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# 1.0 Executive Summary

This Annual Monitoring Report documents the results of monitoring activities during the 2011 growing season on the Wolf Pond Stream Restoration Project. Construction of the site, including planting of trees, was completed in March 2008. The 2011 data documents results from the fourth year of geomorphic and vegetation monitoring at the site.

The design for the Wolf Pond Stream Restoration Project involved stream restoration. After construction, it was determined that the project generated 4,513 feet of stream restoration. The As-Built Survey is included as Appendix B.

This Annual Monitoring Report presents data from five vegetation monitoring plots, one crest gauge, one rain gauge, eight cross sections, approximately 4,000 linear feet of profile survey and photographic reference locations, as specified in the approved Restoration Plan for the site.

A manual rain gauge was used in conjunction with the onsite automatic rain gauge to collect precipitation data. Rainfall data was then verified by comparison with the NOAA Rainfall Atlas 2011 data for nearby sites. Normal rainfall conditions prevailed in the 2011 monitoring period with a total 38.95 inches recorded for the year.

Vegetation monitoring for 2011 documented surviving planted stem densities between 364 and 566 stems per acre with an average of 455 stems per acre. This represents a survival rate of approximately 66% based on a baseline density of 691 stems per acre.

The reach is on track to meet the final vegetative success criteria of 260 five-year-old planted stems per acre at the end of five years of monitoring.

One bankfull event was recorded by the crest gauge and rainfall data in May 2011. The restored stream channel has remained stable and is providing the intended habitat and hydrologic functions. Most monitored cross sections for 2011 document only minor adjustment in stream dimension although two cross sections did have significant change. The longitudinal profile is stable for 2011 except for some problem areas in Reach 2.

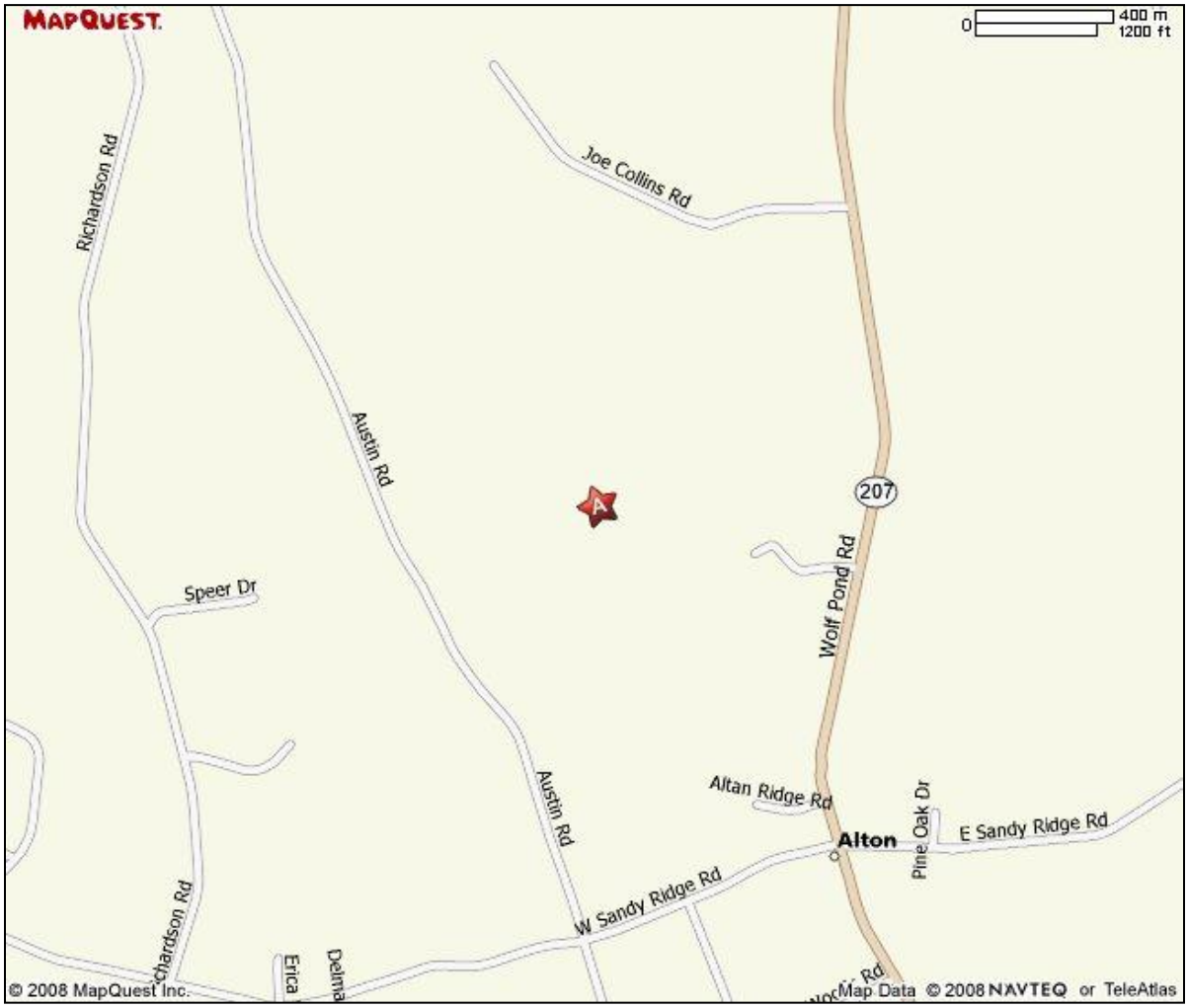
The bed material in some riffles continues to be finer than anticipated due to cropland runoff, the rapid growth of cattails throughout the reach and culvert backwater. All problem areas identified in Monitoring Year 3 have been repaired and are recovering. Six new problem areas were identified and all but one were in Reach 2. All six problem areas will be inspected and repaired as needed during winter 2011/2012.

# 2.0 Introduction

## 2.1 Project Description

The Wolf Pond site is located approximately 8 miles south of Monroe in Union County (see Figure 1). The property is located west of Wolf Pond Road, SR 207, and south of Joe Collins Road. The site is accessed by a farm path that runs adjacent to the main power transmission lines that bisect the property.

**Figure 1 - Wolf Pond Location Map**




The project is a restoration of approximately 4,500 linear feet of unnamed tributaries to Adams Branch in the Yadkin Pee-Dee River Basin. The project is made up of an upper and lower section of UT2, referred to as Reach 3 and Reach 1, respectively for monitoring and UT1,

referred to as Reach 2 for monitoring. Reach 1, 2, and 3 stationing is summarized in Table 1. The Wolf Pond site has a drainage area of 0.95mi$^2$. The dominant historic land use was originally timber production followed by intensive agricultural production of crops including corn, soybeans, and winter wheat. The channel was straightened and channelized for agricultural purposes. This led to an incised condition with little to no floodplain access.

**Table 1 - Wolf Pond Monitoring Reaches**

| Reach Name | As-Built Length (ft) | Monitoring Stations | Restoration Approach |
|---|---|---|---|
| UT2/Reach 1/Reach 3 | 2,972 | 202+03 – 215+45<br>219+13 – 229+63 | Restoration (Priority I) |
| UT1/Reach 2 | 1,541 | 100+45 – 116+26 | Restoration (Priority I/II) |
| **Total** | 4,513 | 3,975 | |

## 2.2 Project Objectives

The Wolf Pond site was identified by EBX to support the NC EEP full delivery mitigation process. The objective of the project was to produce a minimum of 4,500 stream mitigation units (SMU) to NC EEP through the full delivery process in the Yadkin Pee-Dee River 03040105 hydrologic unit.

Due to the incised condition of the channel and lack of access to the floodplain, the existing channel was abandoned and a Priority I Natural Channel Design approach was selected for the majority of the project. Reach 2 existed at a higher elevation than Reaches 1 and 3, so a Priority II approach was used to create a floodplain at a lower elevation to reach appropriate elevations before the confluence with UT2 (Reach 1 and 3). Given the valley type VIII drainage, a C4 channel was chosen as the design channel. The design channel relies heavily on structures for grade control and bank protection.

Monitoring of the Wolf Pond site is required to demonstrate successful mitigation based on success criteria specified in the Restoration Plan. Stream and vegetation monitoring are conducted on an annual basis. This Annual Monitoring Report documents the results of the monitoring for 2011 (Year 4).

The as-built data documented 4,513 linear feet of stream restoration. The stream restoration will provide multiple ecological and water quality benefits within the Yadkin Pee-Dee River Basin. Those benefits are as follows:

***Hydrology***:

- Re-establishing floodplain connection by raising bed elevations
- Increase flood storage by re-establishing floodplain

***Water Quality***:

- Reducing turbidity by reducing sediment inputs
- Reducing water temperatures by providing shading
- Increasing/ stabilizing oxygen levels by reducing BOD/COD and increasing re-oxygenating turbulence

***Habitat***:

- Improve bed habitat by increasing riffle-pool diversity, reducing sediment deposition, and improving low flow water depths
- Improve bank habitat by increasing stability and woody biomass
- Improve floodplain habitat by establishing micro-topography and hydrology, removing invasive vegetation, and increasing habitat diversity
- Improve food web dynamics by adding biomass (such as detritus, wood debris, and leaf matter) and re-establishing floodplain connection

## 2.3 Project History

This project was identified by EBX in the winter of 2006.

**Table 2 - Wolf Pond Site History**

| Project Activity and Reporting History | | |
|---|---|---|
| **Activity or Report** | **Data Collection Complete** | **Actual Completion or Delivery** |
| Restoration Plan | February 2007 | April 2007 |
| Final Design - 90% | N/A | July 2007 |
| Construction | N/A | February 2008 |
| Temporary S&E mix applied to entire project area | N/A | February 2008 |
| Permanent seed mix applied to reach | N/A | February 2008 |
| Bare roots and live stakes | N/A | March 2008 |
| Mitigation Plan / As-built (Monitoring Baseline) | March 2008 | June 2008 |
| Year 1 Monitoring | March 2009 | March 2009 |
| Year 2 Monitoring | October 2009 | December 2009 |
| Year 3 Monitoring | September 2010 | December 2010 |
| Year 4 Monitoring | September 2011 | December 2011 |
| Year 5 Monitoring | September 2012 | - |

# 3.0 Project Condition and Monitoring Results

## 3.1 Vegetation Assessment

### 3.1.1 Vegetation Success Criteria

Successful establishment of vegetation in riparian areas will be the survival of 260 planted stems following Year 5 monitoring. The interim vegetative success criteria will be the survival of at least 320 planted stems per acre at the end of Year 3 monitoring. Up to 20% of the site species composition may be comprised of volunteers. Remedial action may be required should volunteers present a problem or exceed 20% composition.

A digital image photo log will be used to subjectively evaluate the restoration site over time. A series of images over the five year monitoring period should demonstrate maturation of planted vegetation and volunteer species.

### 3.1.2 Description of Vegetation Monitoring

Five semi-permanent vegetation plots were established within the planted restoration areas to monitor the success of planted vegetation. The vegetation plots are 0.01 hectares in size. The vegetation plots are distributed across the site, but the precise location and orientation of the plots was random (see location on as-built drawings.) The plots cover approximately two percent of the site. Seven species were planted on site (see Table 3).

**Table 3 - Wolf Pond Planted Species**

| Common Name | Scientific Name | Abbreviations |
|---|---|---|
| Paw Paw | Asimina triloba | AT |
| River Birch | Betula nigra | BN |
| Shag Bark Hickory | Carya ovate | CO |
| Green Ash | Fraxinus pennsylvanica | FP |
| Swamp Chestnut Oak | Quercus michauxii | QM |
| Water Oak | Quercus nigra | QN |
| Willow Oak | Quercus phellos | QP |

Each of the planted stems inside the plots was flagged to help in locating them in the future.

The taxonomic standard for vegetation used in this report was based on "Manual of the Vascular of the Carolinas", by Albert E Radford et al. The vegetation monitoring protocol used for collecting vegetation data was established for this project in 2000 by the Wetland Restoration Program (WRP) and Karen Hall of NCSU.

### 3.1.3 Results of Vegetation Monitoring

Wolf Pond continues to be dominated by Goldenrod *(Solidago spp.)* with Groundsel *(Baccharis halimifolia)* tree becoming very common across the site. Plot WP3 has a high density of Groundsel tree. (See Photo D-3 page 72) The stream's banks are reasonably well vegetated with a few areas having stunted live stake shrubs. This is allowing aquatic vegetation to persist in the stream channel in places due to lack of shade. This site suffered a loss of 2 trees from the spring monitoring count. Overall, the site appears to be stable and doing well.

Original planting density, based on the five 0.01 hectare plots, (100 square meters) was 691 stems per acre. The current density is currently 471 stems per acre which represents a survival rate of approximately 68%. The planted stems in the monitoring plots ranged from 404 to 607 stems per acre. This site has met the interim success criteria of 360 stems per acre after three years and is on track to meet the success criteria of 260 stems per acre after five years.

**Table 4 - Baseline Stem Counts**

| Baseline Data | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| May 2008 | | | | | | | | | |
| Plot | PLANTED SPECIES | | | | | | | | |
| | AT | BN | CO | FP | QM | QN | QP | Q | PLANTED STEMS |
| WP1 | 1 | 4 | 1 | 5 | | 1 | 4 | 1 | 17 |
| WP2 | 2 | | 3 | 2 | 5 | 3 | | 1 | 16 |
| WP3 | 2 | 4 | 2 | 2 | 3 | 2 | 2 | 1 | 18 |
| WP4 | 1 | 5 | 1 | 2 | 3 | 2 | 2 | 3 | 19 |
| WP5 | 3 | 4 | 3 | 2 | | | 2 | 1 | 15 |
| TOTALS | 9 | 17 | 10 | 13 | 11 | 8 | 10 | 7 | 85 |
| Percent | 0.106 | 0.200 | 0.118 | 0.153 | 0.129 | 0.094 | 0.118 | 0.082 | 1.000 |

**Table 5 – MY4 (2011) Stem Counts**

| September 2011 (MY4) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Plot | PLANTED SPECIES | | | | | | | | LIVE |
| | AT | BN | CO | FP | QM | QN | QP | Q | PLANTED STEMS |
| WP1 | 1 | 3 | | 5 | | | 2 | | 11 |
| WP2 | | | 2 | 2 | 3 | 1 | 1 | | 9 |
| WP3 | | 4 | 1 | 2 | 1 | 2 | 4 | | 14 |
| WP4 | | 5 | | 2 | 3 | | 2 | | 12 |
| WP5 | 2 | 3 | 2 | 2 | | | 1 | | 10 |
| | | | | | | | | | |
| TOTALS | 3 | 15 | 5 | 13 | 7 | 3 | 10 | 0 | 56 |

**Table 6 - Baseline Stems per Acre**

| Monitoring Plots Baseline Data | | | | | |
|---|---|---|---|---|---|
| May 2008 | | | | | |
| **Plot** | **Trees** | **Plot size** | **Plot size** | **Plot size** | **Stems** |
| | **$n_i$** | $m^2$ | $ft^2$ | acre | **per acre** |
| WP1 | 17 | 100 | 1076 | 0.0247 | 688 |
| WP2 | 16 | 100 | 1076 | 0.0247 | 647 |
| WP3 | 18 | 100 | 1076 | 0.0247 | 728 |
| WP4 | 19 | 100 | 1076 | 0.0247 | 769 |
| WP5 | 15 | 100 | 1076 | 0.0247 | 607 |
| **Totals:** | 85 | 500 | 5380 | 0.123 | |
| Stems per plot | 17 | | | Average | 691 |

**Table 7 – MY4 (2011) Stems per Acre**

| Fall Monitoring Data | | | | | |
|---|---|---|---|---|---|
| September 2011 | | | | | |
| **Plot** | **Trees** | **Plot size** | **Trees** | **Percent** | **Stems** |
| | **$n_i$** | $m^2$ | **Loss** | **Loss** | **per acre** |
| WP1 | 11 | | 0 | 0.000 | 445 |
| WP2 | 10 | | 1 | 0.100 | 404 |
| WP3 | 15 | | 1 | 0.067 | 607 |
| WP4 | 12 | | 0 | 0.000 | 485 |
| WP5 | 10 | | 0 | 0.000 | 404 |
| **Totals:** | 58 | | 2 | 0.034 | |
| Trees/plot | 11.6 | | | Average= | 471 |

## 3.2 Stream Assessment

### 3.2.1 Stream Success Criteria

As stated in the approved Mitigation Plan, the stream restoration criteria for the site includes the following:

Bankfull Events: Two bankfull flow events must be documented within the five-year monitoring period.

