

Smelt Working Group  
January 29, 2018

**Meeting Summary**

The Working Group reviewed current Delta conditions, survey data, current water project operations, and forecasted weather. Current weather conditions are overcast, and no precipitation is forecasted over the next few weeks. The air temperature is expected to increase in the coming weeks, which would likely in turn increase water temperature. Based on Delta conditions, the forecasted weather, and the lack of recent detections of Delta Smelt from surveys within the entrainment risk area, the SWG concluded that the risk for Delta Smelt and Longfin Smelt entrainment is low.

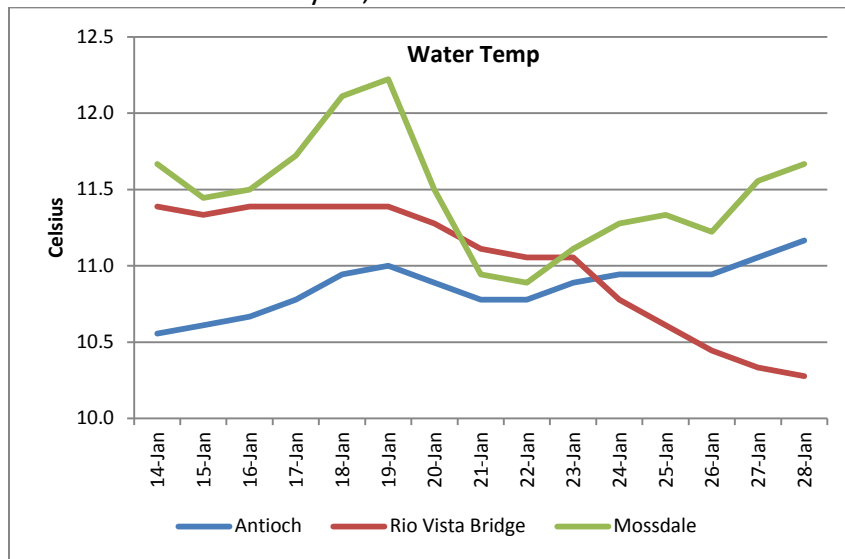
The Working Group does not believe that a recommendation under Action 1 or Action 2 (adult pre-spawning Delta Smelt) is necessary to protect Delta Smelt at this time. The Working Group will continue to monitor Delta Smelt survey and salvage data, Delta conditions, and this week's forecasted weather. The group will meet again next Monday, February 5, 2018 at 1000 hours.

**Reported Data**

1. **Current environmental data**

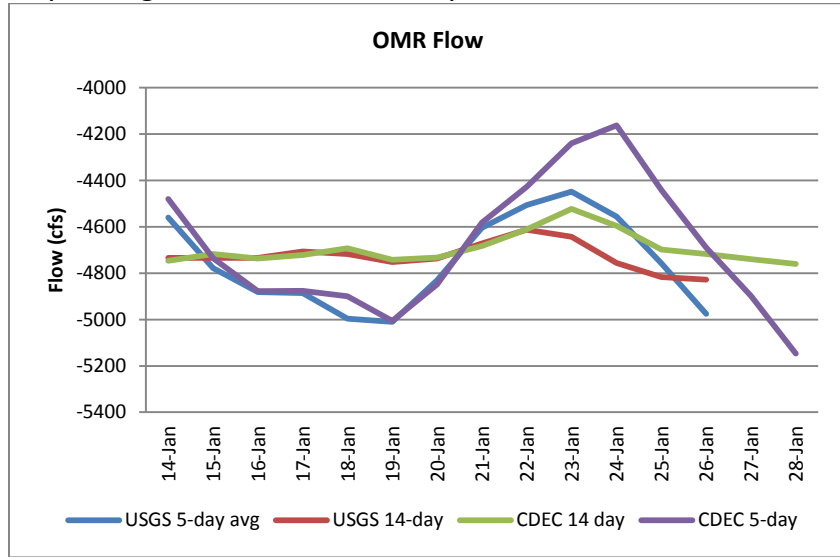
a. Temperature

Daily averages of the 3 Delta Stations (Antioch, Rio Vista Bridge, and Mossdale) was 11.0°C as of January 28, 2018.



