

SMELT WORKING GROUP
Friday, December 14, 2012

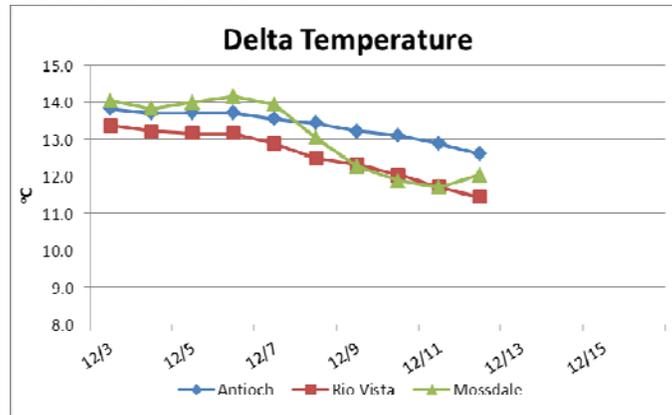
Meeting Summary:

The Working Group recommended no change in projected operations based on a review of current Delta conditions, but noted that the recent salvage of delta smelt would require continued monitoring. The Working Group will continue to monitor smelt salvage over the weekend and will reconvene on Monday, December 17.

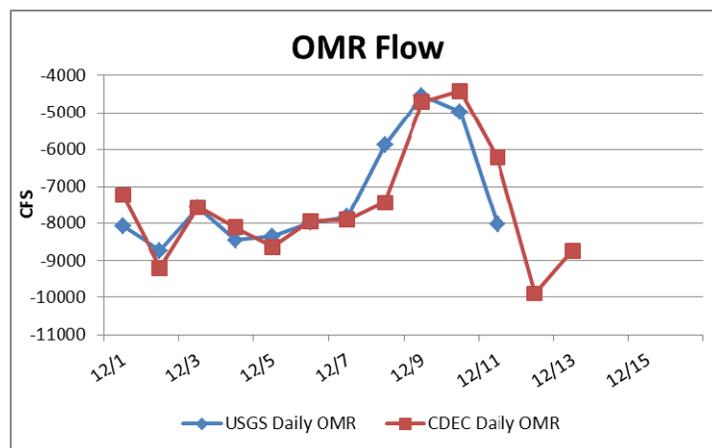
Reported Data:

1) Current environmental data:

- **Water temperatures** are as follows:

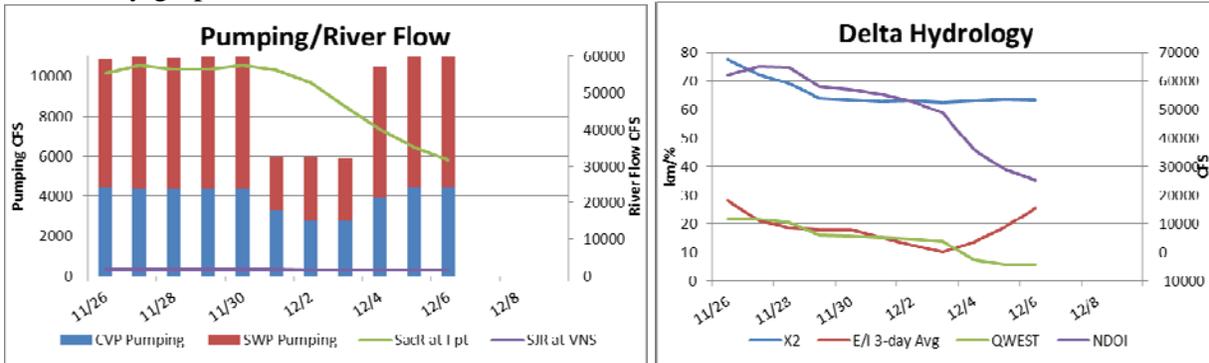


- **OMR:** USGS tidally-averaged daily OMR as of December 11 is -8,020 cfs. CDEC daily OMR flow as of December 13 is -8729 cfs.



- **Flow:** Sacramento River inflow is 31,764 cfs and San Joaquin River is 1,472 cfs. X_2 calculation from CDEC was 63.5km. The graphs below show the most recent trends in Delta

hydrology and water quality that were evaluated by the Working Group. See attachment for turbidity graphics.



Delta Fish Monitoring:

The Smelt Turbidity Study sampled primarily at two locations, just downstream and just upstream of Rio Vista on the lower Sacramento River over the past two weeks. This study is now concluded. Survey catch post-storm was noticeably higher than during pre-storm sampling at these locations and during the first sampling date post-storm. Also, virtually all the delta smelt catch occurred during the flood tide and very little during the ebb indicating that delta smelt could be “surfing” upstream with the flood tides, or at least holding position. During the last survey day, the project moved some sampling upstream into a location in the Sacramento Deepwater Shipping Channel and Cache Slough. Higher delta smelt densities at the upstream location on the last day as compared to similar pre-storm sampling was interpreted by the study principle investigators as indicating that spawning migration for delta smelt has begun, although it may be in the early stages.