Cross-Sections: There should be little change in as-built cross sections. Cross sections shall be classified using the Rosgen stream classification method and all monitored cross-sections should fall within the quantitative parameters defined for C type channels.

Longitudinal Profiles: The longitudinal profiles should show that the bedform features are remaining stable, e.g. they are not aggrading or degrading. Bedforms observed should be consistent with those observed in C type channels.

Photo Reference Stations: Photographs will be used to subjectively evaluate channel aggradation or degradation, bank erosion, success of riparian vegetation and effectiveness of erosion control measures.

### 3.2.2 Stream Morphology Monitoring Plan

Stream monitoring will document the stability of the restored channel. Monitoring will occur for 5 years or until the final success criteria have been achieved, whichever is longer. Monitoring methods used are based on US Army Corps of Engineering guidance documents and NC Division of Water Quality guidance documents.

#### *Cross Sections*

Two permanent cross sections, one at a riffle and one at a pool were installed for every 1,000 linear feet of restored stream. Each cross section was marked with permanent pins on both banks. Each cross section is tied to a benchmark to allow for comparison for data each year. The cross section survey takes into account water surface and all breaks in slope including thalweg, top of bank, and bankfull if present.

#### *Longitudinal Profile*

Longitudinal profile is surveyed once every year for five years or until the final success criteria are met. The longitudinal survey will include thalweg, water surface, bankfull and top of bank. Each survey point will occur at the head, midpoint, and end of each feature and the invert of each structure. The survey will be tied to a permanent benchmark.

***Hydrology***

Bankfull events will be monitored for the length of the monitoring period. One crest gauge is installed on site to capture bankfull events. Photographs of high water marks, wrack lines and sediment deposition will also be used to document these events.

***Photo Reference Stations***

Photographs will be taken at the same locations each year for the length of the monitoring period. These photos will document the progression of the site from year to year.

### 3.2.3 Stream Morphology Monitoring Results

Stream conditions are generally stable with the exception of the problems discussed below. Bank stability is improving with the vegetative growth. There are 30 structures within the monitoring reaches. All structures appear to be stable. The channel has experienced some adjustment but is expected to further stabilize as the bed material changes, and the riparian vegetation completely establishes itself. All problem areas will be addressed during winter of 2011/2012

The heavy growth of cattails (*Typha latifolia*) within the stream bed in Reach 2 as well as backwater from the culvert within the reach has provided a stop to the sediment movement and a flattening of the stream bed with the resultant loss of riffle habitat. This is the natural response of a stream to changes in its watershed and bed vegetation and is listed as general problem area MY4 PA-1 that occurs in at least 10 places from station 100+43 to 113+46 in Reach 2.

A second factor affecting the stability of the stream occurs outside of the riparian buffer on Reaches 2 and 3 where farming practices are causing an increase in sediment load throughout both reaches and impacting the morphology of the stream. The grading of the adjacent field in winter of 2010 increased the concentration of flows through swales into the reach causing erosion in a swale transecting the buffer (See photo 3.1.3-1 below). This was identified as problem area MY4 PA-2 located at station 3+29 in Reach 2.

The changes in flow regime have created a headcut along with scour from station 107+97 to station 108+08 in Reach 2 which is listed as problem area MY4 PA-3.

Problem area MY4 PA-4 is a scour pool above a stone cross vane which occurs at station 109+08 in Reach 2. It is caused by the cattail growth that has filled the pool below the cross vane causing water to back up at high flows and the resulting turbulence and bypass flows.

Problem area MY4 PA-5 is bank scour on the outside of a bend that occurs at station 108+09 in Reach 2 and can be attributed to a steep point bar on the inside of a tight radius bend. Evidence of the bank issue can be seen by the changes in WP R2 PXS-1 left bank cross section as well which is as station 108+12.

Problem area MY4 PA-6 is located in Reach 1 and occurs at station 223+30 and can be attributed to in stream vegetation causing a change in flow pattern and resultant bank scour on a point bar.

**Photo 3.1.3-1 – Eroding swale through buffer**

### *Cross Sections*

The survey data was collected in September 2011, and the results are presented in Appendix C. The majority of cross sections appear stable. Two cross sections R2-PXS-2 and R3-RXS-1 had significant change. Several other cross sections have begun to return towards the as-built dimensions and the as-built $D_{50}$ particle size.

R2-PXS-2 showed a change in cross section area from 8.3 feet$^2$ to 6.7 feet$^2$ and a change in bankfull width from 18.5 feet to 11.3 feet. The change is due to the extensive growth of vegetation in the stream bed and some backwater from the Reach 2 culvert causing sediment deposition above the culvert. This is causing changes to the stream cross section and profile as would be expected. The cross section is not considered a problem area as it is fully vegetated and the stream is responding appropriately to changes in its watershed. See the Morphological Results section for more discussion.

R3-RXS-1 showed a change in cross section width from 16.8 feet to 12.2 feet and a change in width/depth ratio from 40 to 14. This is due to considerable deposition on the banks. The right pin was covered with approximately 0.2 feet of fresh sediment between 2010 and 2011 surveys. The sediment source is generally from the land use practices mentioned previously and particularly the steep slope above the right bank slumping onto the bank. The section is stable (see the Cross Section Photos) and is not considered a problem.

All remaining cross sectional variances ranged from 0.2% to 0.7% and were determined not to be problem areas but rather natural streambed adjustment, reaction to debris or variability in bed survey.

***Longitudinal Profile***

The longitudinal profile survey was conducted in September 2011, and the results are presented in Appendix C. The profile survey showed some adjustment in channel dimensions and profile. Reach 2 (R2) showed a flattening of features from station 111+50 downstream to station 116+00. This has resulted in a change in the riffle lengths, the pool lengths and the riffle pool ratio. As mentioned above, vegetation growth in the stream bed and deposition due to the backwater above culverts in this area was the cause of most adjustments. A headcut was discovered in Reach 2 at station 08+00. The headcut results from the flattening of the reach from this point downstream and is the transition from the original reach slope to the new lower slope. Note that the Elevation values for Reach 2 profile are in 5 foot increments while Reach 1 and 3 are in 2 foot increments

***Hydrology***

One bankfull event was documented during this year of monitoring by a crest gauge. The event most likely occurred in May 2011 during a 1.91 inch rainfall event and was approximately 0.15 feet above bankfull based on measurements from the single stage recorder. No debris evidence was found.

### 3.2.4 Problem Areas

At the time of data collection in September 2011, all four problem areas identified in MY3 2010 have had repairs made, been replanted and experienced a normal growing season. The effectiveness of these measures was good and all four areas are stable with good vegetative growth. See problem area photos for an example. Six new problem areas were observed. Five are in Reach 2 and one in Reach 1. All six problem areas will be repaired and replanted as needed during the winter/spring of 2011/2012. See discussion in Morphology Results above.

**Table 8 – Wolf Pond MY4 Problem Areas**

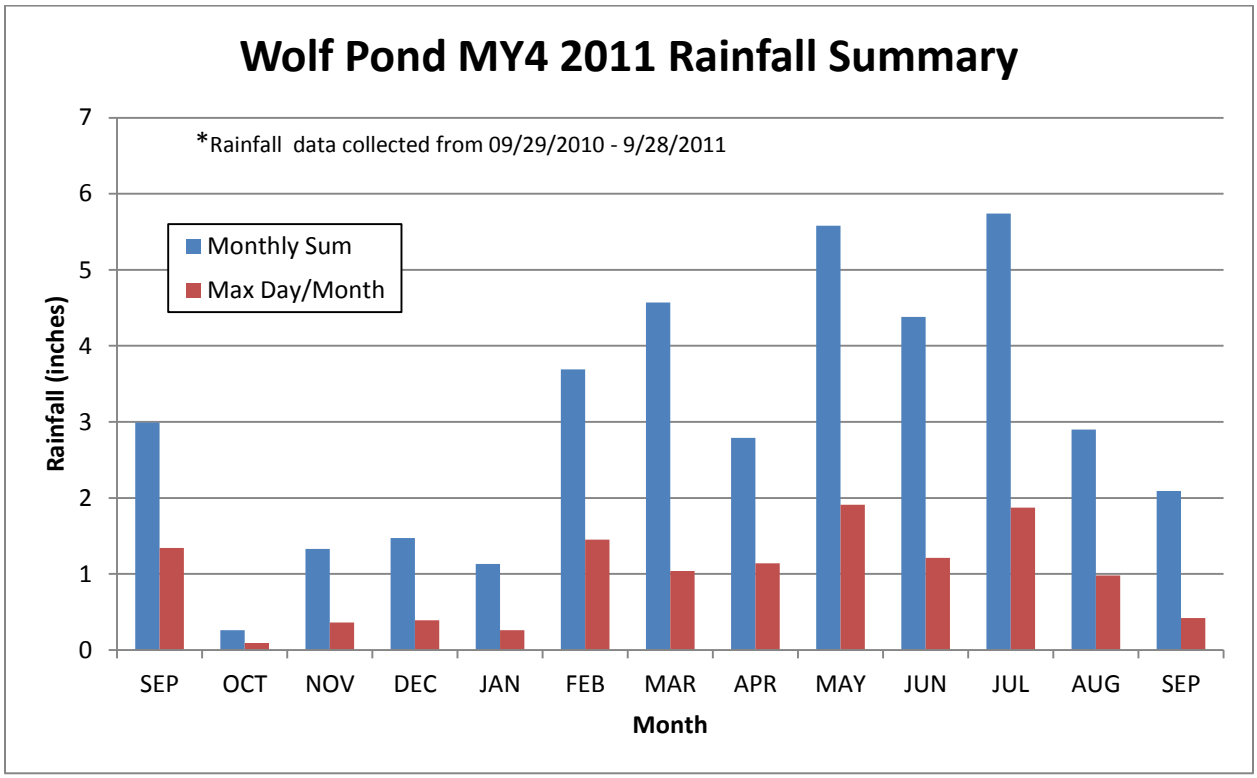
| ID | Station | Description | Photo Number[1] |
|---|---|---|---|
| MY4 PA-1 | 100+43 – 107+46 | Reach-2 cattail growth | Problem Area Photo 1 |
| MY4 PA-2 | 103+29 | Reach-2 swale erosion | Problem Area Photo 2 |
| MY4 PA-3 | 107+97 – 108+08 | Reach-2 headcut | Problem Area Photo 3 |
| MY4 PA-4 | 109+08 | Reach 2 scour at vane | Problem Area Photo 4 |
| MY4 PA-5 | 108+90 | Reach 2 bank scour | Problem Area Photo 5 |
| MY4 PA-6 | 223+29 | Reach-1 bank scour | Problem Area Photo 6 |
| MY3 PA-4 | n/a | MY3 before and after | Problem Area Photos 7-8 |

[1] See Appendix D.

## 3.3 Rainfall Data

Rainfall data is collected by an automated rain gauge, confirmed with a manual rain gauge and calibrated by comparison with nearby NOAA rain data. The data shows that normal rainfall occurred at this site for the entire monitoring. The average monthly rainfall for the 2011 growing season was 2.99 inches with a maximum of 5.74 inches occurring in July. The average maximum daily amount per month was 0.96 inches with a maximum of 1.91 inches occurring in May. Complete rainfall data is shown in Appendix F.

**Figure 2 – MY4 Rainfall Data Summary**



# 4.0 Conclusions

Overall stream dimension, pattern, and profile are stable. Both volunteer and planted riparian vegetation is flourishing. Repairs made to the site prior to Monitoring Year 4 were effective. Six new problem areas developed during MY4 that will be addressed during the winter of 2011-2012. The channel in all three reaches was dry during data collection with standing water in some pools. All stream structures appear functional and stable. Overall, the site is on track to achieve the stream stability and vegetative success criteria specified in the Restoration Plan. Monitoring will continue through 2012.

# Appendix A – As Built Survey

# Appendix B – MY4 Survey

# Appendix C – Profile, Cross Sections, and Pebble Counts

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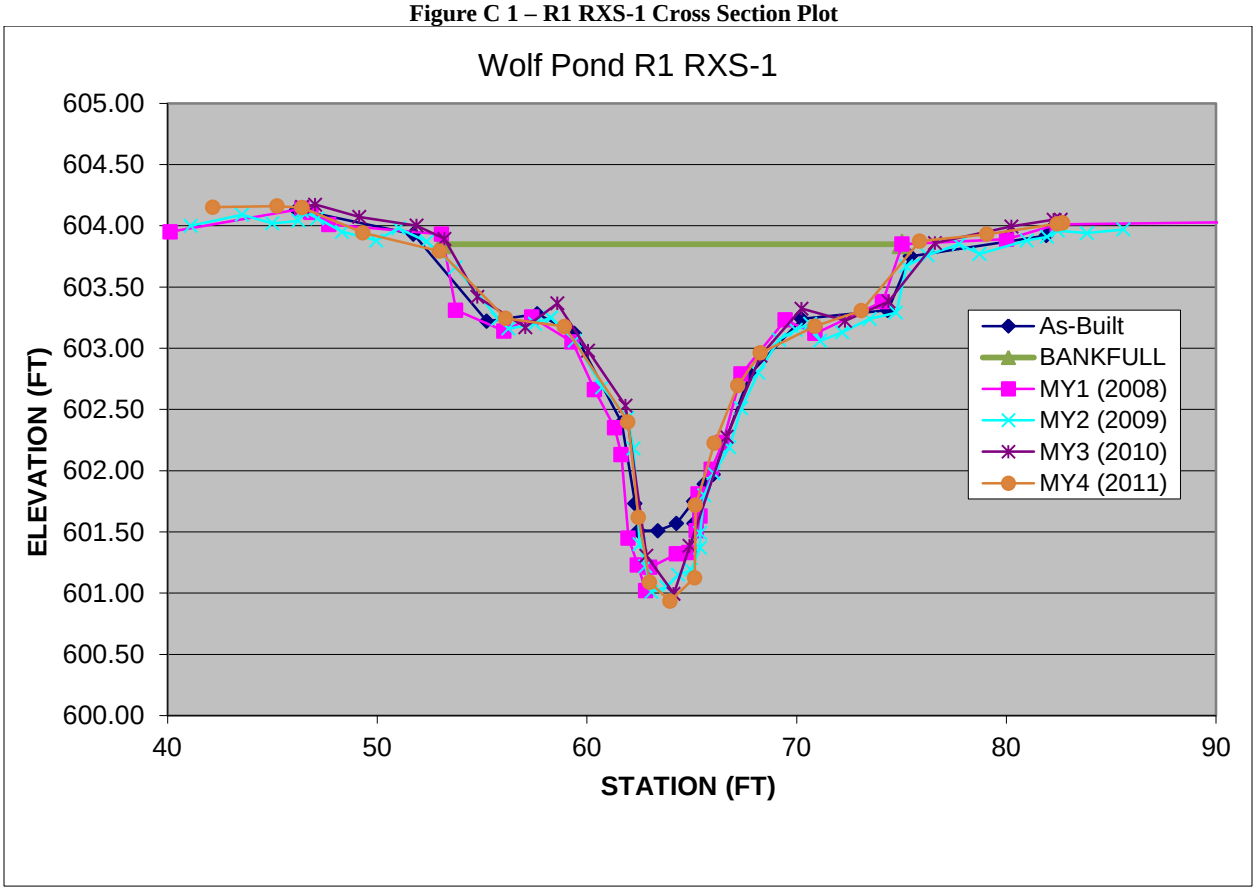
**Photo C 1 – R1 RXS-1 Left Pin**