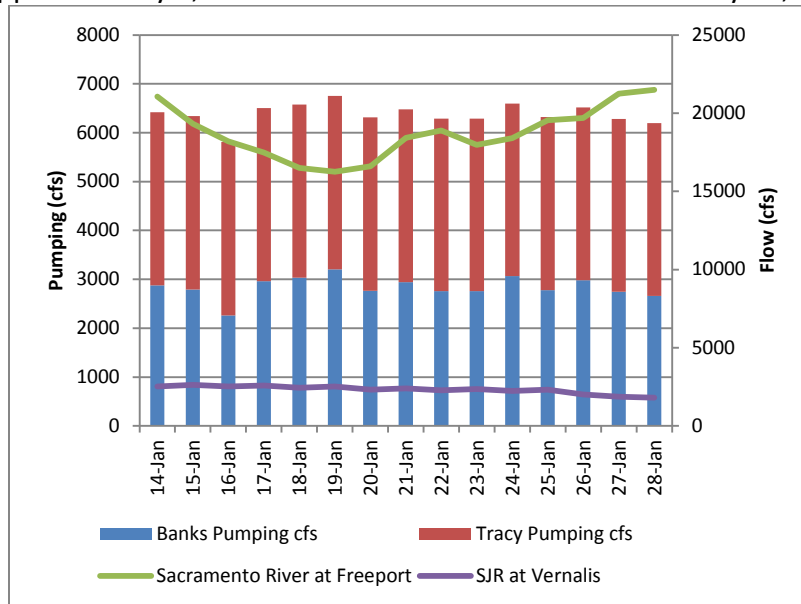
b. OMR flow

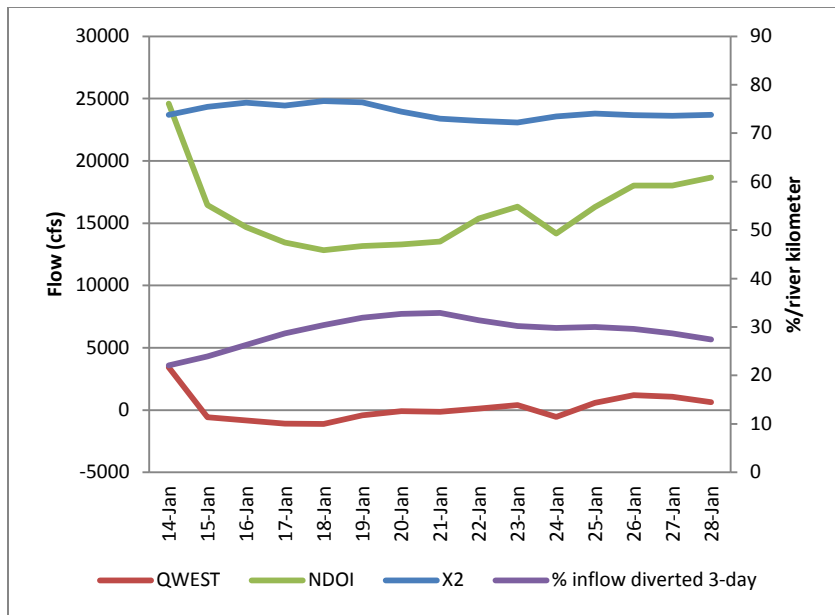
The CDEC daily average OMR flow for January 28, 2018 was -5,087 cfs. USGS daily average OMR flow for January 26, 2018 was -4,870 cfs.