Fall Midwater Trawl (FMWT) has concluded field sampling for 2012. The Final FMWT Index (all four months) is anticipated to be released mid- to late next week. Preliminary results indicate no detections of smelt in the interior Delta stations, and a few detections in Suisun Bay, with only slightly larger numbers in the Sacramento River system and Cache Slough.

The 2012 Delta Smelt Recovery Index (based on September and October) is 13. More information on the Recovery Index can be found on the Bay-Delta Office’s web site at http://www.fws.gov/sfbaydelta/species/delta_smelt.cfm. Results from CDFG surveys are available online at: <http://www.dfg.ca.gov/delta/>.

2) Salvage:

One delta smelt was counted at the Skinner Fish Facility (SWP facility) on December 12, 2012, and it corresponds to a salvage number of four. Another single delta smelt was counted at the SWP facility on December 13, 2012, and represents a salvage number of two. No delta smelt were salvaged at the CVP fish salvage facility. The total combined salvage for delta smelt for the season is now six. No longfin smelt were salvaged at either facility.

CDFG provided a historical perspective on early season salvage. The last time that consecutive days salvage in the first half of December contained delta smelt was 2001. Back-to-back days of

delta smelt salvage over the years were noted to generally coincide with years of higher than average FMWT Index and higher than average salvage numbers later in the year.

Current longfin smelt and delta smelt salvage information can be downloaded from DFG's salvage FTP site at <ftp://ftp.dfg.ca.gov/salvage/Daily%20Smelt%20Summary/> or queried from DFG's salvage web page at <http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx>

3) Expected Project Operations:

Combined CVP/SWP exports are approximately 11,000 cfs as of December 14, and are anticipated to remain steady until December 15, when the SWP pumping facility can add approximately 500cfs (6,680 cfs + 1/3 of the flow at Vernalis).

Operators indicated that although some precipitation events were anticipated over the next week, little measureable rain was expected.

4) Particle Tracking Modeling:

No PTM runs were requested for this week.

5) Assessment of Risk:

Background:

RPA Component 1: "Beginning in December of each year, the Service shall review data on flow, turbidity, salvage, and other parameters that have historically predicted the timing of delta smelt migration into the Delta. On an ongoing basis, and consistent with the parameters outlined... [in the BO]...the SWG shall recommend to the Service OMR flows that are expected to minimize entrainment of adult delta smelt" (page 280).

RPA Component 1, Action 1, Part A: "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 [of the BO]. 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).

Discussion: The Working Group reviewed and discussed all relevant data from fish surveys, Delta monitoring, salvage, and planned Project operations. The members were concerned with the highly negative daily OMR flow, the early recent salvage, and overall Delta hydrological conditions, which were deemed favorable for delta smelt movement into the central and southern

Delta. Turbidity has encroached into the central and part of the southern Delta, with increased readings at many of these stations.

Members expressed concern that the six delta smelt salvaged may represent a much larger percentage of the total population than the consecutive days of salvage in early December 2001, when the FMWT Index was much higher than it is anticipated to be this year. The group felt this was an issue of relative magnitude.

The group discussed previous years with similar historical conditions in early December, such as years with OMR flow in the -8,000 to -10,000 cfs range, and how those years typically corresponded with larger numbers of salvage later in the year.