**Photo C 2 – R1 RXS-1 Right Pin**

**Photo C 3 – R1 RXS-1 Downstream**

**Figure C 1 – R1 RXS-1 Cross Section Plot**



## Table C 1 - R1 RXS-1 Dimension Data

| AS-BUILT | | | MY1 (2008) | | | MY2 (2009) | | | MY3 (2010) | | | MY4 (2011) | | | MY5 (2012) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Station | Elevation | Description | Station | Elevation | Description | Station | Elevation | Description | Station | Elevation | Description | Station | Elevation | Description | Station | Elevation | Description |
| 46.17 | 604.13 | r1rxs1r | 13.29 | 604.41 | R1RXS1 | 41.12 | 604 | XS | 46.43 | 604.153 | R PIN | 82.7 | 604.023 | (ZXS)ZXS | | | |
| 46.51 | 604.12 | r1rxs1 | 25.51 | 604.01 | R1RXS1 | 43.56 | 604.09 | XS | 47.05 | 604.172 | Ground | 82.43 | 604.015 | (ZXSLP)ZXS | | | |
| 51.74 | 603.93 | r1rxs1tob | 35.5 | 604.079 | R1RXS1 | 45.01 | 604.02 | XS | 49.16 | 604.072 | Ground | 79.08 | 603.931 | (ZXS)ZXS | | | |
| 55.23 | 603.22 | r1rxs1 | 40.14 | 603.95 | R1RXS1 | 46.25 | 604.04 | XS | 51.88 | 604.001 | Ground | 75.88 | 603.874 | (ZXS)ZXS | | | |
| 57.64 | 603.28 | r1rxs1 | 46.43 | 604.14 | R1RXS1PR | 46.43 | 604.12 | XSRP09 | 53.21 | 603.893 | Ground | 73.1 | 603.308 | (ZXS)ZXS | | | |
| 59.41 | 603.12 | r1rxs1 | 46.85 | 604.11 | R1RXS1 | 47.16 | 604.06 | XS | 54.78 | 603.418 | Ground | 70.88 | 603.179 | (ZXS)ZXS | | | |
| 61.66 | 602.39 | r1rxs1 | 47.71 | 604.01 | R1RXS1 | 48.33 | 603.95 | XS | 57.07 | 603.172 | Ground | 68.28 | 602.961 | (ZXS)ZXS | | | |
| 62.3 | 601.73 | r1rxs1w | 53.08 | 603.93 | R1RXS1 | 49.96 | 603.88 | XS | 58.6 | 603.366 | Ground | 67.2 | 602.696 | (ZXS)ZXS | | | |
| 62.46 | 601.51 | r1rxs1 | 53.75 | 603.31 | R1RXS1 | 51.03 | 603.98 | XS | 60.06 | 602.979 | Ground | 66.08 | 602.225 | (ZXS)ZXS | | | |
| 63.39 | 601.51 | r1rxs1 | 56.06 | 603.14 | R1RXS1 | 52.37 | 603.87 | XS | 61.85 | 602.53 | Ground | 65.18 | 601.719 | (ZXS)ZXS | | | |
| 64.28 | 601.57 | r1rxs1 | 57.38 | 603.254 | R1RXS1 | 53.74 | 603.66 | XS | 62.84 | 601.306 | Ground | 65.14 | 601.125 | (ZXS)ZXS | | | |
| 65.1 | 601.75 | r1rxs1w | 59.31 | 603.05 | R1RXS1 | 55.77 | 603.24 | XS | 64.14 | 600.995 | Ground | 63.97 | 600.935 | (ZXS)ZXS | | | |
| 65.11 | 601.57 | r1rxs1 | 60.37 | 602.66 | R1RXS1 | 56.27 | 603.16 | XS | 64.91 | 601.387 | Ground | 63 | 601.087 | (ZXS)ZXS | | | |
| 65.61 | 601.89 | r1rxs1 | 61.33 | 602.35 | R1RXS1 | 57.54 | 603.2 | XS | 66.67 | 602.278 | Ground | 62.46 | 601.619 | (ZXS)ZXS | | | |
| 66.03 | 601.97 | r1rxs1 | 61.64 | 602.13 | R1RXS1 | 58.28 | 603.25 | XS | 68.29 | 602.939 | Ground | 61.96 | 602.398 | (ZXS)ZXS | | | |
| 67.78 | 602.79 | r1rxs1 | 61.98 | 601.45 | R1RXS1 | 58.29 | 603.25 | XS | 70.24 | 603.323 | Ground | 58.93 | 603.177 | (ZXS)ZXS | | | |
| 70.25 | 603.24 | r1rxs1 | 62.42 | 601.23 | R1RXS1 | 59.42 | 603.06 | XS | 72.32 | 603.224 | Ground | 56.13 | 603.244 | (ZXS)ZXS | | | |
| 74.35 | 603.31 | r1rxs1 | 62.81 | 601.02 | R1RXS1 | 60.74 | 602.68 | XS | 74.39 | 603.382 | Ground | 52.98 | 603.792 | (ZXS)ZXS | | | |
| 75.43 | 603.75 | r1rxs1tob | 63.01 | 601.21 | R1RXS1 | 61.94 | 602.43 | XS | 76.6 | 603.859 | Ground | 49.32 | 603.942 | (ZXS)ZXS | | | |
| 81.91 | 603.92 | r1rxs1 | 64.28 | 601.32 | R1RXS1 | 62.23 | 602.18 | XS | 80.26 | 603.995 | Ground | 46.43 | 604.147 | (ZXSRP)ZX | | | |
| 82.17 | 603.98 | r1rxs1l | 64.87 | 601.33 | R1RXS1 | 62.52 | 601.4 | XS | 82.27 | 604.049 | Ground | 45.23 | 604.16 | (ZXS)ZXS | | | |
| | | | 65.22 | 601.51 | R1RXS1 | 62.79 | 601.22 | XS | 82.6 | 604.049 | L PIN | 42.16 | 604.152 | (ZXS)ZXS | | | |
| | | | 65.4 | 601.63 | R1RXS1 | 63.09 | 601.01 | XS | | | | | | | | | |
| | | | 65.32 | 601.81 | R1RXS1WS | 63.8 | 601.05 | XS | | | | | | | | | |
| | | | 65.94 | 602.01 | R1RXS1 | 64.36 | 601.15 | XS | | | | | | | | | |
| | | | 66.48 | 602.23 | R1RXS1 | 64.97 | 601.19 | XS | | | | | | | | | |
| | | | 67.36 | 602.79 | R1RXS1 | 65.4 | 601.37 | XS | | | | | | | | | |
| | | | 69.46 | 603.23 | R1RXS1 | 65.4 | 601.49 | XSW | | | | | | | | | |
| | | | 70.89 | 603.12 | R1RXS1 | 65.6 | 601.8 | XS | | | | | | | | | |
| | | | 74.11 | 603.38 | R1RXS1 | 66.05 | 601.98 | XS | | | | | | | | | |
| | | | 75.04 | 603.85 | R1RXS1 | 66.79 | 602.19 | XS | | | | | | | | | |
| | | | 80.03 | 603.89 | R1RXS1 | 67.36 | 602.51 | XS | | | | | | | | | |
| | | | 82.43 | 604.01 | R1RXS1PL | 68.18 | 602.8 | XS | | | | | | | | | |
| | | | 91.04 | 604.03 | R1RXS1 | 69.17 | 603.07 | XS | | | | | | | | | |
| | | | 104.03 | 604.05 | R1RXS1 | 69.97 | 603.15 | XS | | | | | | | | | |
| | | | 110.33 | 604.05 | R1RXS1 | 70.65 | 603.2 | XS | | | | | | | | | |
| | | | | | | 71.13 | 603.06 | XS | | | | | | | | | |
| | | | | | | 72.18 | 603.13 | XS | | | | | | | | | |
| | | | | | | 73.49 | 603.24 | XS | | | | | | | | | |
| | | | | | | 74.75 | 603.29 | XS | | | | | | | | | |
| | | | | | | 75.24 | 603.67 | XS | | | | | | | | | |
| | | | | | | 76.25 | 603.76 | XS | | | | | | | | | |
| | | | | | | 77.75 | 603.85 | XS | | | | | | | | | |
| | | | | | | 78.73 | 603.77 | XS | | | | | | | | | |
| | | | | | | 80.98 | 603.88 | XS | | | | | | | | | |
| | | | | | | 81.95 | 603.91 | XS | | | | | | | | | |
| | | | | | | 82.46 | 603.96 | XSLP09 | | | | | | | | | |
| | | | | | | 83.85 | 603.94 | XS | | | | | | | | | |
| | | | | | | 85.6 | 603.97 | XS | | | | | | | | | |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bankfull Width (ft.) | 23.7 | | Bankfull Width (ft.) | 22.0 | | Bankfull Width (ft.) | 26.4 | | Bankfull Width (ft.) | 21.18 | | Bankfull Width (ft.) | 19.75 | | Bankfull Width (ft.) | | |
| Bankfull Cross Sectional Area (sq ft) | 20.4 | | Bankfull Cross Sectional Area (sq ft) | 24.2 | | Bankfull Cross Sectional Area (sq ft) | 24.7 | | Bankfull Cross Sectional Area (sq ft) | 22.7 | | Bankfull Cross Sectional Area (sq ft) | 22.9 | | Bankfull Cross Sectional Area (sq ft) | | |
| Bankfull Mean Depth (ft.) | 0.86 | | Bankfull Mean Depth (ft.) | 1.10 | | Bankfull Mean Depth (ft.) | 0.94 | | Bankfull Mean Depth (ft.) | 1.07 | | Bankfull Mean Depth (ft.) | 1.16 | | Bankfull Mean Depth (ft.) | | |
| Bankfull Max Depth (ft.) | 2.24 | | Bankfull Max Depth (ft.) | 2.83 | | Bankfull Max Depth (ft.) | 2.84 | | Bankfull Max Depth (ft.) | 2.85 | | Bankfull Max Depth (ft.) | 2.31 | | Bankfull Max Depth (ft.) | | |
| Flood Prone Width (ft) | 97 | | Flood Prone Width (ft) | 97 | | Flood Prone Width (ft) | 97 | | Flood Prone Width (ft) | 97 | | Flood Prone Width (ft) | 97 | | Flood Prone Width (ft) | | |
| Entrenchment Ratio (ft/ft) | 4.09 | | Entrenchment Ratio (ft/ft) | 4.42 | | Entrenchment Ratio (ft/ft) | 3.68 | | Entrenchment Ratio (ft/ft) | 4.58 | | Entrenchment Ratio (ft/ft) | 4.91 | | Entrenchment Ratio (ft/ft) | | |
| Width/Depth Ratio (ft/ft) | 27.50 | | Width/Depth Ratio (ft/ft) | 19.95 | | Width/Depth Ratio (ft/ft) | 28.15 | | Width/Depth Ratio (ft/ft) | 19.8 | | Width/Depth Ratio (ft/ft) | 17.0 | | Width/Depth Ratio (ft/ft) | | |
| D50 (mm) | 8.88 | | D50 (mm) | 0.88 | | D50 (mm) | 0.06 | | D50 (mm) | 0.06 | | D50 (mm) | 0.06 | | D50 (mm) | | |
| D84 (mm) | 18.75 | | D84 (mm) | 8.0 | | D84 (mm) | 0.06 | | D84 (mm) | 0.06 | | D84 (mm) | 4.68 | | D84 (mm) | | |