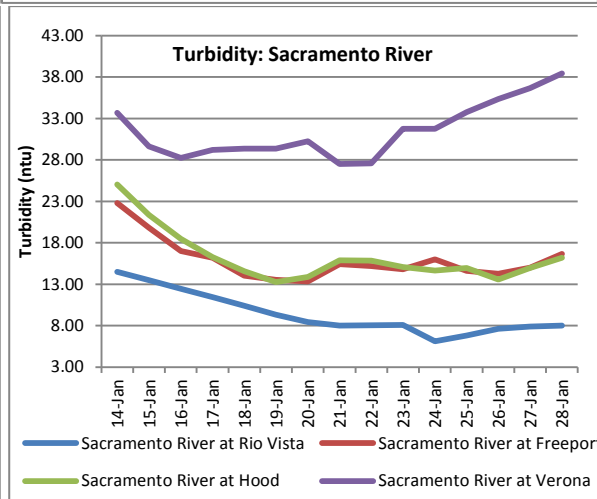
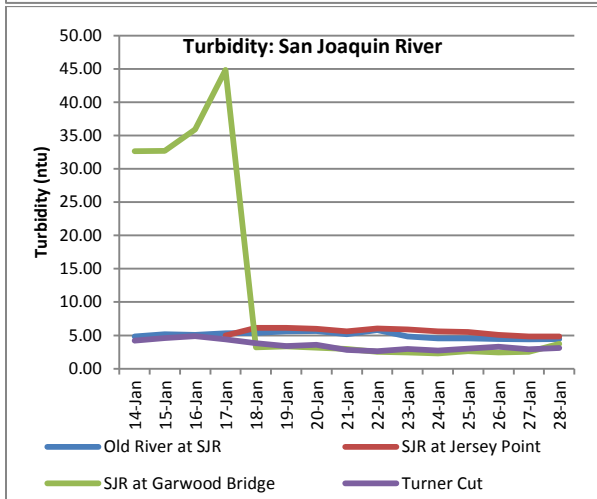
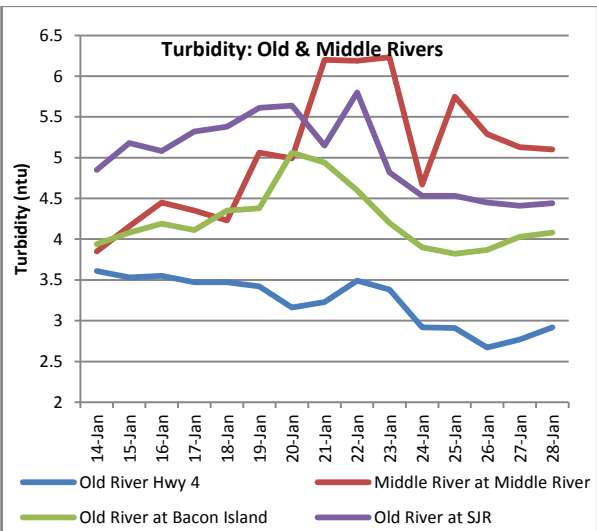
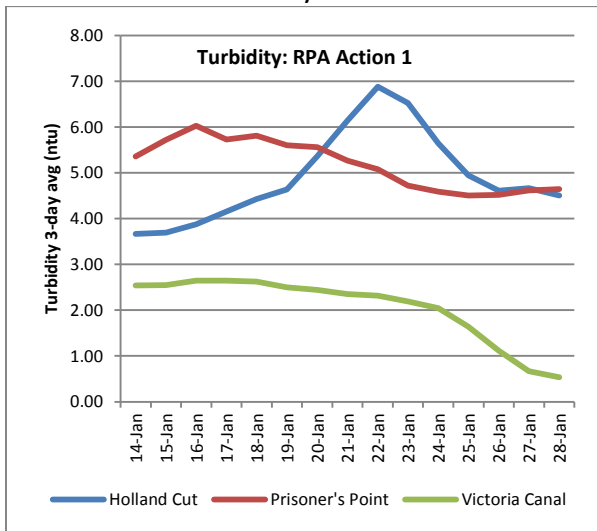
c. River flows and pumping

Sacramento River at Freeport flow for January 28, 2018 was approximately 21,494 cfs. San Joaquin River at Vernalis flow for January 28, 2018 was approximately 1,813 cfs. X2 was at 73.79 km as of January 28, 2018.





d. Turbidity



## **2. Delta fish monitoring**

No DFW surveys were out in the field this past week. SLS #2's samples have been fully processed, and 298 Longfin Smelt larvae were widely distributed with most of the catches occurring mostly west of the confluence. SLS #3 starts this week, and SKT #2 will be from February 6-8.

Enhanced Delta Smelt Monitoring (EDSM) was in the field last week and will be in the field this week. Last week, 2 Delta Smelt and 4 Longfin Smelt were detected. Today, one Delta Smelt was detected in the Lower Sacramento River. Complete EDSM catch reports are publicly available [here](#).

## **3. Modeling**

No modeling or PTMs were performed over the past few weeks, and there were no new modeling requests.