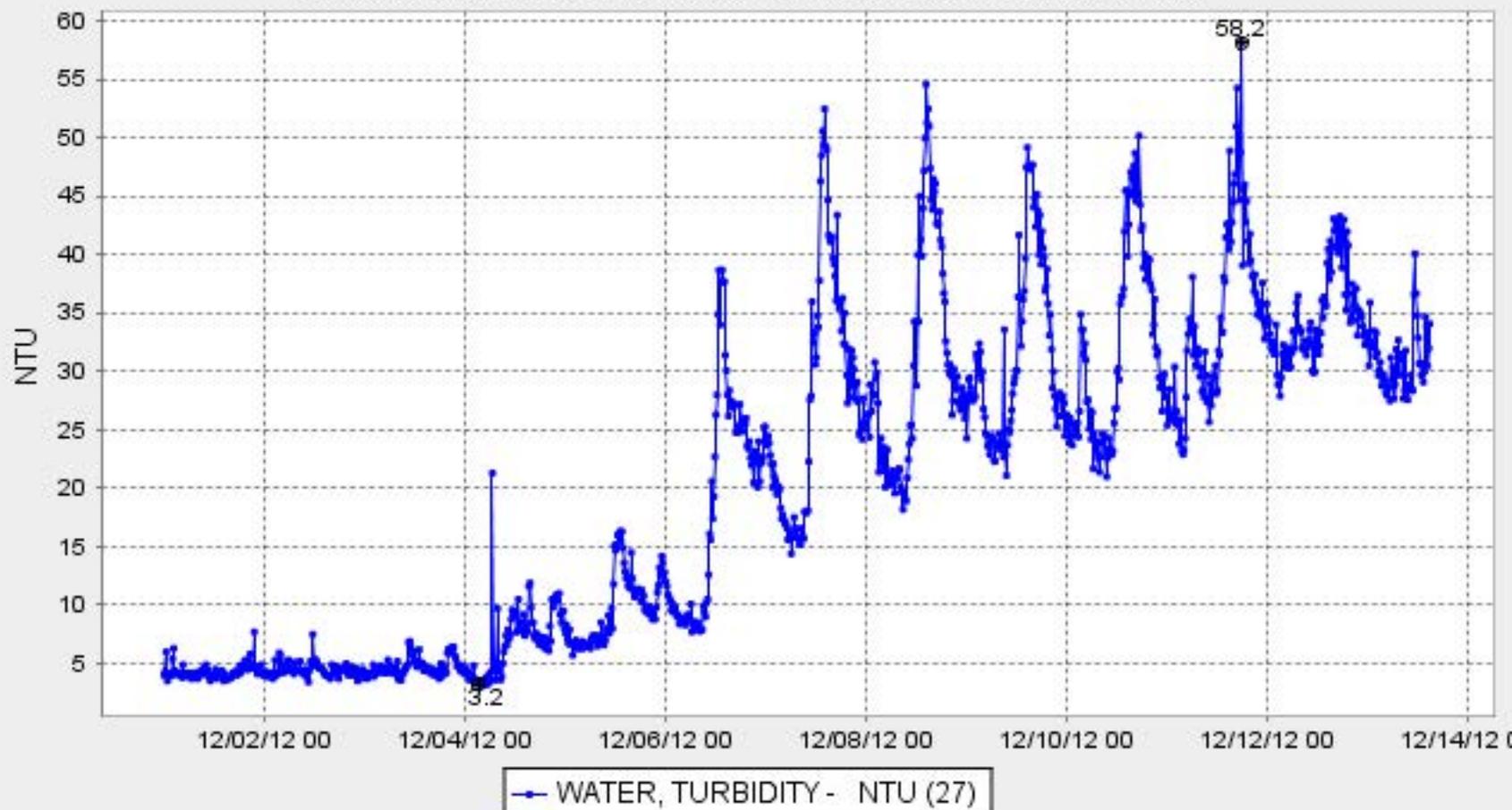
The salvage density criterion for RPA Component 1, Action 1, Part B was discussed. Members suggested that this criterion could be utilized now to determine if a recommendation was necessary. Members provided a historical perspective that pre- and post-POD years were used in the analysis that led to the current criterion of delta smelt salvage. Some members expressed concern that it may no longer be appropriate to use pre-POD data when looking at the current delta smelt population and salvage. Some members suggested that consecutive days of increasing salvage should result in a recommendation, while others suggested that simple presence in salvage over the weekend was sufficient for a recommendation.

The members recognized the lack of fish data post-storm for the San Joaquin River and central and southern Delta stations, and acknowledged that until the January 2013 surveys begin, the only new fish data will be from salvage. The members agreed that at this time, there was not enough evidence to say that the recent salvage reflects a large number of delta smelt have entered the San Joaquin system and OMR action is warranted. Although precise agreement on how many additional fish reported in salvage would trigger the need for a recommendation to the Service was not achieved, the members did agree that salvage should be monitored closely over the weekend and to discuss the issue again on Monday.

PRISONERS POINT (PPT)