## Wolf Pond R1 PXS-1

**Photo C 4 - R1 PXS-1 Left Pin**

**Photo C 5 - R1 PXS-1 Right Pin**

**Photo C 6 - R1 PXS-1 Downstream**

**Figure C 2 - R1 PXS-1 Cross Section Plot**

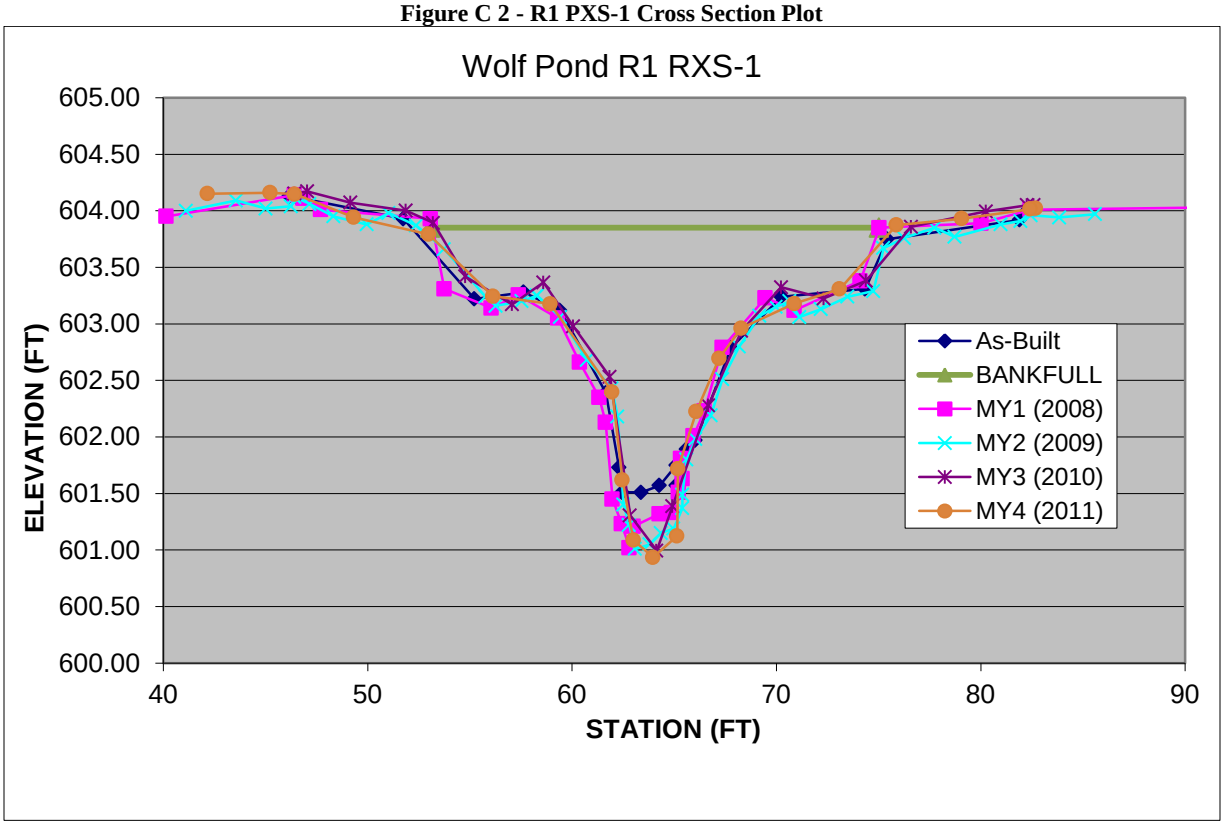


**Table C 2 - R1 PXS-1 Dimension Data**

| | | AS-BUILT | | | MY1 (2008) | | | MY2 (2009) | | | | MY3 (2010) | | | | MY4 (2011) | | | | MY5 (2012) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Station | Elevation | Description | Station | Elevation | Description | Station | Elevation | Description | Station | Elevation | Description | Station | Elevation | Description | Station | Elevation | Description | Station | Elevation | Description |
| 12.5 | 602.73 | r1rxs1r | 3.96 | 603.2 | R1PXS1 | 7.56 | 602.9 | XS | 12.92 | 602.733 | R PIN | 57.64 | 603.105 | (ZXS)ZXS | | | | | | |
| 13.01 | 602.75 | r1rxs1 | 9.51 | 602.71 | R1PXS1 | 8.73 | 602.89 | XS | 13.11 | 602.692 | Ground | 54.62 | 602.764 | (ZXS)ZXS | | | | | | |
| 15.7 | 602.57 | r1rxs1tob | 12.63 | 602.78 | R1PXS1PR | 9.64 | 602.71 | XS | 18.49 | 602.762 | Ground | 53.83 | 602.725 | (ZXS)ZXS | | | | | | |
| 18.35 | 602.69 | r1rxs1 | 14.06 | 602.61 | R1PXS1 | 9.73 | 602.67 | XS | 21.39 | 602.173 | Ground | 53.68 | 602.78 | (ZXSLP)ZXSLP | | | | | | |
| 21.15 | 602.07 | r1rxs1 | 18.16 | 602.75 | R1PXS1 | 10.94 | 602.6 | XS | 24.75 | 601.417 | Ground | 49.55 | 602.488 | (ZXS)ZXS | | | | | | |
| 24.03 | 601.34 | r1rxs1 | 20.63 | 602.16 | R1PXS1 | 11.19 | 602.52 | XS | 25.79 | 600.994 | Ground | 46.62 | 602.199 | (ZXS)ZXS | | | | | | |
| 25.42 | 600.78 | r1rxs1 | 23.28 | 601.83 | R1PXS1 | 12.98 | 602.67 | XSRP09 | 27.24 | 599.447 | Ground | 44.04 | 601.893 | (ZXS)ZXS | | | | | | |
| 25.81 | 600.62 | r1rxs1w | 26.46 | 600.29 | R1PXS1 | 13.16 | 602.59 | XS | 29.24 | 599.31 | Ground | 42.24 | 601.689 | (ZXS)ZXS | | | | | | |
| 26.03 | 600.39 | r1rxs1 | 26.89 | 599.69 | R1PXS1 | 13.36 | 602.57 | XS | 31.8 | 599.653 | Ground | 39.55 | 601.574 | (ZXS)ZXS | | | | | | |
| 26.35 | 600.14 | r1rxs1 | 27.61 | 599.36 | R1PXS1 | 14.85 | 602.59 | XS | 34.19 | 600.529 | Ground | 38.93 | 601.459 | (ZXS)ZXS | | | | | | |
| 27.26 | 599.51 | r1rxs1 | 28.64 | 599.55 | R1PXS1 | 16.99 | 602.57 | XS | 36.42 | 601.188 | Ground | 37.3 | 601.23 | (ZXS)ZXS | | | | | | |
| 28.67 | 599.57 | r1rxs1w | 29.61 | 599.59 | R1PXS1 | 18.06 | 602.55 | XS | 39.89 | 601.635 | Ground | 36.1 | 601.166 | (ZXS)ZXS | | | | | | |
| 30.34 | 599.88 | r1rxs1 | 31.12 | 599.78 | R1PXS1 | 19.01 | 602.66 | XS | 44.34 | 602.008 | Ground | 35.2 | 600.97 | (ZXS)ZXS | | | | | | |
| 31.61 | 600.22 | r1rxs1 | 31.74 | 599.96 | R1PXS1 | 20.61 | 602.22 | XS | 50.83 | 602.637 | Ground | 34.83 | 600.624 | (ZXS)ZXS | | | | | | |
| 31.99 | 600.38 | r1rxs1 | 32.32 | 600.25 | R1PXS1 | 21.5 | 602.08 | XS | 53.27 | 602.838 | Ground | 34.19 | 600.431 | (ZXS)ZXS | | | | | | |
| 33.56 | 600.62 | r1rxs1 | 33.11 | 600.57 | R1PXS1 | 22.68 | 601.81 | XS | 53.68 | 602.829 | L PIN | 33.58 | 600.129 | (ZXS)ZXS | | | | | | |
| 38.07 | 601.32 | r1rxs1 | 35.91 | 600.96 | R1PXS1 | 23.86 | 601.51 | XS | | | | 32.2 | 599.857 | (ZXS)ZXS | | | | | | |
| 43.96 | 601.97 | r1rxs1 | 38.17 | 601.03 | R1PXS1 | 25.05 | 601.14 | XS | | | | 31.5 | 599.442 | (ZXS)ZXS | | | | | | |
| 48.67 | 602.53 | r1rxs1tob | 40.29 | 601.32 | R1PXS1 | 25.9 | 600.79 | XS | | | | 30.33 | 599.289 | (ZXS)ZXS | | | | | | |
| 52.87 | 602.66 | r1rxs1 | 43.31 | 601.51 | R1PXS1 | 26.59 | 600.33 | XS | | | | 29.29 | 599.293 | (ZXS)ZXS | | | | | | |
| 53.39 | 602.78 | r1rxs1l | 45.65 | 602.22 | R1PXS1 | 26.78 | 600.03 | XS | | | | 28.07 | 599.217 | (ZXS)ZXS | | | | | | |
| | | | 49.51 | 602.58 | R1PXS1 | 26.72 | 599.84 | XS | | | | 27.25 | 599.629 | (ZXS)ZXS | | | | | | |
| | | | 53.27 | 602.73 | R1PXS1 | 27.19 | 599.38 | XS | | | | 26.5 | 600.093 | (ZXS)ZXS | | | | | | |
| | | | 53.54 | 602.84 | RPRXS1PL | 27.92 | 599.23 | XS | | | | 25.95 | 600.894 | (ZXS)ZXS | | | | | | |
| | | | 57.68 | 603.31 | R1PXS1 | 28.85 | 599.3 | XS | | | | 25.19 | 601.042 | (ZXS)ZXS | | | | | | |
| | | | 61.52 | 603.21 | R1PXS1 | 29.84 | 599.38 | XS | | | | 22.79 | 601.937 | (ZXS)ZXS | | | | | | |
| | | | 67.8 | 603.46 | R1PXS1 | 30.68 | 599.38 | XS | | | | 19.4 | 602.559 | (ZXS)ZXS | | | | | | |
| | | | | | | 31.39 | 599.68 | XS | | | | 14.22 | 602.58 | (ZXS)ZXS | | | | | | |
| | | | | | | 32.09 | 599.85 | XS | | | | 12.95 | 602.716 | (ZXSRP)ZXSRP | | | | | | |
| | | | | | | 32.34 | 600.06 | XSW | | | | 12.93 | 602.672 | (ZXS)ZXS | | | | | | |
| | | | | | | 32.79 | 600.14 | XS | | | | 11.69 | 602.576 | (ZXS)ZXS | | | | | | |
| | | | | | | 33.21 | 600.21 | XS | | | | 7.77 | 603.006 | (ZXS)ZXS | | | | | | |
| | | | | | | 34.22 | 600.43 | XS | | | | | | | | | | | | |
| | | | | | | 34.48 | 600.74 | XS | | | | | | | | | | | | |
| | | | | | | 35.11 | 601.03 | XS | | | | | | | | | | | | |
| | | | | | | 36.41 | 600.98 | XS | | | | | | | | | | | | |
| | | | | | | 38.08 | 600.84 | XS | | | | | | | | | | | | |
| | | | | | | 38.73 | 601.14 | XS | | | | | | | | | | | | |
| | | | | | | 40.26 | 601.39 | XS | | | | | | | | | | | | |
| | | | | | | 41.52 | 601.48 | XS | | | | | | | | | | | | |
| | | | | | | 42.51 | 601.61 | XS | | | | | | | | | | | | |
| | | | | | | 43.74 | 601.79 | XS | | | | | | | | | | | | |
| | | | | | | 45.4 | 602.05 | XS | | | | | | | | | | | | |
| | | | | | | 47.06 | 602.23 | XS | | | | | | | | | | | | |
| | | | | | | 48.2 | 602.32 | XS | | | | | | | | | | | | |
| | | | | | | 50.06 | 602.46 | XS | | | | | | | | | | | | |
| | | | | | | 52.19 | 602.55 | XS | | | | | | | | | | | | |
| | | | | | | 53.48 | 602.66 | XS | | | | | | | | | | | | |
| | | | | | | 53.63 | 602.72 | XSLP09 | | | | | | | | | | | | |
| | | | | | | 55.55 | 602.8 | XS | | | | | | | | | | | | |
| | | | | | | 56.64 | 602.92 | XS | | | | | | | | | | | | |
| | | | | | | 57.51 | 603.05 | XS | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bankfull Width (ft.) | 33.0 | Bankfull Width (ft.) | 35.1 | Bankfull Width (ft.) | 43.8 | Bankfull Width (ft.) | 37.91 | Bankfull Width (ft.) | 30.15 | Bankfull Width (ft.) | |
| Bankfull Cross Sectional Area (sq ft) | 40.0 | Bankfull Cross Sectional Area (sq | 48.6 | Bankfull Cross Sectional Area (sq ft) | 52.2 | Bankfull Cross Sectional Area (sq ft) | 46.7 | Bankfull Cross Sectional Area (sq ft) | 42.4 | Bankfull Cross Sectional Area (sq ft) | |
| Bankfull Mean Depth (ft.) | 1.21 | Bankfull Mean Depth (ft.) | 1.38 | Bankfull Mean Depth (ft.) | 1.19 | Bankfull Mean Depth (ft.) | 1.23 | Bankfull Mean Depth (ft.) | 1.41 | Bankfull Mean Depth (ft.) | |
| Bankfull Max Depth (ft.) | 3.06 | Bankfull Max Depth (ft.) | 3.39 | Bankfull Max Depth (ft.) | 3.52 | Bankfull Max Depth (ft.) | 3.44 | Bankfull Max Depth (ft.) | 3.35 | Bankfull Max Depth (ft.) | |
| Flood Prone Width (ft) | - | Flood Prone Width (ft) | - | Flood Prone Width (ft) | - | Flood Prone Width (ft) | - | Flood Prone Width (ft) | - | Flood Prone Width (ft) | |
| Entrenchment Ratio (ft/ft) | - | Entrenchment Ratio (ft/ft) | - | Entrenchment Ratio (ft/ft) | - | Entrenchment Ratio (ft/ft) | - | Entrenchment Ratio (ft/ft) | - | Entrenchment Ratio (ft/ft) | |
| Width/Depth Ratio (ft/ft) | - | Width/Depth Ratio (ft/ft) | - | Width/Depth Ratio (ft/ft) | - | Width/Depth Ratio (ft/ft) | - | Width/Depth Ratio (ft/ft) | - | Width/Depth Ratio (ft/ft) | |
| D50 (mm) | 6.21 | D50 (mm) | 4.0 | D50 (mm) | 0.06 | D50 (mm) | 0.06 | D50 (mm) | 0.06 | D50 (mm) | |
| D84 (mm) | 14.21 | D84 (mm) | 11.3 | D84 (mm) | 0.06 | D84 (mm) | 6.47 | D84 (mm) | 0.06 | D84 (mm) | |