## **4. Salvage**

No adult or juvenile stages of Delta Smelt and Longfin Smelt have been observed in salvage so far this season (WY 2018). Last Thursday, the Tracy salvage facility experienced a mechanical breakdown of a fish collection hoist which resulted in a 12-hour stoppage of fish counting. One group member mentioned that even as a 60-year-old facility, hoist breakdowns are rare, and that last week's malfunction would likely not have changed the outcome trend of not detecting any Delta Smelt and Longfin Smelt.

## **5. Expected Project Operations**

Combined pumping for the Banks and Tracy pumping facilities on January 28, 2018 was 6,197 cfs, and Net Delta Outflow on January 28, 2018 was 18,676 cfs. Pumping is currently restricted by NMFS RPA Action IV.2.3, which was initiated on January 1, 2018. Index OMR values will be maintained at around -5,000 cfs to comply with the RPA, which is the current controlling factor on Delta operations. The Tracing pumping facility will be reducing pumping starting this Wednesday to allow the Banks pumping facility to increase pumping.

Ambient temperatures are anticipated to increase this week. Precipitation is not forecasted for the coming weeks.

## **6. Delta Conditions Team**

The DCT met last week and did not have any recommendations for the SWG this week.

## **7. DWR Turbidity Transects**

No turbidity transects have been performed to date. Since recent turbidity at Holland's Cut, Prisoner's Point, and Victoria Canal have all remained well under 8 NTU with no upcoming rain forecasted, the SWG agreed that turbidity transects are not required at this time.

## **8. Biological Opinion Background:**

RPA Component 1, Action 1: “Low-entrainment risk period: Delta Smelt salvage has historically been low between December 1 and December 19, even during periods when first flush conditions (i.e., elevated river inflow and turbidity) occurred. During the low-entrainment risk period, the SWG shall determine if the information generated by physical (i.e. turbidity and river inflow) and biological (e.g., salvage, DFG trawls) monitoring indicates that Delta Smelt are vulnerable to entrainment or are likely to migrate into a region where future entrainment events may occur. If this occurs, the Service shall require initiation of Action 1 as described in Attachment B. Action 1 shall require the Projects to maintain OMR flows no more negative than -2,000 cfs (14-day average) with a simultaneous 5-day running average flow no more negative than -2,500 cfs to protect adult Delta Smelt for 14 days.” (page 281).

RPA Component 1, Action 2 states, “An action implemented using an adaptive process to tailor protection to changing environmental conditions after Action 1. As in Action 1, the intent is to protect pre-spawning adults from entrainment and, to the extent possible, from adverse hydrodynamic conditions.”

“The range of net daily OMR flows will be no more negative than - 1,250 to -5,000 cfs. Depending on extant conditions (and the general guidelines below) specific 4 OMR flows within this range are recommended by the Working Group from the onset of Action 2 through its termination...”

The timing of Action 2 is immediately after Action 1. Before this date (in time for operators to implement the flow requirement) the SWG will recommend specific requirement OMR flows based on salvage and on physical and biological data on an ongoing basis. If Action 1 is not implemented, the SWG may recommend a start date for the implementation of Action 2 to protect adult Delta Smelt. (BiOp page 352).

## **9. Assessment of Risk Discussion**

### *Delta Smelt Detections*

SLS #2 did not detect any larval Delta Smelt, and last week EDSM detected 1 adult Delta Smelt in Suisun Marsh and 1 adult Delta Smelt in the Deepwater Shipping Channel. This morning, EDSM detected 1 adult Delta Smelt in the Lower Sacramento River near the confluence. None of the detected fish were within close proximity to the pumping facilities. No fish salvaged as yet this season (WY 2018).

### *Longfin Smelt Detections*

SLS #2 detected 298 larval Longfin Smelt mostly west of the confluence, and last week EDSM detected 4 adult Longfin Smelt in Suisun Marsh, which are not in close proximity to the pumping facilities. No fish salvaged as yet this season (WY 2018).

### *General discussion*

Conditions in the Delta are currently overcast with no precipitation forecasted for the coming weeks. The river flows and net Delta outflow are expected to remain stable as no changes in pumping operations are scheduled.