Date from 12/01/2012 00:00 through 12/14/2012 00:00 Duration : 13 days

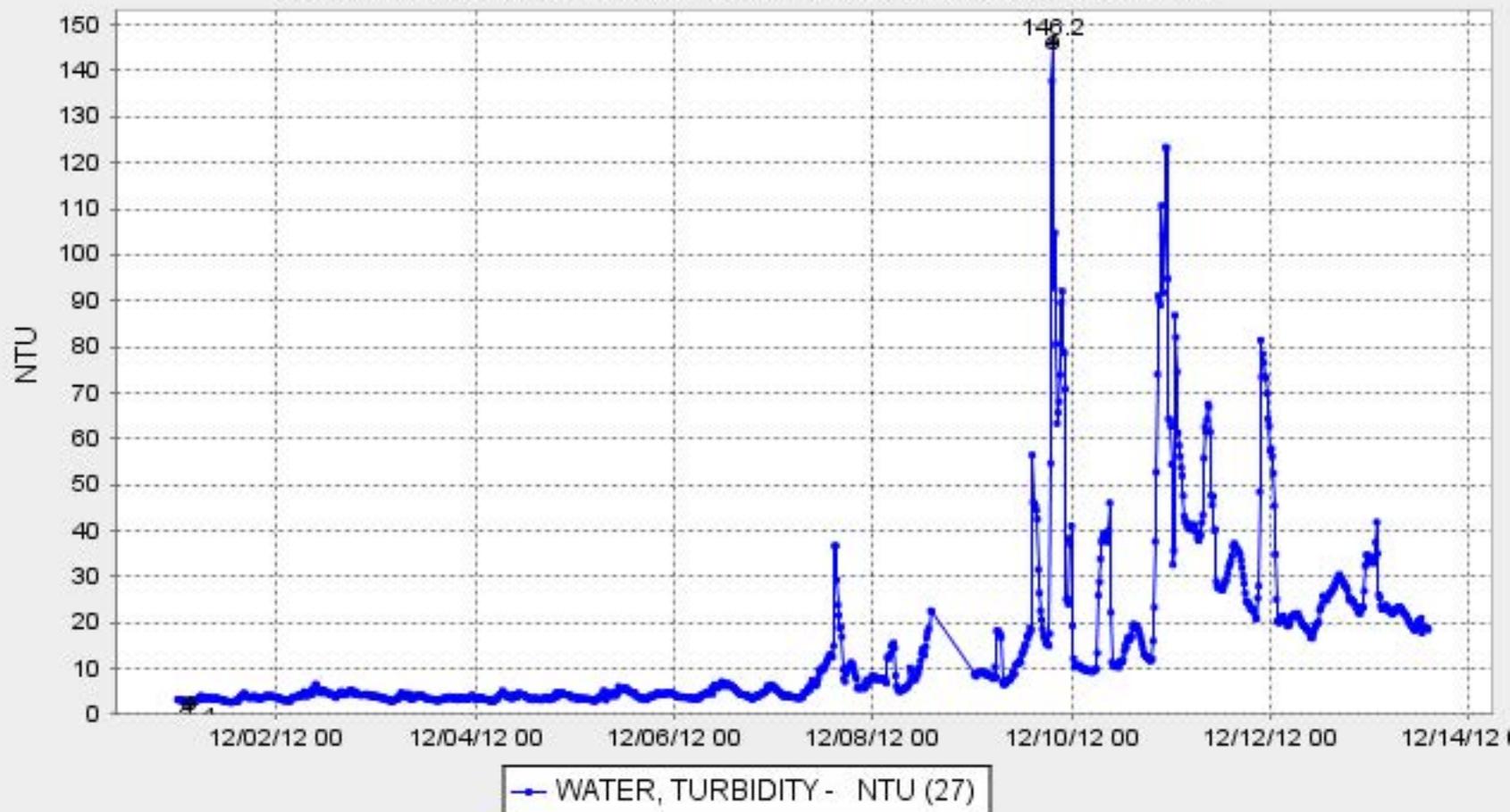
Max of period : (12/11/2012 17:45, 58.2) Min of period: (12/04/2012 03:15, 3.2)



OLD RIVER @ QUIMBLY IS NEAR BETHEL IS (ORQ)

