	√	√	√	√	√	√	√	√	√
sl130	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√
sl131	√	√	√*	√*	√	√	√	√	√*	√	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*
sl132	√*	√*	√	√*	√*	√*	√	√	√	√	√	√	√*	√*	√	√	√	√	√	√	√	√*
sl133	√*	√*	√*	√*	√*	√*	√*	√	√**	√*	√*	√*	√	√*	√*	√	√	√	√	√	√*	√*
sl134	√	√**	√*	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
sl135	√*	√*	√*	√	√	√*	√*	√	√	√	√*	√*	√*	√*	√	√	√	√	√	√*	√	√
sl136	√*	√*	√	√*	√	√	√	√	√	√	√	√*	√*	√	√*	√*	√*	√*	√*	√*	√*	√*
sl137	√	√	√	√*	√	√	√	√*	√	√	√	√	√	√*	√	√	√	√	√*	√	√	√
sl138	√*	√	√	√*	√	√	√	√	√	√	√*	√*	√	√	√	√	√*	√	√	√	√*	√*
sl139	√*	√**						√**														
sl149	√	√	√	√*	√	√	√*	√*	√	√*	√*	√	√	√	√	√*	√*	√*	√*	√	√*	√*
sl150	√*	√	√	√	√	√	√	√	√*	√	√*	√*	√*	√*	√	√	√*	√*	√	√	√	√
sl151	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√	√	√*	√	√	√	√	√	√	√	√	√*
SL152	√*	√*	√	√*	√*	√	√	√	√	√	√	√*	√*	√	√	√	√	√	√	√	√	√
SL153	√	√	√*	√	√*	√*	√*	√*	√	√	√	√	√	√	√	√	√	√	√	√	√	√*
SL155	√	√	√	√	√	√	√	√	√	√*	√	√	√	√	√	√	√	√	√	√	√	√
SL156	√	√	√	√*	√*	√	√*	√	√	√*	√*	√*	√*	√*	√*	√*	√*	√*	√	√	√	√
SL157	√*	√*	√*	√*	√*	√*	√*	√*	√*	√	√	√	√	√	√	√	√*	√	√	√	√*	√*
SL158	√	√*	√	√	√	√	√	√	√	√	√	√	√	√*	√*	√*	√*	√*	√	√*		
SL159	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
SL167			√	√	√	√	√	√	√	√	√	√	√	√	√	√	√*	√	√	√	√	√
SL168			√	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√	√	√	√
SL169									√	√*	√	√	√	√	√	√	√	√	√	√	√	√
SL170								√	√	√	√*	√	√	√	√*	√	√*	√*	√*	√*	√	√
SL171								√*	√*	√*	√*	√*	√	√*	√*	√*	√	√	√	√	√	√
SL172								√	√	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*
SL176													√*	√	√*	√*	√*	√*	√*	√*	√*	√*
SL177											√	√	√	√	√	√	√	√	√	√	√*	√*

2018	8/3	8/6	8/10	8/17	8/20	8/23	8/27	8/31	9/6	9/17	9/21	9/24	9/28	10/1	10/8	10/15	10/19	10/22	10/26	10/29		
sl103	√*	√	√	√*	√*	√	√*	√*	√*	√	√	√*	√*	√	√*	√	√	√	√	√		
sl104	√	√	√*	√	√*	√	√	√	√	√	√	√	√*	√	√	√	√	√	√	√		
sl101	√*			√	√	√*	√*	√*		√	√	√	√	√	√	√	√*	√*	√*	√*		

sl102	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√	√	√	√	√*	√*	√*	√*	√*	√*		
sl111	√*	√*	√*	√	√	√	√	√	√	√	√	√*	√	√	√	√*	√	√	√	√		
sl112	√	√	√	√	√	√	√	√	√	√	√	√	√	√*	√	√	√	√	√	√		
sl113	√	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*		
sl114	√	√	√*	√	√	√	√	√	√*	√*	√	√*	√	√	√*	√*	√*	√*	√*	√*		
sl105	√*	√*	√*	√*	√	√*	√*	√*	√*	√*	√*	√*	√*	√	√	√	√	√*	√	√*		
sl115																						
sl116	√	√	√	√	√	√	√	√	√	√	√*	√*	√*				√	√	√	√		