Recent Delta Smelt detections have been outside of the entrainment risk area. One group member mentioned that even without first flush and with low turbidity levels, Delta Smelt will eventually move upstream for spawning, making them vulnerable to entrainment. Even without hard evidence from surveying data, the series of recent storm events could have triggered movement of fish, but the problem is that the fish are likely very low in numbers and extremely hard to detect. Another group member stated that as the spawning season begins, SKT#2 may see more Delta Smelt by mid-February and in March, which would provide a better distributional picture of the fish. One group member pointed out that increasing temperature could also act as a spawning cue for Delta Smelt to move upstream. The overall group consensus is that although current conditions do not warrant a significant level of concern for Delta Smelt entrainment, the upcoming spawning migration could put the fish at risk of entrainment. The group will also monitor temperature conditions at the Antioch, Rio Vista, and Mossdale stations to determine if Action #3 (larval/juvenile protection) will be warranted, which is triggered when the 3-station average reaches 12 °C.

The SWG determined that no recommendation was necessary this week for the protection of Delta Smelt.

## WEEKLY ADVICE FOR THE DEPARTMENT OF FISH AND WILDLIFE FOR LONGFIN SMELT

### **Advice for week of January 29, 2018:**

The Smelt Working Group has no advice for protection of Longfin Smelt.

No advice for Barker Slough operation. Current water year type for the Sacramento River is above normal, which does not trigger concern for Barker Slough risk of entrainment (see Basis for advice #5 below).

### **Basis for advice:**

The 2009 State Water Project 2081 for Longfin Smelt states that advice to WOMT and the DFW Director shall be based on:

1. Adult Salvage – total adult ( $\geq 80$ mm) Longfin Smelt salvage (SWP+CVP) for December through February  $> 5$  times the Fall Midwater Trawl Longfin Smelt annual abundance index.
2. Adult abundance, distribution or other information indicates that OMR flow advice is warranted.
3. Larva distribution in the Smelt Larva Survey or the 20mm Survey finds Longfin Smelt larvae present at 8 of 12 central and south Delta sampling stations in 1 survey (809, 812, 815, 901, 902, 906, 910, 912, 914, 915, 918, 919; see Figure 1).
4. Larva catch per tow exceeds 15 Longfin Smelt larvae or juveniles in 4 or more of the 12 survey stations listed.
5. During the period January 15 through March 31 of a dry or critically dry water year only, advice for Barker Slough pumping plant operations may be warranted if larval Longfin Smelt are detected at station 716 and other information indicates risk of entrainment.

### **Discussion of Criteria**

1. As of January 28, 2018, no Longfin Smelt have been salvaged for the water year. See current conditions discussion below. The 2017 Fall Midwater Trawl Survey annual abundance index for Longfin Smelt is 141, so the salvage threshold is 705. Advice is not warranted based on this criterion.
2. January Bay Study sampling was discontinued due to boat issues after sampling within the Delta. No juvenile or adult Longfin Smelt were detected in the central Delta, but some were collected in the lower Sacramento River; exact numbers and locations are not available at this time. December Bay Study and Fall Midwater Trawl sampling collected no Longfin Smelt in the San Joaquin River or south Delta. December Bay Study and Fall Midwater Trawl did detect Longfin Smelt in the Sacramento River as high as station 750 (Bay Study) and 703 (FMWT), both adjacent to Sherman Lake, indicating that Longfin Smelt adults are entering the Delta. Presence of adult Longfin Smelt in the Sacramento River increases concern, but the lack of detection of Longfin Smelt in the central or south Delta makes advice unwarranted.

3 & 4. The second Smelt Larva Survey (SLS) of 2018 detected Longfin Smelt larvae at three of 12 central and south Delta criteria stations and none of the catches exceeded 15 (Table 1). Processing was completed for survey 2 and reported during the working group call. Based on these criteria, no advice is warranted.

5. Criteria were scheduled to begin January 15<sup>th</sup> and only go into effect during dry and critical water years. Water year 2018 is classified above normal as of January 1 (<http://cdec.water.ca.gov/cgi-progs/iodir/WSI>). Currently, there is no concern. Nonetheless, a couple Longfin Smelt larvae were detected at station 716 during survey 2 and three larva at station 723 (proximal to 716; Table 1), so risk remains low.

**Current conditions:** For January 28, Sacramento River at Freeport was 21,294 cfs and the San Joaquin was at 1,813 cfs. Clifton Court exports were 2,695 cfs and Tracy exports were 3,538 cfs. The OMR index was -5,033. Qwest for January 28 was +639 cfs, which is favorable for tidal dispersion downstream of any LFS larvae detected in the lower San Joaquin River.