Date from 12/01/2012 00:00 through 12/14/2012 00:00 Duration : 13 days

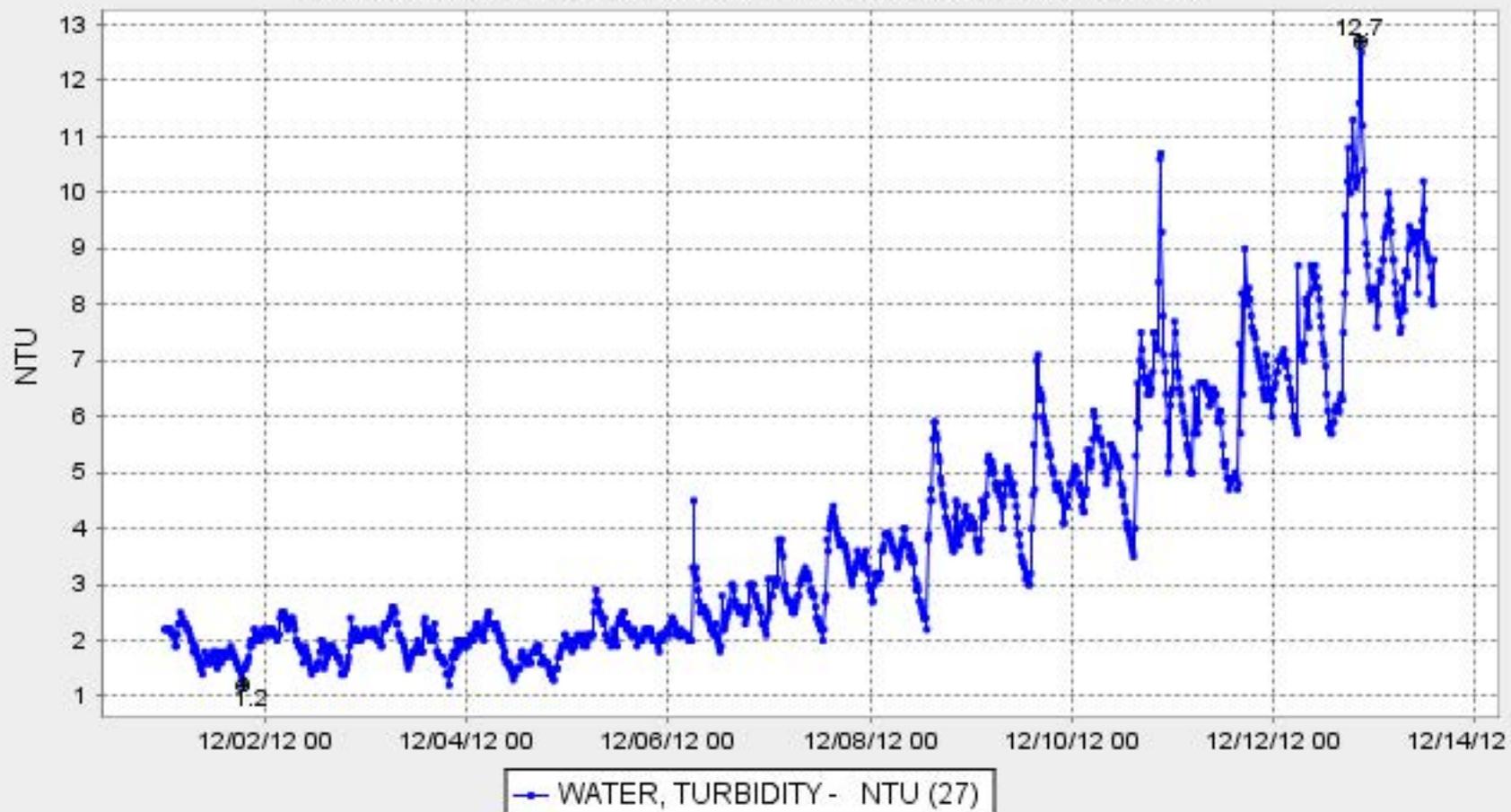
Max of period : (12/09/2012 19:30, 146.2) Min of period: (12/01/2012 02:45, 2.4)



HOLLAND CUT NEAR BETHEL ISLAND (HOL)

Date from 12/01/2012 00:00 through 12/14/2012 00:00 Duration : 13 days

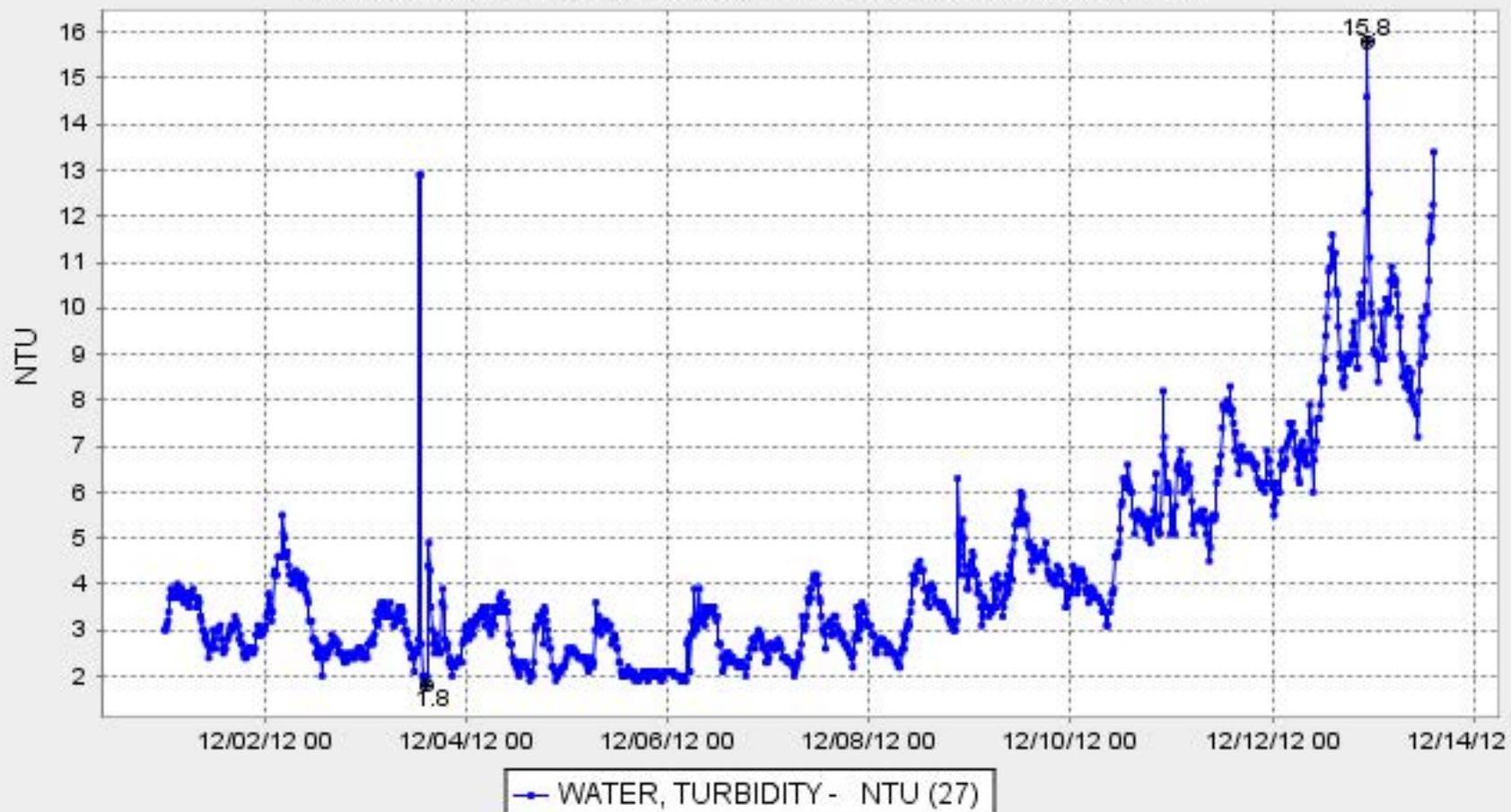
Max of period : (12/12/2012 20:45, 12.7) Min of period: (12/01/2012 18:45, 1.2)