sl117			√*	√	√	√*	√	√	√	√	√	√	√	√	√	√	√*	√*	√	√*		
sl118	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*		
sl119	√	√	√	√	√	√*	√*	√	√	√	√	√	√	√	√	√	√	√*	√	√		
sl120	√*	√	√	√	√	√	√*	√	√*	√*	√	√	√	√	√*	√*	√*	√*		√*		
sl121	√*	√*	√	√*	√*	√*	√*	√*	√	√*	√	√*	√	√*	√	√	√*	√*	√*	√*		
sl122	√*	√*	√*	√*	√*	√	√	√	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√	√		
sl123																						
sl124																						
sl127	√*	√*	√*	√*	√*	√*	√*	√*	√*													
sl128	√*	√	√	√*	√*	√*										√*	√*	√*	√*	√		
sl130	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*		
sl131	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*		
sl132	√*	√*	√*	√*	√*	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√		
sl133	√	√	√	√*	√	√*	√*	√*	√*	√	√	√	√	√	√	√	√	√	√	√		
sl134	√	√	√	√*	√*	√*	√*	√*	√*	√	√	√	√*	√	√*	√*	√*	√	√	√		
sl135	√	√	√*	√*	√	√	√*	√*	√*	√*	√*	√	√	√*	√*	√*	√	√	√	√*		
sl136	√	√	√*	√	√	√	√*	√*	√	√*	√	√*		√	√*	√*	√*	√*				
sl137	√	√	√*	√	√	√	√	√	√	√	√	√*	√	√	√*	√	√	√	√*	√		
sl138	√	√	√	√*	√*	√	√*	√*	√	√	√	√	√	√*	√*	√*	√*	√*	√*	√*		
sl139																						
sl149	√*	√*	√*	√	√*	√*	√	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√	√*		
sl150	√	√	√	√	√	√	√	√	√	√	√	√	√*	√*	√*	√*	√*	√*	√*	√*		
sl151	√*	√*	√	√*	√	√	√	√	√*	√	√*	√*	√	√*	√*	√*	√*	√*	√*	√*		
sl152	√	√	√	√*	√*	√	√	√	√	√	√*	√*	√*	√*	√	√	√	√*	√*	√*		
sl153	√	√	√*	√*	√*	√*	√*	√*	√	√*	√*	√*	√*	√*	√	√*	√*	√*	√*	√*		
sl155	√	√	√*	√*	√	√	√*	√	√	√	√	√	√	√	√	√	√	√	√	√		
sl156	√	√	√	√	√	√	√*	√	√	√	√	√	√*	√*	√*	√	√	√*	√	√*		
sl157	√*	√*	√*	√*	√*	√*	√	√*	√*	√*	√*	√*	√*	√	√*	√	√	√	√	√		
sl158	√	√	√		√	√	√*	√*	√	√	√	√	√	√	√	√	√	√	√	√		
sl159	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√*	√	√*	√*		
sl167	√	√	√*	√*	√	√	√	√	√*	√	√*											
sl168	√	√	√	√	√	√	√	√	√	√	√*	√*	√	√	√	√	√*	√*	√*	√		
sl169	√*	√	√	√	√	√	√	√	√	√*	√*	√	√*	√	√	√*	√	√*	√	√		
sl170	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√	√	√*	√*	√*	√	√	√	√	√		
sl171	√	√*	√*	√	√	√*	√	√	√	√*	√	√	√*	√*	√*	√	√	√	√	√		
sl172	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√	√*	√*	√*	√*	√*	√*	√*	√*	√*		
sl176	√*	√*	√	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√*	√	√	√	√		
sl177	√	√*	√	√	√*	√	√*	√*	√	√	√*	√*	√	√	√*	√*	√*	√	√	√		
sl179					√*	√*	√*	√*				√*	√	√	√*	√*	√*	√*	√*	√*		
sl189										√	√	√	√	√	√	√	√	√	√	√		
sl190										√	√	√	√	√	√	√	√	√	√	√		
sl191																	√	√	√	√*		