## Wolf Pond R2 RXS-1

**Photo C 7 - R2 RXS-1 Left Pin**

**Photo C 8 - R2 RXS-1 Right Pin**

**Photo C 9 - R2 RXS-1 Downstream**

**Figure C 3 - R2 RXS-1 Cross Section Plot**

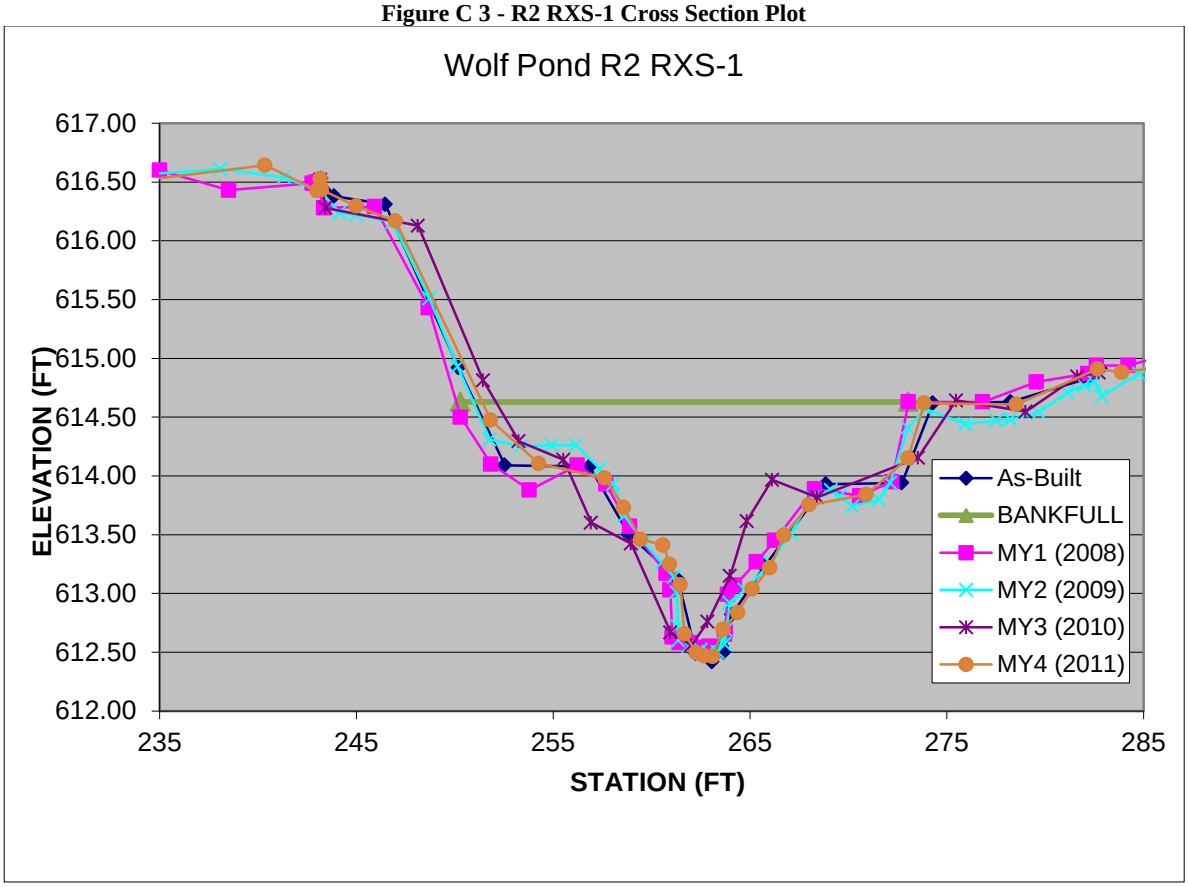


**Table C 2 - R2 RXS-1 Dimension Data**

| AS-BUILT | | | MY1 (2008) | | | MY2 (2009) | | | MY3 (2010) | | | MY4 (2011) | | | MY5 (2012) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Station | Elevation | Description | Station | Elevation | Description | Station | Elevation | Description | Station | Elevation | Description | Station | Elevation | Description | Station | Elevation | Description |
| 243.2 | 616.53 | r2rxs1r | 20.35 | 624.87 | R2RXS1 | 223.98 | 616.47 | XS | 243.16 | 616.519 | R PIN | 288.87 | 614.99 | (ZXS)ZXS | | | |
| 243.87 | 616.38 | r2rxs1 | 40.29 | 624.21 | R2RXS1 | 226.37 | 616.59 | XS | 243.43 | 616.279 | Ground | 283.9 | 614.881 | (ZXS)ZXS | | | |
| 246.46 | 616.31 | r2rxs1tob | 67.31 | 623.02 | R2RXS1 | 230.07 | 616.25 | XS | 248.13 | 616.128 | Ground | 282.67 | 614.91 | (ZXSLP)ZXSLP | | | |
| 250.19 | 614.92 | r2rxs1 | 92.19 | 621.76 | R2RXS1 | 234.66 | 616.57 | XS | 251.44 | 614.813 | Ground | 278.54 | 614.608 | (ZXS)ZXS | | | |
| 252.54 | 614.09 | r2rxs1 | 121.49 | 619.8 | R2RXS1 | 238.09 | 616.61 | XS | 253.25 | 614.295 | Ground | 273.86 | 614.619 | (ZXS)ZXS | | | |
| 256.86 | 614.08 | r2rxs1b | 149.27 | 618.92 | R2RXS1 | 241.33 | 616.54 | XS | 255.53 | 614.136 | Ground | 273.04 | 614.152 | (ZXS)ZXS | | | |
| 258.85 | 613.5 | r2rxs1 | 185.64 | 617.45 | R2RXS1 | 243.16 | 616.42 | XSRP09 | 256.93 | 613.602 | Ground | 270.92 | 613.841 | (ZXS)ZXS | | | |
| 261.34 | 613.12 | r2rxs1 | 201.14 | 617.05 | R2RXS1 | 244.15 | 616.24 | XS | 258.96 | 613.424 | Ground | 268.01 | 613.753 | (ZXS)ZXS | | | |
| 262.25 | 612.49 | r2rxs1 | 210.6 | 617.16 | R2RXS1 | 245.02 | 616.22 | XS | 260.96 | 612.668 | Ground | 266.74 | 613.496 | (ZXS)ZXS | | | |
| 262.29 | 612.52 | r2rxs1w | 213.73 | 616.78 | R2RXS1 | 246.84 | 616.16 | XS | 262.02 | 612.558 | Ground | 266.01 | 613.216 | (ZXS)ZXS | | | |
| 263.08 | 612.42 | r2rxs1 | 217.3 | 616.57 | R2RXS1 | 248.71 | 615.51 | XS | 262.85 | 612.759 | Ground | 265.12 | 613.038 | (ZXS)ZXS | | | |
| 263.56 | 612.55 | r2rxs1w | 222.11 | 616.61 | R2RXS1 | 250.14 | 614.93 | XS | 263.99 | 613.149 | Ground | 264.39 | 612.837 | (ZXS)ZXS | | | |
| 263.68 | 612.5 | r2rxs1 | 227.97 | 616.52 | R2RXS1 | 251.77 | 614.31 | XS | 264.84 | 613.615 | Ground | 263.64 | 612.694 | (ZXS)ZXS | | | |
| 264.09 | 612.82 | r2rxs1 | 235 | 616.6 | R2RXS1 | 253.37 | 614.25 | XS | 266.13 | 613.966 | Ground | 263.11 | 612.462 | (ZXS)ZXS | | | |
| 265.73 | 613.23 | r2rxs1 | 238.51 | 616.43 | R2RXS1 | 254.92 | 614.26 | XS | 268.42 | 613.818 | Ground | 262.68 | 612.469 | (ZXS)ZXS | | | |
| 268.86 | 613.93 | r2rxs1b | 242.76 | 616.49 | R2RXS1PR | 256.16 | 614.26 | XS | 273.54 | 614.154 | Ground | 262.28 | 612.497 | (ZXS)ZXS | | | |
| 272.72 | 613.94 | r2rxs1 | 242.95 | 616.5 | R2RXS1PR | 257.38 | 614.06 | XS | 275.48 | 614.641 | Ground | 261.67 | 612.656 | (ZXS)ZXS | | | |
| 274.3 | 614.62 | r2rxs1tob | 243.35 | 616.28 | R2RXS1 | 258.07 | 613.93 | XS | 279.02 | 614.547 | Ground | 261.46 | 613.072 | (ZXS)ZXS | | | |
| 278.24 | 614.63 | r2rxs1 | 245.93 | 616.29 | R2RXS1 | 258.63 | 613.66 | XS | 281.64 | 614.846 | Ground | 260.92 | 613.248 | (ZXS)ZXS | | | |
| 282.18 | 614.83 | r2rxs1 | 248.67 | 615.43 | R2RXS1 | 259.64 | 613.43 | XS | 282.74 | 614.878 | L PIN | 260.59 | 613.411 | (ZXS)ZXS | | | |
| 282.8 | 614.91 | r2rxs1l | 250.29 | 614.5 | R2RXS1 | 260.52 | 613.26 | XS | | | | 259.44 | 613.46 | (ZXS)ZXS | | | |
| | | | 251.84 | 614.1 | R2RXS1 | 261.14 | 613.14 | XS | | | | 258.58 | 613.732 | (ZXS)ZXS | | | |
| | | | 253.79 | 613.88 | R2RXS1 | 261.27 | 613.01 | XS | | | | 257.63 | 613.982 | (ZXS)ZXS | | | |
| | | | 256.23 | 614.09 | R2RXS1 | 261.36 | 612.6 | XS | | | | 254.28 | 614.104 | (ZXS)ZXS | | | |
| | | | 257.69 | 613.93 | R2RXS1 | 261.33 | 612.72 | XSW | | | | 251.82 | 614.474 | (ZXS)ZXS | | | |
| | | | 258.89 | 613.57 | R2RXS1 | 261.89 | 612.55 | XS | | | | 246.99 | 616.167 | (ZXS)ZXS | | | |
| | | | 260.75 | 613.17 | R2RXS1 | 262.51 | 612.52 | XS | | | | 244.98 | 616.295 | (ZXS)ZXS | | | |
| | | | 260.95 | 613.03 | R2RXS1 | 262.91 | 612.5 | XS | | | | 243.23 | 616.434 | (ZXS)ZXS | | | |
| | | | 261.05 | 612.63 | R2RXS1 | 263.36 | 612.5 | XS | | | | 243.16 | 616.528 | (ZXSRP)ZXSRP | | | |
| | | | 261.41 | 612.58 | R2RXS1 | 263.78 | 612.69 | XS | | | | 243.01 | 616.427 | (ZXS)ZXS | | | |
| | | | 261.97 | 612.58 | R2RXS1 | 263.7 | 612.57 | XS | | | | 240.36 | 616.643 | (ZXS)ZXS | | | |
| | | | 262.57 | 612.54 | R2RXS1 | 263.97 | 612.92 | XS | | | | 234.44 | 616.52 | (ZXS)ZXS | | | |
| | | | 262.93 | 612.55 | R2RXS1 | 264.75 | 613.03 | XS | | | | | | | | | |
| | | | 263.73 | 612.65 | R2RXS1WS | 266.04 | 613.26 | XS | | | | | | | | | |
| | | | 263.75 | 612.68 | R2RXS1 | 267.07 | 613.51 | XS | | | | | | | | | |
| | | | 263.87 | 612.99 | R2RXS1 | 268.16 | 613.82 | XS | | | | | | | | | |
| | | | 264.23 | 613.07 | R2RXS1 | 269.12 | 613.88 | XS | | | | | | | | | |
| | | | 265.34 | 613.27 | R2RXS1 | 269.58 | 613.83 | XS | | | | | | | | | |
| | | | 266.26 | 613.45 | R2RXS1 | 270.21 | 613.74 | XS | | | | | | | | | |
| | | | 268.29 | 613.89 | R2RXS1 | 271.57 | 613.8 | XS | | | | | | | | | |
| | | | 270.59 | 613.83 | R2RXS1 | 272.13 | 613.94 | XS | | | | | | | | | |
| | | | 272.21 | 613.95 | R2RXS1 | 273.03 | 614.41 | XS | | | | | | | | | |
| | | | 273.06 | 614.63 | R2RXS1 | 273.93 | 614.57 | XS | | | | | | | | | |
| | | | 276.84 | 614.63 | R2RXS1 | 275.96 | 614.44 | XS | | | | | | | | | |
| | | | 279.57 | 614.8 | R2RXS1 | 277.54 | 614.47 | XS | | | | | | | | | |
| | | | 282.18 | 614.87 | R2RXS1 | 278.23 | 614.48 | XS | | | | | | | | | |
| | | | 282.62 | 614.94 | R2RXS1PL | 279.68 | 614.54 | XS | | | | | | | | | |
| | | | 284.24 | 614.94 | R2RXS1 | 281.14 | 614.71 | XS | | | | | | | | | |
| | | | 290.41 | 615.23 | R2RXS1 | 282.01 | 614.77 | XS | | | | | | | | | |
| | | | 294.64 | 615.24 | R2RXS1 | 282.52 | 614.8 | XSLP09 | | | | | | | | | |
| | | | 299.06 | 615.71 | R2RXS1 | 282.89 | 614.68 | XS | | | | | | | | | |
| | | | 307.87 | 616.9 | R2RXS1 | 284.78 | 614.87 | XS | | | | | | | | | |
| | | | 324.46 | 617.21 | R2RXS1 | 286.69 | 615.01 | XS | | | | | | | | | |
| | | | 412.44 | 624.2 | R2RXS1 | 289.93 | 615.07 | XS | | | | | | | | | |
| | | | | | | 293.76 | 615.23 | XS | | | | | | | | | |
| | | | | | | 295.12 | 614.97 | XS | | | | | | | | | |
| | | | | | | 296.94 | 614.99 | XS | | | | | | | | | |
| | | | | | | 299.06 | 615.94 | XS | | | | | | | | | |
| | | | | | | 299.78 | 616.07 | XS | | | | | | | | | |
| | | | | | | 299.74 | 616.02 | XS | | | | | | | | | |
| | | | | | | 300.6 | 615.71 | XS | | | | | | | | | |
| | | | | | | 302.44 | 615.82 | XS | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| Bankfull Width (ft.) | 24.1 | | Bankfull Width (ft.) | 22.8 | | Bankfull Width (ft.) | 26.5 | | Bankfull Width (ft.) | 25.77 | | Bankfull Width (ft.) | 24.26 | | Bankfull Width (ft.) | | |
| Bankfull Cross Sectional Area (sq ft) | 22.1 | | Bankfull Cross Sectional Area (sq | 22.4 | | Bankfull Cross Sectional Area (sq ft) | 20.6 | | Bankfull Cross Sectional Area (sq ft) | 21.0 | | Bankfull Cross Sectional Area (sq ft) | 21.7 | | Bankfull Cross Sectional Area (sq ft) | | |
| Bankfull Mean Depth (ft.) | 0.92 | | Bankfull Mean Depth (ft.) | 0.99 | | Bankfull Mean Depth (ft.) | 0.78 | | Bankfull Mean Depth (ft.) | 0.81 | | Bankfull Mean Depth (ft.) | 0.90 | | Bankfull Mean Depth (ft.) | | |
| Bankfull Max Depth (ft.) | 2.2 | | Bankfull Max Depth (ft.) | 2.09 | | Bankfull Max Depth (ft.) | 2.07 | | Bankfull Max Depth (ft.) | 2.07 | | Bankfull Max Depth (ft.) | 2.17 | | Bankfull Max Depth (ft.) | | |
| Flood Prone Width (ft) | 94 | | Flood Prone Width (ft) | 94 | | Flood Prone Width (ft) | 94 | | Flood Prone Width (ft) | 94.14 | | Flood Prone Width (ft) | 94.14 | | Flood Prone Width (ft) | | |
| Entrenchment Ratio (ft/ft) | 3.90 | | Entrenchment Ratio (ft/ft) | 4.13 | | Entrenchment Ratio (ft/ft) | 3.55 | | Entrenchment Ratio (ft/ft) | 3.65 | | Entrenchment Ratio (ft/ft) | 3.88 | | Entrenchment Ratio (ft/ft) | | |
| Width/Depth Ratio (ft/ft) | 26.35 | | Width/Depth Ratio (ft/ft) | 23.10 | | Width/Depth Ratio (ft/ft) | 34.01 | | Width/Depth Ratio (ft/ft) | 31.7 | | Width/Depth Ratio (ft/ft) | 27.1 | | Width/Depth Ratio (ft/ft) | | |
| D50 (mm) | 19.87 | | D50 (mm) | 13.49 | | D50 (mm) | 13.65 | | D50 (mm) | 0.06 | | D50 (mm) | 14.43 | | D50 (mm) | | |
| D84 (mm) | 34.4 | | D84 (mm) | 21.4 | | D84 (mm) | 32.00 | | D84 (mm) | 27.30 | | D84 (mm) | 30.12 | | D84 (mm) | | |