In January, age-1 and older Longfin Smelt were collected by Bay Study in the lower Sacramento River, but not in the lower San Joaquin River. During SLS 2, one or two larvae were present at only three stations in the central and south Delta (Table 1). The number of adults returning to spawn in January was expected to increase, but sampling was insufficient to support or refute the expectation. Increased outflow in January lowered X2 and likely reduced the fraction of the Longfin Smelt population entering the Delta. No Longfin Smelt have been salvaged this water year.

**Summary of Risk:** Risk of entrainment is low due to favorable hydraulic conditions (neutral to slightly positive Qwest), to reduced X2, to no salvage or adult detection in the central or south Delta and to minimal detection of larvae in the central or south Delta.



Table 1. Longfin Smelt Larva catch by station in the Smelt Larva Survey, #2. Sample processing is incomplete.

Year	Survey #	SLS Station	Turbidity (NTU)	Sample Status	Species	Smelt Catch	Min Length	Max Length	Mean Length
2018	2	340		Not yet processed					
2018	2	342	35.0	Processed		No Smelt Catch			
2018	2	343	16.7	Processed	Longfin Smelt	1	8	8	8.0
2018	2	344	12.6	Processed	Longfin Smelt	1	8	8	8.0
2018	2	345	13.8	Processed		No Smelt Catch			
2018	2	346	15.9	Processed		No Smelt Catch			
2018	2	347	20.4	Processed		No Smelt Catch			
2018	2	348		Not yet processed					
2018	2	349		Not yet processed					
2018	2	405	20.1	Processed	Longfin Smelt	1	7	7	7.0
2018	2	411	23.1	Processed		No Smelt Catch			
2018	2	418	22.4	Processed	Longfin Smelt	20	6	9	7.3
2018	2	501	17.1	Processed	Longfin Smelt	9	5	8	6.6
2018	2	504	13.6	Processed	Longfin Smelt	2	6	8	7.0
2018	2	508	24.2	Processed	Longfin Smelt	51	5	8	6.2
2018	2	513	13.3	Processed	Longfin Smelt	20	5	8	6.0
2018	2	519	16.7	Processed	Longfin Smelt	19	6	8	7.1
2018	2	520	16.0	Processed	Longfin Smelt	58	5	8	6.4
2018	2	602	24.2	Processed	Longfin Smelt	35	6	9	7.5
2018	2	606	45.9	Processed	Longfin Smelt	18	7	9	7.8
2018	2	609	28.6	Processed	Longfin Smelt	10	6	7	6.6
2018	2	610	25.2	Processed		No Smelt Catch			
2018	2	703	11.2	Processed		No Smelt Catch			
2018	2	704	11.1	Processed	Longfin Smelt	9	5	7	6.0
2018	2	705	9.7	Processed		No Smelt Catch			
2018	2	706	12.2	Processed	Longfin Smelt	7	5	6	5.6
2018	2	707	12.3	Processed	Longfin Smelt	5	5	6	5.4
2018	2	711	16.2	Processed		No Smelt Catch			
2018	2	716	9.2	Processed	Longfin Smelt	2	6	7	6.5
2018	2	723	9.4	Processed	Longfin Smelt	3	6	7	6.3
2018	2	801	17.9	Processed	Longfin Smelt	10	6	7	6.5
2018	2	804	11.0	Processed	Longfin Smelt	9	6	7	6.4
2018	2	809	ND	Processed		No Smelt Catch			
2018	2	812	9.7	Processed	Longfin Smelt	1	7	7	7.0
2018	2	815	7.9	Processed		No Smelt Catch			
2018	2	901	6.5	Processed	Longfin Smelt	2	7	8	7.5
2018	2	902	6.5	Processed		No Smelt Catch			
2018	2	906	7.2	Processed		No Smelt Catch			
2018	2	910	11.4	Processed		No Smelt Catch			
2018	2	912	15.6	Processed		No Smelt Catch			
2018	2	914	5.8	Processed		No Smelt Catch			
2018	2	915	26.1	Processed	Longfin Smelt	1	7	7	7.0
2018	2	918	39.7	Processed		No Smelt Catch			
2018	2	919	7.0	Processed		No Smelt Catch			

Barker ITP

SWP ITP Criteria Stations

Processing is complete through 01/25/2018  
 ND=No data was collected