OLD RIVER AT BACON ISLAND (USGS) (OBI)

Date from 12/01/2012 00:00 through 12/14/2012 00:00 Duration : 13 days

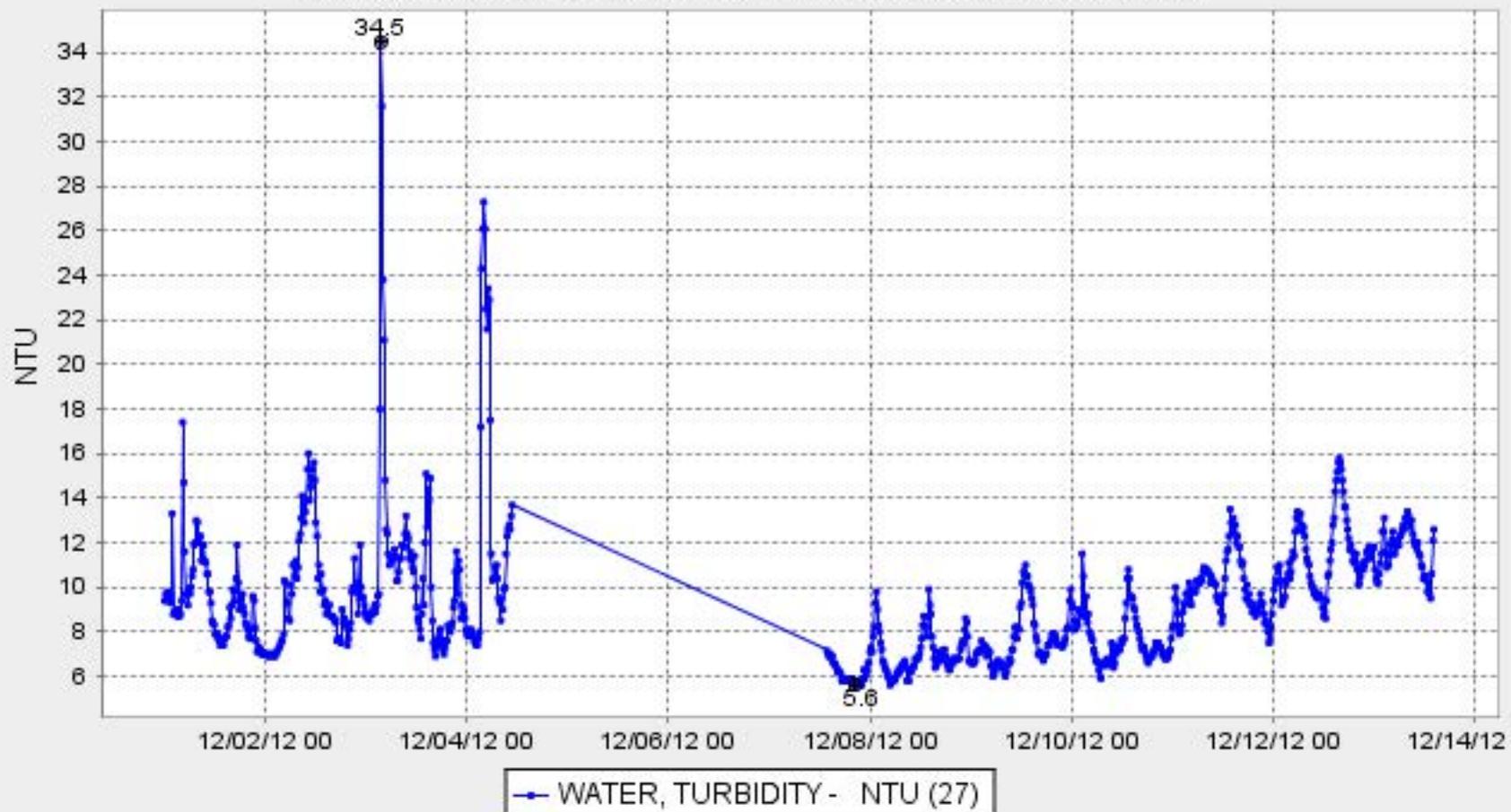
Max of period : (12/12/2012 22:45, 15.8) Min of period: (12/03/2012 14:15, 1.8)