## Wolf Pond R2 RXS-2

**Photo C 2 - R2 RXS-2 Left Pin**

**Photo C 3 - R2 RXS-2 Right Pin**

**Photo C 12 - R2 RXS-2 Downstream**

**Figure C 4 - R2 RXS-2 Cross Section Plot**

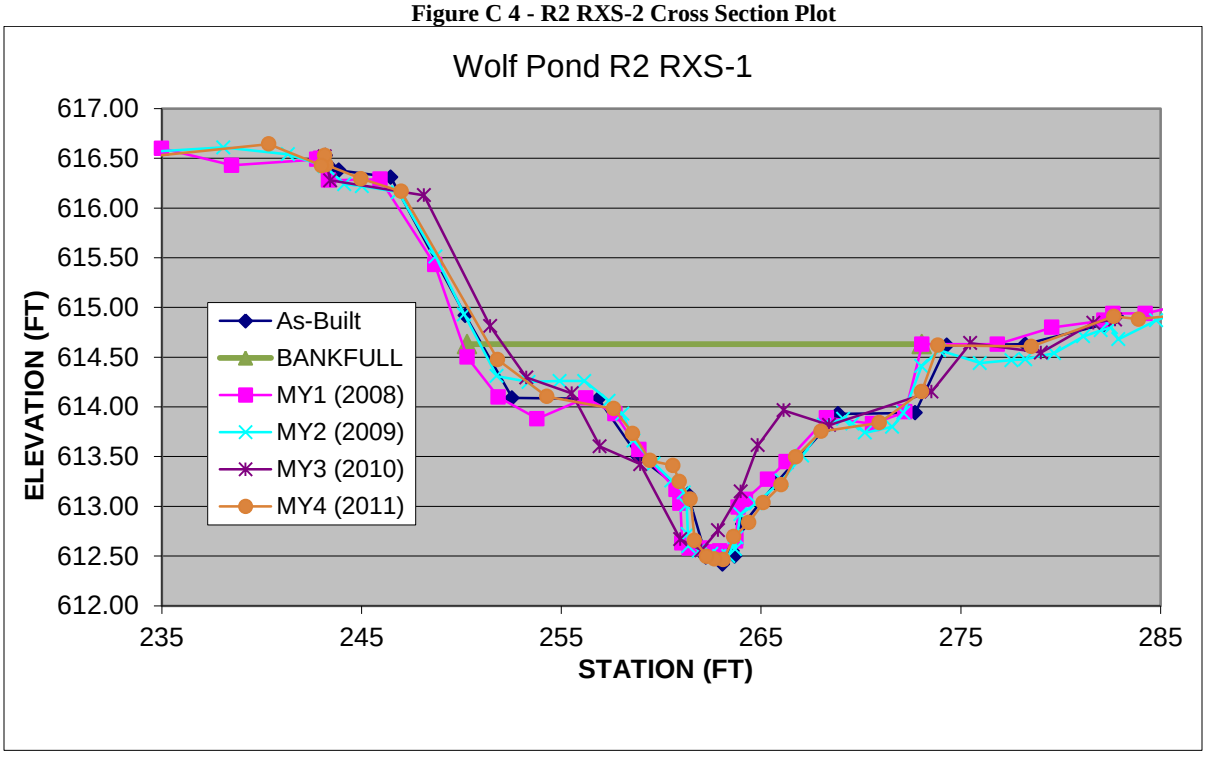


**Table C 3 - R2 RXS-2 Dimension Data**

| AS-BUILT | | | MY1 (2008) | | | MY2 (2009) | | | MY3 (2010) | | | MY4 (2011) | | | MY5 (2012) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Station | Elevation | Description | Station | Elevation | Description | Station | Elevation | Description | Station | Elevation | Description | Station | Elevation | Description | Station | Elevation | Description |
| 123.84 | 612.3 | r2rxs2r | 9.49 | 619.56 | R2RXS2 | 99.15 | 613.39 | XS | 123.64 | 612.268 | R PIN | 169.19 | 612.136 | (ZXS)ZXS | | | |
| 124.05 | 612.25 | r2rxs2 | 28.99 | 618.8 | R2RXS2 | 101.49 | 613.33 | XS | 124.16 | 612.222 | Ground | 164.97 | 611.815 | (ZXS)ZXS | | | |
| 129.04 | 611.88 | r2rxs2tob | 72.93 | 615.94 | R2RXS2 | 104.92 | 613.32 | XS | 131.55 | 611.816 | Ground | 164.04 | 611.899 | (ZXSLP)ZXSLP | | | |
| 133.31 | 610.34 | r2rxs2 | 92.74 | 613.88 | R2RXS2 | 107.87 | 612.84 | XS | 133.77 | 610.466 | Ground | 160.25 | 611.84 | (ZXS)ZXS | | | |
| 137.94 | 610.49 | r2rxs2b | 104.39 | 613.42 | R2RXS2 | 112.77 | 612.88 | XS | 137.98 | 610.617 | Ground | 157.32 | 611.415 | (ZXS)ZXS | | | |
| 140.73 | 610.13 | r2rxs2 | 112.17 | 613.07 | R2RXS2 | 118.57 | 612.58 | XS | 141.64 | 610.36 | Ground | 156.19 | 611.028 | (ZXS)ZXS | | | |
| 142.64 | 609.36 | r2rxs2 | 119.61 | 612.62 | R2RXS2 | 121.57 | 612.53 | XS | 142.75 | 609.274 | Ground | 155.57 | 610.633 | (ZXS)ZXS | | | |
| 143.35 | 608.96 | r2rxs2w | 123.42 | 612.31 | R2RXS2PR | 122.92 | 612.34 | XS | 143.52 | 608.928 | Ground | 153.59 | 610.467 | (ZXS)ZXS | | | |
| 143.71 | 608.94 | r2rxs2 | 126.13 | 612.34 | R2RXS2 | 123.64 | 612.25 | XSRP09 | 144.78 | 609.041 | Ground | 150.57 | 610.43 | (ZXS)ZXS | | | |
| 144.75 | 608.9 | r2rxs2 | 130.05 | 611.96 | R2RXS2 | 124.34 | 612.15 | XS | 146.8 | 609.695 | Ground | 147.87 | 610.149 | (ZXS)ZXS | | | |
| 144.99 | 608.97 | r2rxs2w | 134.72 | 610.16 | R2RXS2 | 126.81 | 611.93 | XS | 148.87 | 610.578 | Ground | 146.13 | 609.756 | (ZXS)ZXS | | | |
| 145.49 | 609.3 | r2rxs2 | 137.52 | 610.61 | R2RXS2 | 129.19 | 611.77 | XS | 153.9 | 609.902 | Ground | 145.61 | 609.543 | (ZXS)ZXS | | | |
| 145.8 | 609.78 | r2rxs2 | 138.23 | 610.47 | R2RXS2 | 131.73 | 610.95 | XS | 158.14 | 611.15 | Ground | 145.01 | 609.091 | (ZXS)ZXS | | | |
| 147.28 | 610.14 | r2rxs2 | 140.58 | 610.21 | R2RXS2 | 133.28 | 610.34 | XS | 163.21 | 611.789 | Ground | 144.45 | 608.892 | (ZXS)ZXS | | | |
| 149.91 | 610.58 | r2rxs2b | 141.72 | 609.6 | R2RXS2 | 134.87 | 610.36 | XS | 163.99 | 611.873 | L PIN | 143.8 | 608.956 | (ZXS)ZXS | | | |
| 154.91 | 610.57 | r2rxs2 | 142.23 | 609.12 | R2RXS2 | 136.11 | 610.5 | XS | | | | 143.29 | 609.156 | (ZXS)ZXS | | | |
| 159.65 | 611.83 | r2rxs2tob | 142.68 | 608.95 | R2RXS2 | 137.03 | 610.62 | XS | | | | 142.77 | 609.435 | (ZXS)ZXS | | | |
| 163.46 | 611.87 | r2rxs2 | 143.36 | 608.75 | R2RXS2 | 138.26 | 610.57 | XS | | | | 142.3 | 609.659 | (ZXS)ZXS | | | |
| 164.22 | 611.9 | r2rxs2l | 143.95 | 608.69 | R2RXS2 | 139.29 | 610.44 | XS | | | | 141.12 | 610.116 | (ZXS)ZXS | | | |
| | | | 144.51 | 608.68 | R2RXS2 | 140.27 | 610.36 | XS | | | | 139.91 | 610.398 | (ZXS)ZXS | | | |
| | | | 144.87 | 608.79 | R2RXS2 | 140.86 | 610.2 | XS | | | | 137.78 | 610.472 | (ZXS)ZXS | | | |
| | | | 145.14 | 608.98 | R2RXS2 | 142 | 609.71 | XS | | | | 136.63 | 610.524 | (ZXS)ZXS | | | |
| | | | 145.25 | 609.33 | R2RXS2WS | 142.65 | 609.45 | XS | | | | 135.09 | 610.423 | (ZXS)ZXS | | | |
| | | | 145.86 | 609.54 | R2RXS2 | 143.15 | 609.21 | XS | | | | 134.37 | 610.333 | (ZXS)ZXS | | | |
| | | | 146.84 | 609.84 | R2RXS2 | 143.77 | 608.99 | XS | | | | 133.09 | 610.507 | (ZXS)ZXS | | | |
| | | | 148.27 | 610.34 | R2RXS2 | 144.3 | 608.88 | XS | | | | 132.17 | 610.723 | (ZXS)ZXS | | | |
| | | | 150.11 | 610.59 | R2RXS2 | 144.82 | 608.94 | XS | | | | 131.32 | 611.15 | (ZXS)ZXS | | | |
| | | | 151.27 | 610.41 | R2RXS2 | 145.28 | 609.08 | XS | | | | 129.75 | 611.68 | (ZXS)ZXS | | | |
| | | | 152.69 | 610.36 | R2RXS2 | 145.35 | 609.21 | XSW | | | | 128.56 | 611.857 | (ZXS)ZXS | | | |
| | | | 154.97 | 610.39 | R2RXS2 | 145.53 | 609.56 | XS | | | | 127.69 | 611.853 | (ZXS)ZXS | | | |
| | | | 156.35 | 611.08 | R2RXS2 | 146.17 | 609.72 | XS | | | | 126.26 | 611.903 | (ZXS)ZXS | | | |
| | | | 158.13 | 611.41 | R2RXS2 | 147.19 | 609.76 | XS | | | | 125.43 | 611.994 | (ZXS)ZXS | | | |
| | | | 159.5 | 611.74 | R2RXS2 | 147.67 | 610.09 | XS | | | | 124.22 | 612.07 | (ZXS)ZXS | | | |
| | | | 163.85 | 611.88 | R2RXS2PL | 148.84 | 610.33 | XS | | | | 123.64 | 612.058 | (ZXSRP)ZXSRP | | | |
| | | | 164.99 | 611.81 | R2RXS2 | 149.53 | 610.44 | XS | | | | | | | | | |
| | | | 170.97 | 612.08 | R2RXS2 | 150.49 | 610.52 | XS | | | | | | | | | |
| | | | 181.58 | 612.29 | R2RXS2 | 151.3 | 610.33 | XS | | | | | | | | | |
| | | | 189.78 | 612.68 | R2RXS2 | 152.56 | 610.14 | XS | | | | | | | | | |
| | | | 200.11 | 612.56 | R2RXS2 | 152.75 | 610.04 | XS | | | | | | | | | |
| | | | 214.86 | 612.35 | R2RXS2 | 153.49 | 610 | XS | | | | | | | | | |
| | | | 233.86 | 612.73 | R2RXS2 | 154.19 | 610.01 | XS | | | | | | | | | |
| | | | 246.31 | 613.2 | R2RXS2 | 154.62 | 610.03 | XS | | | | | | | | | |
| | | | 276.09 | 614.4 | R2RXS2 | 154.89 | 610.15 | XSW | | | | | | | | | |
| | | | 299.38 | 616.07 | R2RXS2 | 155.24 | 610.23 | XS | | | | | | | | | |
| | | | | | | 155.28 | 610.39 | XS | | | | | | | | | |
| | | | | | | 155.9 | 610.92 | XS | | | | | | | | | |
| | | | | | | 156.51 | 611.01 | XS | | | | | | | | | |
| | | | | | | 157.07 | 611.17 | XS | | | | | | | | | |
| | | | | | | 157.68 | 611.36 | XS | | | | | | | | | |
| | | | | | | 158.69 | 611.47 | XS | | | | | | | | | |
| | | | | | | 159.95 | 611.64 | XS | | | | | | | | | |
| | | | | | | 161.8 | 611.8 | XS | | | | | | | | | |
| | | | | | | 163.39 | 611.76 | XS | | | | | | | | | |
| | | | | | | 164.12 | 611.81 | XSLP09 | | | | | | | | | |
| | | | | | | 165.67 | 611.73 | XS | | | | | | | | | |
| | | | | | | 167.44 | 611.95 | XS | | | | | | | | | |
| | | | | | | 168.38 | 611.73 | XS | | | | | | | | | |
| | | | | | | 171.75 | 612.06 | XS | | | | | | | | | |
| | | | | | | 173.92 | 612.24 | XS | | | | | | | | | |
| | | | | | | 177.4 | 612.2 | XS | | | | | | | | | |
| | | | | | | 178.7 | 612.32 | XS | | | | | | | | | |
| | | | | | | 181.94 | 612.35 | XS | | | | | | | | | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bankfull Width (ft.) | 30.6 | Bankfull Width (ft.) | 30.4 | Bankfull Width (ft.) | 30.8 | Bankfull Width (ft.) | 26.59 | Bankfull Width (ft.) | 28.93 | Bankfull Width (ft.) | |
| Bankfull Cross Sectional Area (sq ft) | 42.5 | Bankfull Cross Sectional Area (sq | 41.4 | Bankfull Cross Sectional Area (sq ft) | 41.7 | Bankfull Cross Sectional Area (sq ft) | 40.8 | Bankfull Cross Sectional Area (sq ft) | 39.4 | Bankfull Cross Sectional Area (sq ft) | |
| Bankfull Mean Depth (ft.) | 1.39 | Bankfull Mean Depth (ft.) | 1.36 | Bankfull Mean Depth (ft.) | 1.35 | Bankfull Mean Depth (ft.) | 1.53 | Bankfull Mean Depth (ft.) | 1.36 | Bankfull Mean Depth (ft.) | |
| Bankfull Max Depth (ft.) | 2.93 | Bankfull Max Depth (ft.) | 3.06 | Bankfull Max Depth (ft.) | 2.86 | Bankfull Max Depth (ft.) | 2.81 | Bankfull Max Depth (ft.) | 2.85 | Bankfull Max Depth (ft.) | |
| Flood Prone Width (ft) | 203 | Flood Prone Width (ft) | 203 | Flood Prone Width (ft) | 203 | Flood Prone Width (ft) | 203 | Flood Prone Width (ft) | 203 | Flood Prone Width (ft) | |
| Entrenchment Ratio (ft/ft) | 6.63 | Entrenchment Ratio (ft/ft) | 6.68 | Entrenchment Ratio (ft/ft) | 6.6 | Entrenchment Ratio (ft/ft) | 7.63 | Entrenchment Ratio (ft/ft) | 7.02 | Entrenchment Ratio (ft/ft) | |
| Width/Depth Ratio (ft/ft) | 22.07 | Width/Depth Ratio (ft/ft) | 22.36 | Width/Depth Ratio (ft/ft) | 22.71 | Width/Depth Ratio (ft/ft) | 17.3 | Width/Depth Ratio (ft/ft) | 21.3 | Width/Depth Ratio (ft/ft) | |
| D50 (mm) | 14.53 | D50 (mm) | 2.0 | D50 (mm) | 10.97 | D50 (mm) | 0.06 | D50 (mm) | 0.06 | D50 (mm) | |
| D84 (mm) | 27.85 | D84 (mm) | 11.3 | D84 (mm) | 22.60 | D84 (mm) | 13.65 | D84 (mm) | 32.00 | D84 (mm) | |

## Wolf Pond R2 PXS-1

**Photo C 4 - R2 PXS-1 Left Pin**

**Photo C 5 - R2 PXS-1 Right Pin**

**Photo C 6 - R2 PXS-1 Downstream**

**Figure C 5 - R2 PXS-1 Cross Section Plot**

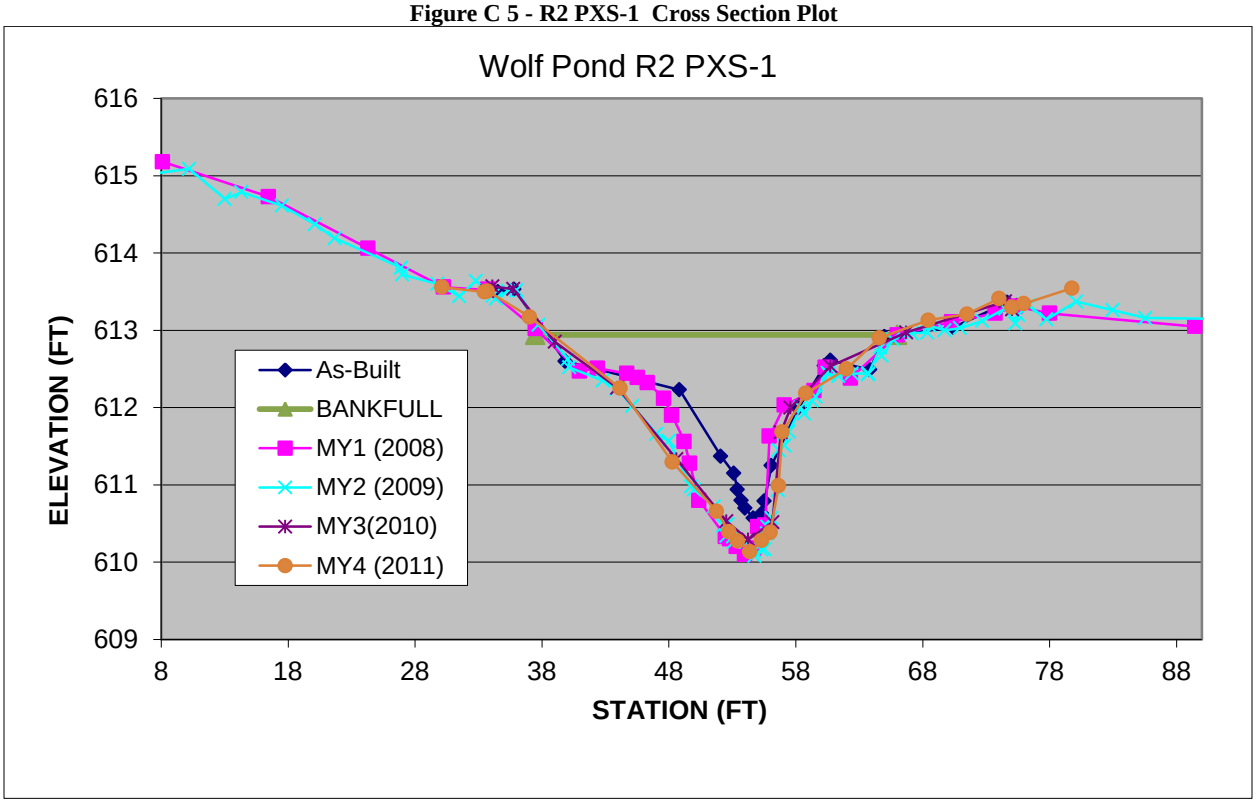


**Table C 4 - R2 PXS-1 Dimension Data**

| AS-BUILT | | | MY1 (2008) | | | MY2 (2009) | | | MY3 (2010) | | | MY4 (2011) | | | MY5 (2012) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Station | Elevation | Description | Station | Elevation | Description | Station | Elevation | Description | Station | Elevation | Description | Station | Elevation | Description | Station | Elevation | Description |
| 34.12 | 613.52 | r2pxs1r | 8.11 | 615.18 | R2PXS1 | 1.06 | 615.74 | XSRP09 | 33.7 | 613.507 | R PIN | 79.76 | 613.544 | (ZXS)ZXS | | | |
| 34.53 | 613.5 | r2pxs1 | 16.45 | 614.73 | R2PXS1 | 1.37 | 615.8 | XS | 34.12 | 613.567 | Ground | 75.96 | 613.343 | (ZXS)ZXS | | | |
| 35.81 | 613.53 | r2pxs1tob | 24.31 | 614.06 | R2PXS1 | 4.14 | 614.82 | XSRP09 | 35.74 | 613.534 | Ground | 75.02 | 613.301 | (ZXSLP)ZXSLP | | | |
| 39.83 | 612.6 | r2pxs1 | 30.25 | 613.56 | R2PXS1 | 7.06 | 615.02 | XS | 39.02 | 612.851 | Ground | 74.02 | 613.411 | (ZXS)ZXS | | | |
| 48.84 | 612.23 | r2pxs1b | 33.7 | 613.52 | R2PXS1PR | 10.2 | 615.09 | XSRP09 | 43.95 | 612.255 | Ground | 71.5 | 613.209 | (ZXS)ZXS | | | |
| 52.09 | 611.37 | r2pxs1 | 33.72 | 613.52 | R2PXS1 | 13.01 | 614.7 | XS | 48.6 | 611.333 | Ground | 68.45 | 613.131 | (ZXS)ZXS | | | |
| 53.11 | 611.15 | r2pxs1 | 33.72 | 613.53 | R2PXS1PR | 14.32 | 614.79 | XSRP09 | 52.55 | 610.527 | Ground | 64.6 | 612.903 | (ZXS)ZXS | | | |
| 53.41 | 610.94 | r2pxs1 | 37.48 | 613.02 | R2PXS1 | 17.53 | 614.61 | XS | 54.25 | 610.291 | Ground | 62 | 612.5 | (ZXS)ZXS | | | |
| 53.7 | 610.8 | r2pxs1w | 40.96 | 612.47 | R2PXS1 | 20.12 | 614.37 | XSRP09 | 56.17 | 610.518 | Ground | 58.8 | 612.184 | (ZXS)ZXS | | | |
| 54 | 610.7 | r2pxs1 | 42.38 | 612.51 | R2PXS1 | 21.67 | 614.19 | XS | 56.82 | 611.679 | Ground | 56.93 | 611.684 | (ZXS)ZXS | | | |
| 54.66 | 610.57 | r2pxs1 | 44.69 | 612.44 | R2PXS1 | 26.89 | 613.81 | XS | 57.59 | 611.999 | Ground | 56.64 | 610.987 | (ZXS)ZXS | | | |
| 55.31 | 610.63 | r2pxs1 | 45.53 | 612.39 | R2PXS1 | 27.01 | 613.72 | XSRP09 | 60.73 | 612.537 | Ground | 55.99 | 610.382 | (ZXS)ZXS | | | |
| 55.52 | 610.79 | r2pxs1w | 46.32 | 612.32 | R2PXS1 | 29.77 | 613.6 | XS | 66.72 | 612.973 | Ground | 55.31 | 610.28 | (ZXS)ZXS | | | |
| 56.08 | 611.25 | r2pxs1 | 47.61 | 612.12 | R2PXS1 | 31.48 | 613.44 | XSRP09 | 74.5 | 613.372 | Ground | 54.39 | 610.137 | (ZXS)ZXS | | | |
| 58.22 | 612 | r2pxs1 | 48.23 | 611.9 | R2PXS1 | 32.79 | 613.64 | XS | 75.06 | 613.27 | L PIN | 53.42 | 610.274 | (ZXS)ZXS | | | |
| 60.26 | 612.54 | r2pxs1b | 49.22 | 611.56 | R2PXS1 | 34.13 | 613.45 | | | | | 52.75 | 610.392 | (ZXS)ZXS | | | |
| 60.74 | 612.61 | b/tob | 49.63 | 611.28 | R2PXS1 | 34.4 | 613.41 | XS | | | | 51.76 | 610.656 | (ZXS)ZXS | | | |
| 63.83 | 612.49 | r2pxs1 | 50.38 | 610.8 | R2PXS1 | 35.32 | 613.51 | XSRP09 | | | | 48.28 | 611.296 | (ZXS)ZXS | | | |
| 64.99 | 612.92 | r2pxs1tob | 52.47 | 610.33 | R2PXS1 | 36.01 | 613.52 | XS | | | | 44.16 | 612.251 | (ZXS)ZXS | | | |
| 70.42 | 613.04 | r2pxs1 | 52.79 | 610.3 | R2PXS1 | 37.74 | 613.07 | XS | | | | 37.04 | 613.172 | (ZXS)ZXS | | | |
| 74.69 | 613.36 | r2pxs1 | 53.32 | 610.2 | R2PXS1 | 40.06 | 612.63 | XS | | | | 33.7 | 613.507 | (ZXSRP)ZXSRP | | | |
| 75.43 | 613.32 | r2pxs1l | 53.99 | 610.1 | R2PXS1 | 40.17 | 612.52 | XSRP09 | | | | 33.48 | 613.498 | (ZXS)ZXS | | | |
| | | | 54.71 | 610.18 | R2PXS1 | 42.8 | 612.35 | XS | | | | 30.12 | 613.56 | (ZXS)ZXS | | | |
| | | | 55 | 610.46 | R2PXS1 | 43.85 | 612.24 | XSRP09 | | | | | | | | | |
| | | | 55.57 | 610.48 | R2PXS1WS | 45.12 | 612.02 | XS | | | | | | | | | |
| | | | 55.92 | 611.63 | R2PXS1 | 47.02 | 611.66 | XSRP09 | | | | | | | | | |
| | | | 57.11 | 612.03 | R2PXS1 | 48 | 611.57 | XS | | | | | | | | | |
| | | | 59.45 | 612.22 | R2PXS1 | 49.76 | 610.98 | XSRP09 | | | | | | | | | |
| | | | 60.32 | 612.52 | R2PXS1 | 49.99 | 610.94 | XS | | | | | | | | | |
| | | | 62.32 | 612.38 | R2PXS1 | 51.56 | 610.72 | XS | | | | | | | | | |
| | | | 66.01 | 612.94 | R2PXS1 | 52.29 | 610.47 | XSRP09 | | | | | | | | | |
| | | | 70.3 | 613.11 | R2PXS1 | 52.53 | 610.34 | XS | | | | | | | | | |
| | | | 73.72 | 613.22 | R2PXS1 | 52.64 | 610.49 | XS | | | | | | | | | |
| | | | 75.34 | 613.31 | R2PXS1PL | 53.08 | 610.33 | XS | | | | | | | | | |
| | | | 78 | 613.22 | R2PXS1 | 53.11 | 610.26 | XSRP09 | | | | | | | | | |
| | | | 89.45 | 613.05 | R2PXS1 | 54.08 | 610.26 | XS | | | | | | | | | |
| | | | | | | 54.73 | 610.14 | XS | | | | | | | | | |
| | | | | | | 54.75 | 610.08 | XSRP09 | | | | | | | | | |
| | | | | | | 55.32 | 610.16 | XSRP09 | | | | | | | | | |
| | | | | | | 55.53 | 610.17 | XS | | | | | | | | | |
| | | | | | | 55.75 | 610.37 | XS | | | | | | | | | |
| | | | | | | 55.77 | 610.46 | XSRP09 | | | | | | | | | |
| | | | | | | 56.09 | 610.57 | XSW | | | | | | | | | |
| | | | | | | 56.6 | 610.93 | XS | | | | | | | | | |
| | | | | | | 56.66 | 611.45 | XSRP09 | | | | | | | | | |
| | | | | | | 57.12 | 611.51 | XS | | | | | | | | | |
| | | | | | | 57.46 | 611.69 | XS | | | | | | | | | |
| | | | | | | 58.38 | 612 | XS | | | | | | | | | |
| | | | | | | 58.67 | 611.92 | XSRP09 | | | | | | | | | |
| | | | | | | 59.28 | 612.09 | XS | | | | | | | | | |
| | | | | | | 59.58 | 612.14 | XSRP09 | | | | | | | | | |
| | | | | | | 60.54 | 612.45 | XS | | | | | | | | | |
| | | | | | | 60.61 | 612.43 | XSRP09 | | | | | | | | | |
| | | | | | | 61.36 | 612.41 | XS | | | | | | | | | |
| | | | | | | 62.42 | 612.44 | XS | | | | | | | | | |
| | | | | | | 63.73 | 612.44 | XS | | | | | | | | | |
| | | | | | | 63.7 | 612.43 | XSRP09 | | | | | | | | | |
| | | | | | | 64.67 | 612.78 | XSRP09 | | | | | | | | | |
| | | | | | | 64.78 | 612.67 | XS | | | | | | | | | |
| | | | | | | 65.67 | 612.88 | XS | | | | | | | | | |
| | | | | | | 67.14 | 612.96 | XS | | | | | | | | | |
| | | | | | | 68.37 | 612.97 | XSRP09 | | | | | | | | | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bankfull Width (ft.) | 25.2 | Bankfull Width (ft.) | 28.5 | Bankfull Width (ft.) | 27.9 | Bankfull Width (ft.) | 21.71 | Bankfull Width (ft.) | 20.44 | Bankfull Width (ft.) | |
| Bankfull Cross Sectional Area (sq ft) | 21.9 | Bankfull Cross Sectional Area (sq | 27.7 | Bankfull Cross Sectional Area (sq ft) | 32.4 | Bankfull Cross Sectional Area (sq ft) | 29.6 | Bankfull Cross Sectional Area (sq ft) | 30.7 | Bankfull Cross Sectional Area (sq ft) | |
| Bankfull Mean Depth (ft.) | 0.87 | Bankfull Mean Depth (ft.) | 0.97 | Bankfull Mean Depth (ft.) | 1.16 | Bankfull Mean Depth (ft.) | 1.36 | Bankfull Mean Depth (ft.) | 1.50 | Bankfull Mean Depth (ft.) | |
| Bankfull Max Depth (ft.) | 2.35 | Bankfull Max Depth (ft.) | 2.84 | Bankfull Max Depth (ft.) | 2.86 | Bankfull Max Depth (ft.) | 2.65 | Bankfull Max Depth (ft.) | 2.80 | Bankfull Max Depth (ft.) | |
| Flood Prone Width (ft) | - | Flood Prone Width (ft) | - | Flood Prone Width (ft) | - | Flood Prone Width (ft) | - | Flood Prone Width (ft) | - | Flood Prone Width (ft) | |
| Entrenchment Ratio (ft/ft) | - | Entrenchment Ratio (ft/ft) | - | Entrenchment Ratio (ft/ft) | - | Entrenchment Ratio (ft/ft) | - | Entrenchment Ratio (ft/ft) | - | Entrenchment Ratio (ft/ft) | |
| Width/Depth Ratio (ft/ft) | - | Width/Depth Ratio (ft/ft) | - | Width/Depth Ratio (ft/ft) | - | Width/Depth Ratio (ft/ft) | - | Width/Depth Ratio (ft/ft) | - | Width/Depth Ratio (ft/ft) | |
| D50 (mm) | 0.15 | D50 (mm) | 0.06 | D50 (mm) | 0.06 | D50 (mm) | 0.06 | D50 (mm) | 0.06 | D50 (mm) | |
| D84 (mm) | 0.40 | D84 (mm) | 8.00 | D84 (mm) | 13.65 | D84 (mm) | 0.06 | D84 (mm) | 11.30 | D84 (mm) | |