OLD RIVER AT HIGHWAY 4 (OH4)

Date from 12/01/2012 00:00 through 12/14/2012 00:00 Duration : 13 days

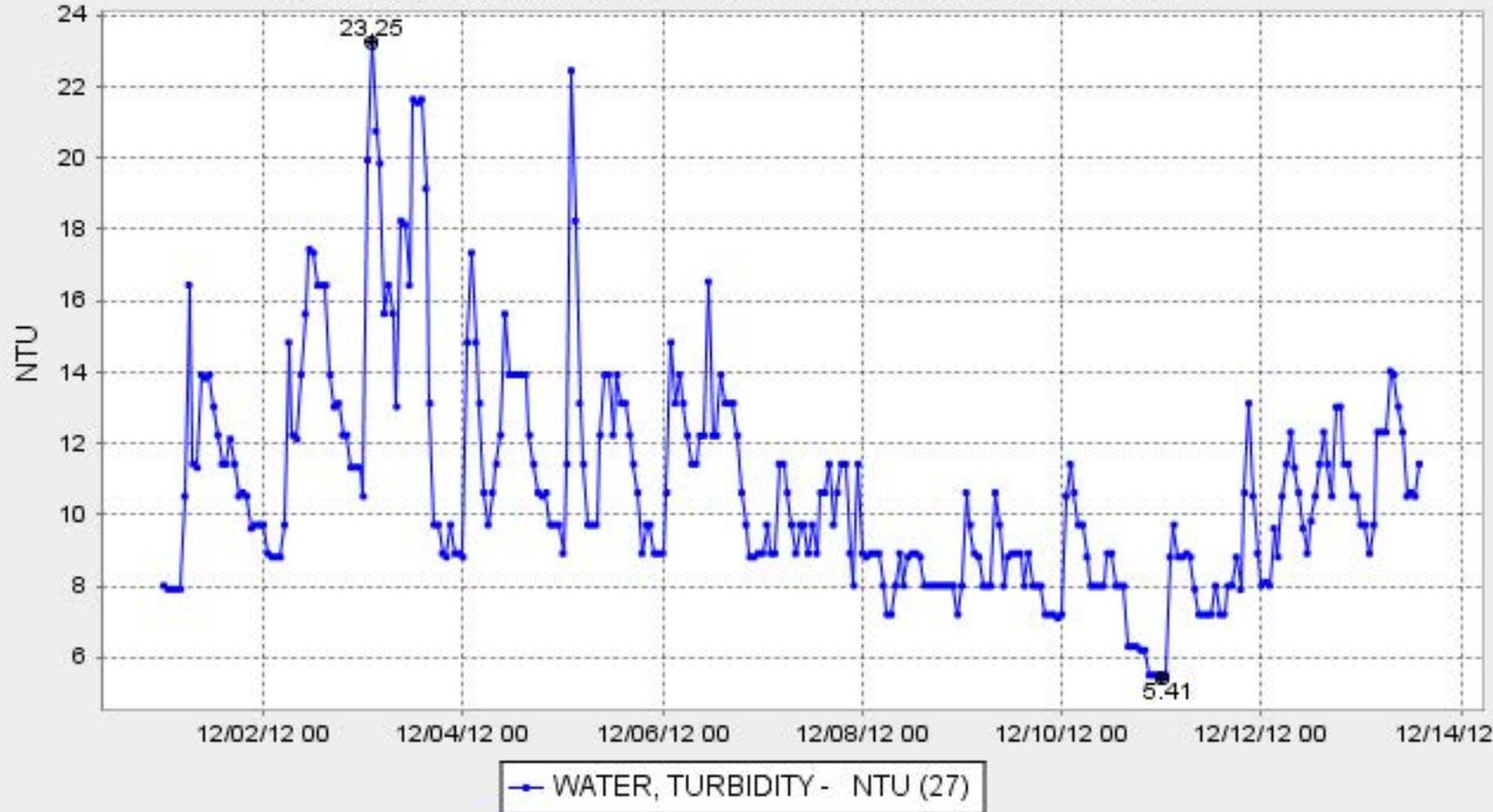
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CLIFTON COURT (CLC)

Date from 12/01/2012 00:00 through 12/14/2012 00:00 Duration : 13 days

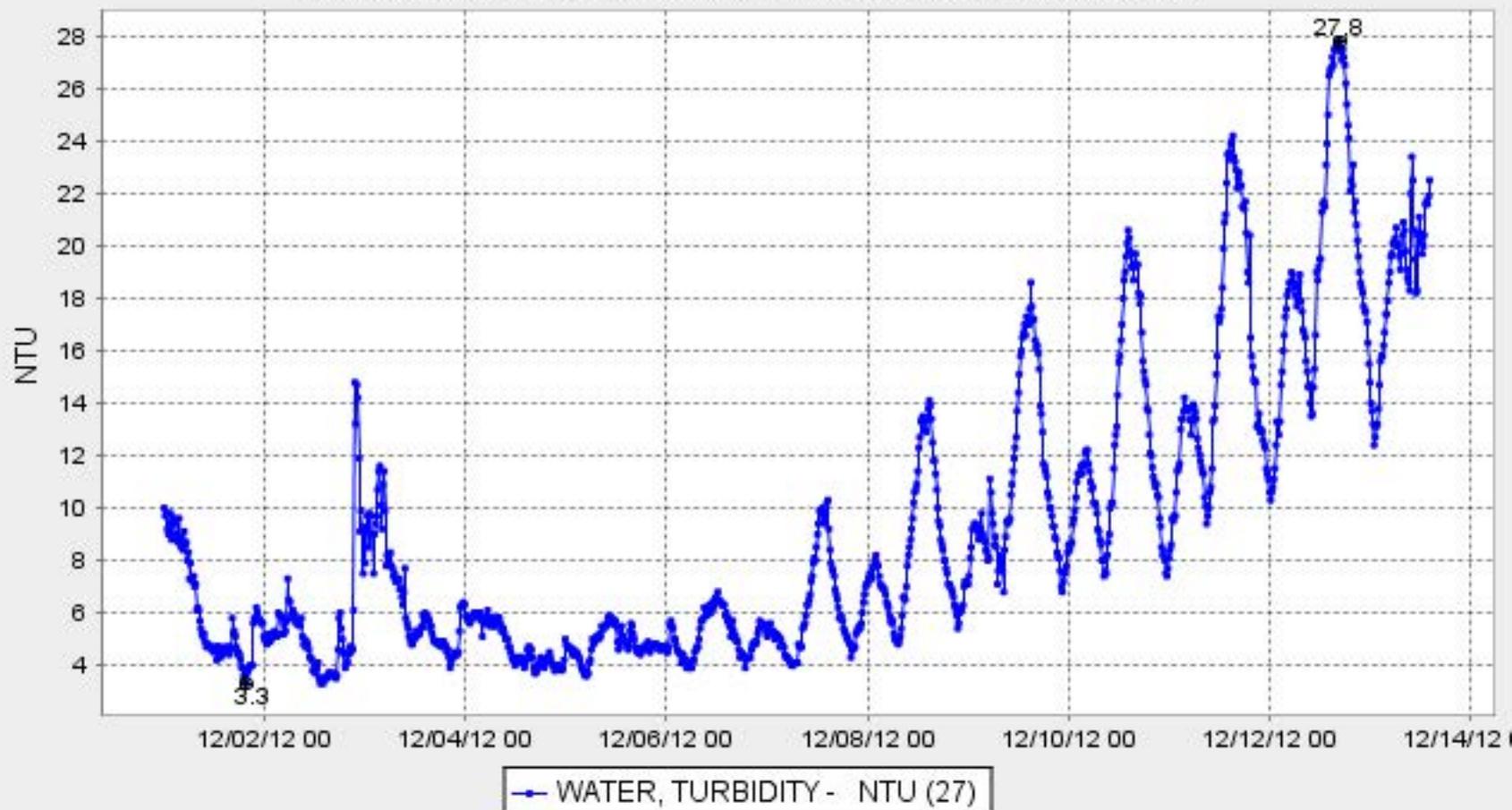
Max of period : (12/03/2012 02:00, 23.25) Min of period: (12/11/2012 00:00, 5.41)



MIDDLE RIVER NEAR HOLT (HLT)

Date from 12/01/2012 00:00 through 12/14/2012 00:00 Duration : 13 days

Max of period : (12/12/2012 16:45, 27.8) Min of period: (12/01/2012 19:30, 3.3)



MIDDLE RIVER AT MIDDLE RIVER (MDM)

Date from 12/01/2012 00:00 through 12/14/2012 00:00 Duration : 13 days

Max of period : (12/12/2012 17:15, 12.0) Min of period: (12/01/2012 15:00, 2.2)