## Wolf Pond R2 PXS-2

**Photo C 7 - R2 PXS-2 Left Pin**

**Photo C 8 - R2 PXS-2 Right Pin**

**Photo C 9 - R2 PXS-2 Downstream**

**Figure C 6 - R2 PXS-2 Cross Section Plot**

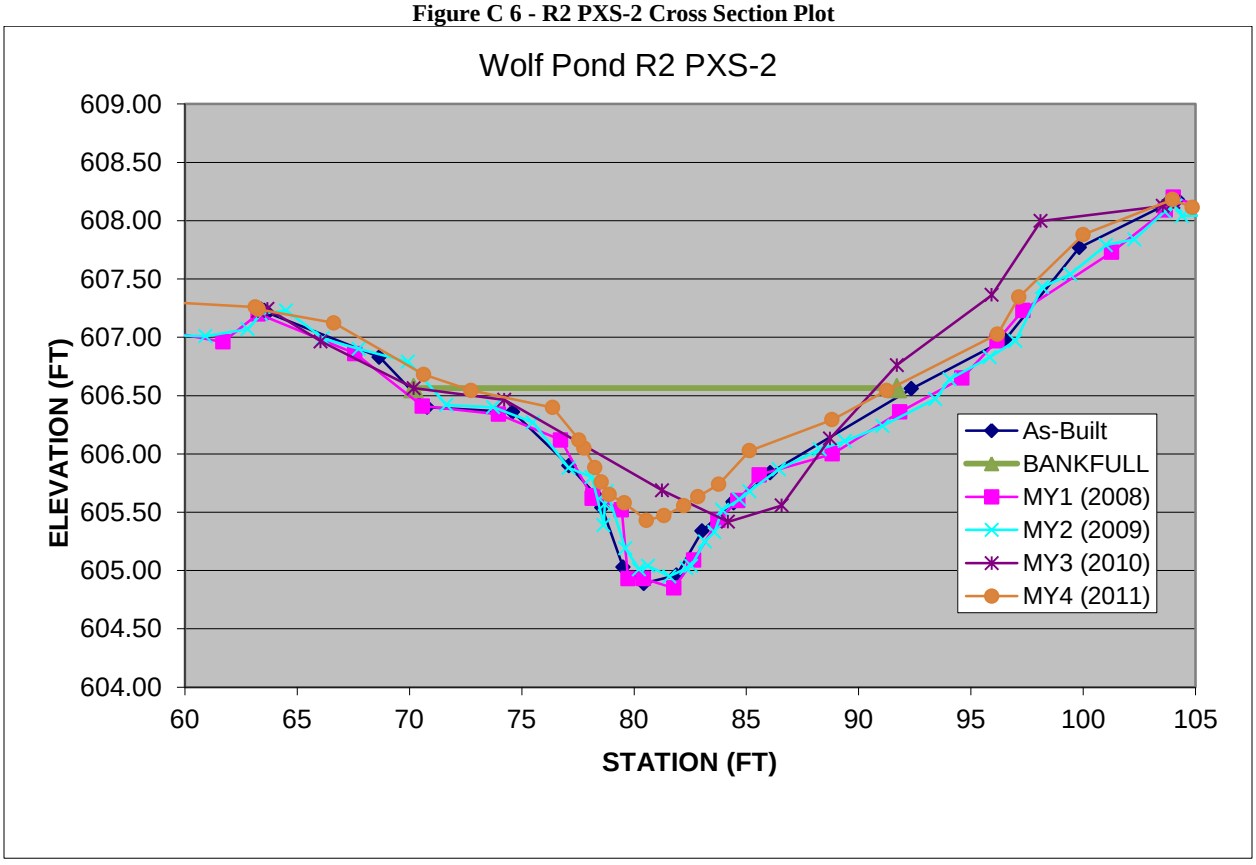


**Table C 5 - R2 PXS-2 Dimension Data**

| AS-BUILT | | | MY1 (2008) | | | MY2 (2009) | | | MY3 (2010) | | | MY4 (2011) | | | MY5 (2012) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Station | Elevation | Description | Station | Elevation | Description | Station | Elevation | Description | Station | Elevation | Description | Station | Elevation | Description | Station | Elevation | Description |
| 63.54 | 607.23 | r2pxs2r | 5.09 | 607.75 | R2PXS2 | 44.3 | 607.62 | XS | 63.27 | 607.225 | R PIN | 109.74 | 608.087 | (ZXS)ZXS | | | |
| 63.69 | 607.21 | r2pxs2 | 37.18 | 607.68 | R2PXS2 | 47.49 | 607.36 | XS | 63.69 | 607.244 | (205)Ground | 104.87 | 608.112 | (ZXS)ZXS | | | |
| 68.66 | 606.83 | r2pxs2 | 51.18 | 607.33 | R2PXS2 | 50.29 | 607.23 | XS | 66.05 | 606.964 | (205)Ground | 103.98 | 608.181 | (ZXSLP)ZXSLP | | | |
| 70.8 | 606.4 | r2pxs2 | 61.7 | 606.96 | R2PXS2 | 51.84 | 607.34 | XS | 70.19 | 606.564 | (205)Ground | 100.01 | 607.881 | (ZXS)ZXS | | | |
| 74.6 | 606.36 | r2pxs2b | 63.27 | 607.2 | R2PXS2PR | 54.93 | 607.32 | XS | 74.23 | 606.464 | (205)Ground | 97.14 | 607.345 | (ZXS)ZXS | | | |
| 77.1 | 605.9 | r2pxs2 | 67.58 | 606.86 | R2PXS2 | 57.5 | 607.03 | XS | 81.26 | 605.687 | (205)Ground | 96.19 | 607.028 | (ZXS)ZXS | | | |
| 78.28 | 605.65 | r2pxs2w | 70.58 | 606.41 | R2PXS2 | 60.92 | 607.01 | XS | 84.19 | 605.418 | (205)Ground | 91.26 | 606.545 | (ZXS)ZXS | | | |
| 78.57 | 605.54 | r2pxs2 | 73.97 | 606.34 | R2PXS2 | 62.8 | 607.07 | XS | 86.58 | 605.558 | (205)Ground | 88.82 | 606.294 | (ZXS)ZXS | | | |
| 79.51 | 605.03 | r2pxs2 | 76.74 | 606.12 | R2PXS2 | 63.4 | 607.2 | XSRP09 | 88.73 | 606.131 | (205)Ground | 85.15 | 606.027 | (ZXS)ZXS | | | |
| 80.44 | 604.89 | r2pxs2 | 78.15 | 605.62 | R2PXS2 | 64.51 | 607.23 | XS | 91.71 | 606.761 | (205)Ground | 83.77 | 605.739 | (ZXS)ZXS | | | |
| 81.89 | 604.96 | r2pxs2 | 78.18 | 605.64 | R2PXS2WS | 66.15 | 606.99 | XS | 95.93 | 607.364 | (205)Ground | 82.85 | 605.634 | (ZXS)ZXS | | | |
| 83.04 | 605.34 | r2pxs2 | 79.45 | 605.52 | R2PXS2 | 67.75 | 606.9 | XS | 98.11 | 607.998 | (205)Ground | 82.22 | 605.556 | (ZXS)ZXS | | | |
| 84.41 | 605.59 | r2pxs2w | 79.74 | 604.93 | R2PXS2 | 69.94 | 606.79 | XS | 103.56 | 608.126 | (205)Ground | 81.34 | 605.47 | (ZXS)ZXS | | | |
| 84.45 | 605.58 | r2pxs2 | 80.43 | 604.93 | R2PXS2 | 71.65 | 606.42 | XS | 104.02 | 608.16 | L PIN | 80.56 | 605.431 | (ZXS)ZXS | | | |
| 86.07 | 605.84 | r2pxs2 | 81.78 | 604.85 | R2PXS2 | 73.73 | 606.4 | XS | | | | 79.57 | 605.58 | (ZXS)ZXS | | | |
| 92.36 | 606.56 | r2pxs2b | 82.66 | 605.09 | R2PXS2 | 75.49 | 606.27 | XS | | | | 78.9 | 605.652 | (ZXS)ZXS | | | |
| 96.52 | 606.98 | r2pxs2 | 83.75 | 605.43 | R2PXS2 | 77.09 | 605.88 | XS | | | | 78.55 | 605.759 | (ZXS)ZXS | | | |
| 99.83 | 607.77 | r2pxs2tob | 84.63 | 605.6 | R2PXS2 | 78.12 | 605.8 | XS | | | | 78.26 | 605.883 | (ZXS)ZXS | | | |
| 103.7 | 608.14 | r2pxs2 | 85.58 | 605.82 | R2PXS2 | 78.65 | 605.39 | XS | | | | 77.77 | 606.051 | (ZXS)ZXS | | | |
| 104.21 | 608.18 | r2pxs2l | 88.84 | 606 | R2PXS2 | 78.7 | 605.57 | XS | | | | 77.55 | 606.12 | (ZXS)ZXS | | | |
| | | | 91.84 | 606.36 | R2PXS2 | 78.79 | 605.68 | XSW | | | | 76.38 | 606.398 | (ZXS)ZXS | | | |
| | | | 94.6 | 606.65 | R2PXS2 | 79.61 | 605.19 | XS | | | | 72.74 | 606.544 | (ZXS)ZXS | | | |
| | | | 96.17 | 606.97 | R2PXS2 | 80.23 | 605.01 | XS | | | | 70.64 | 606.681 | (ZXS)ZXS | | | |
| | | | 97.32 | 607.23 | R2PXS2 | 80.62 | 605.04 | XS | | | | 66.63 | 607.124 | (ZXS)ZXS | | | |
| | | | 101.28 | 607.73 | R2PXS2 | 81.58 | 604.95 | XS | | | | 63.27 | 607.24 | (ZXSRP)ZXSRP | | | |
| | | | 103.66 | 608.09 | R2PXS2 | 82.34 | 605.02 | XS | | | | 63.15 | 607.259 | (ZXS)ZXS | | | |
| | | | 104.02 | 608.2 | R2PXS2PL | 82.55 | 605.04 | XS | | | | 56.62 | 607.33 | (ZXS)ZXS | | | |
| | | | 109.45 | 607.86 | R2PXS2 | 83.16 | 605.25 | XS | | | | | | | | | |
| | | | 117.52 | 608.27 | R2PXS2 | 83.58 | 605.33 | XS | | | | | | | | | |
| | | | 128.17 | 608.24 | R2PXS2 | 83.93 | 605.52 | XS | | | | | | | | | |
| | | | | | | 84.69 | 605.61 | XS | | | | | | | | | |
| | | | | | | 85.14 | 605.68 | XS | | | | | | | | | |
| | | | | | | 86.46 | 605.87 | XS | | | | | | | | | |
| | | | | | | 88.28 | 606.04 | XS | | | | | | | | | |
| | | | | | | 89.39 | 606.11 | XS | | | | | | | | | |
| | | | | | | 91.07 | 606.24 | XS | | | | | | | | | |
| | | | | | | 93.42 | 606.47 | XS | | | | | | | | | |
| | | | | | | 94.07 | 606.64 | XS | | | | | | | | | |
| | | | | | | 95.85 | 606.83 | XS | | | | | | | | | |
| | | | | | | 96.99 | 606.97 | XS | | | | | | | | | |
| | | | | | | 98.18 | 607.43 | XS | | | | | | | | | |
| | | | | | | 99.43 | 607.54 | XS | | | | | | | | | |
| | | | | | | 101.02 | 607.79 | XS | | | | | | | | | |
| | | | | | | 102.28 | 607.84 | XS | | | | | | | | | |
| | | | | | | 103.63 | 608.08 | XS | | | | | | | | | |
| | | | | | | 104.13 | 608.13 | XSLP09 | | | | | | | | | |
| | | | | | | 104.41 | 608.04 | XS | | | | | | | | | |
| | | | | | | 106.56 | 608.05 | XS | | | | | | | | | |
| | | | | | | 108.16 | 608.08 | XS | | | | | | | | | |
| | | | | | | 109.15 | 607.8 | XS | | | | | | | | | |
| | | | | | | 110.23 | 607.98 | XS | | | | | | | | | |
| | | | | | | 111.16 | 607.85 | XS | | | | | | | | | |
| | | | | | | 112.73 | 608.13 | XS | | | | | | | | | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Bankfull Width (ft.) | 21.6 | Bankfull Width (ft.) | 21.3 | Bankfull Width (ft.) | 17.3 | Bankfull Width (ft.) | 18.54 | Bankfull Width (ft.) | 11.27 | Bankfull Width (ft.) | |
| Bankfull Cross Sectional Area (sq ft) | 11.4 | Bankfull Cross Sectional Area (sq | 12.2 | Bankfull Cross Sectional Area (sq ft) | 11.8 | Bankfull Cross Sectional Area (sq ft) | 8.3 | Bankfull Cross Sectional Area (sq ft) | 6.7 | Bankfull Cross Sectional Area (sq ft) | |
| Bankfull Mean Depth (ft.) | 0.53 | Bankfull Mean Depth (ft.) | 0.57 | Bankfull Mean Depth (ft.) | 0.68 | Bankfull Mean Depth (ft.) | 0.45 | Bankfull Mean Depth (ft.) | 0.59 | Bankfull Mean Depth (ft.) | |
| Bankfull Max Depth (ft.) | 1.5 | Bankfull Max Depth (ft.) | 1.6 | Bankfull Max Depth (ft.) | 1.46 | Bankfull Max Depth (ft.) | 0.99 | Bankfull Max Depth (ft.) | 0.98 | Bankfull Max Depth (ft.) | |
| Flood Prone Width (ft) | - | Flood Prone Width (ft) | - | Flood Prone Width (ft) | - | Flood Prone Width (ft) | - | Flood Prone Width (ft) | - | Flood Prone Width (ft) | |
| Entrenchment Ratio (ft/ft) | - | Entrenchment Ratio (ft/ft) | - | Entrenchment Ratio (ft/ft) | - | Entrenchment Ratio (ft/ft) | - | Entrenchment Ratio (ft/ft) | - | Entrenchment Ratio (ft/ft) | |
| Width/Depth Ratio (ft/ft) | - | Width/Depth Ratio (ft/ft) | - | Width/Depth Ratio (ft/ft) | - | Width/Depth Ratio (ft/ft) | - | Width/Depth Ratio (ft/ft) | - | Width/Depth Ratio (ft/ft) | |
| D50 (mm) | 0.06 | D50 (mm) | 0.06 | D50 (mm) | 0.06 | D50 (mm) | 0.06 | D50 (mm) | 0.06 | D50 (mm) | |
| D84 (mm) | 4.85 | D84 (mm) | 0.06 | D84 (mm) | 0.06 | D84 (mm) | 0.06 | D84 (mm) | 0.06 | D84 (mm) | |

## Wolf Pond R3 RXS-1

**Photo C 19 - R3 RXS-1 Left Pin**

**Photo C 10 - R3 RXS-1 Right Pin**

**Photo C 11 - R3 RXS-1 Downstream**

**Figure C 7 - R3 RXS-1 Cross Section Plot**

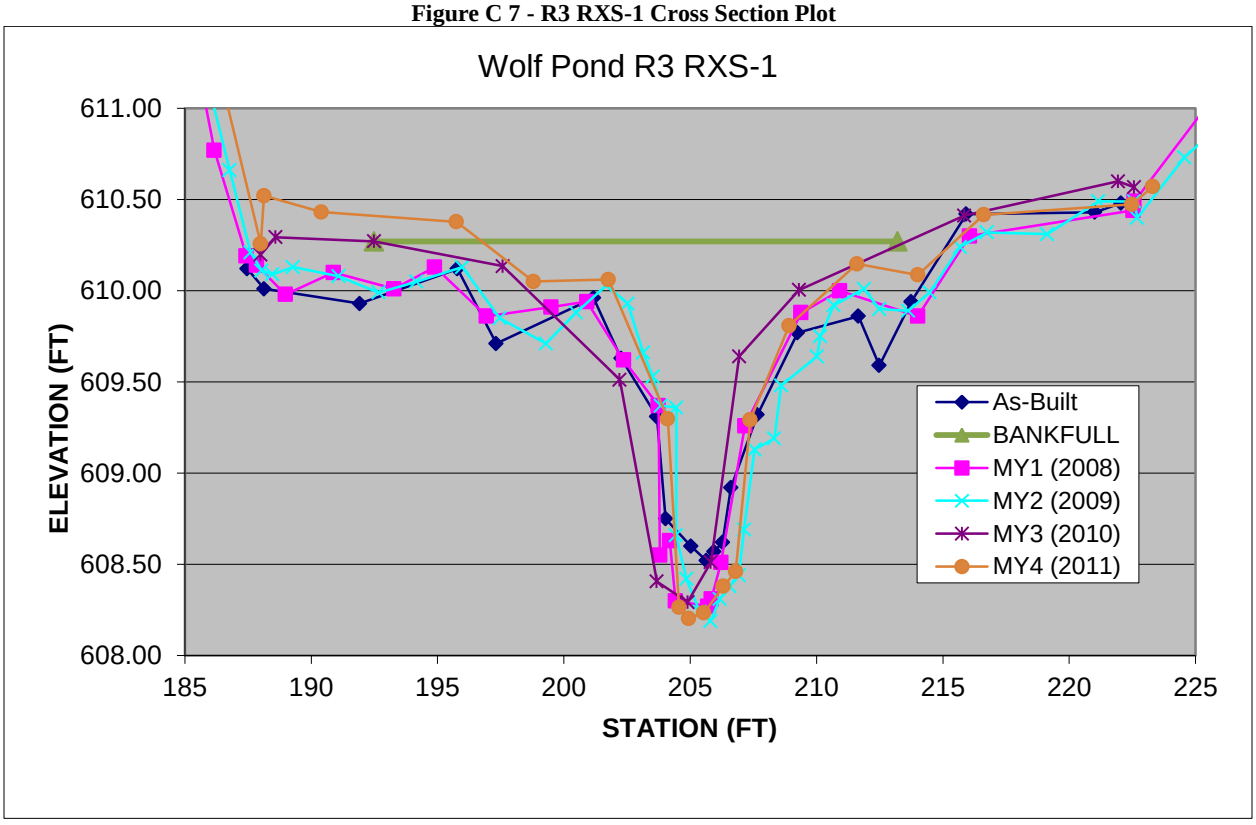


**Table C 6 - R3 RXS-1 Dimension Data**

| AS-BUILT | | | MY1 (2008) | | | MY2 (2009) | | | MY3 (2010) | | | MY4 (2011) | | | MY5 (2012) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Station | Elevation | Description | Station | Elevation | Description | Station | Elevation | Description | Station | Elevation | Description | Station | Elevation | Description | Station | Elevation | Description |
| 187.47 | 610.12 | r3rxs1r | 65.43 | 612.57 | R3PXS1 | 177.92 | 611.48 | XS | 188 | 610.198 | R PIN | 223.31 | 610.572 | (ZXS)ZXS | | | |
| 188.14 | 610.01 | r3rxs1 | 101.5 | 611.9 | R3PXS1 | 179.17 | 611.49 | XS | 188.59 | 610.294 | Ground | 222.49 | 610.473 | (ZXSLP)ZXSLP | | | |
| 191.92 | 609.93 | r3rxs1 | 112.14 | 611.87 | R3PXS1 | 181.6 | 611.53 | XS | 192.49 | 610.271 | Ground | 216.62 | 610.416 | (ZXS)ZXS | | | |
| 195.79 | 610.12 | r3rxs1tob | 128.94 | 611.43 | R3PXS1 | 183.11 | 611.71 | XS | 197.58 | 610.135 | Ground | 214.01 | 610.087 | (ZXS)ZXS | | | |
| 197.32 | 609.71 | r3rxs1 | 140.25 | 611.49 | R3PXS1 | 184.01 | 611.58 | XS | 202.21 | 609.512 | Ground | 211.6 | 610.147 | (ZXS)ZXS | | | |
| 201.18 | 609.96 | r3rxs1 | 156.99 | 611.21 | R3PXS1 | 185.74 | 611.24 | XS | 203.68 | 608.406 | Ground | 208.92 | 609.809 | (ZXS)ZXS | | | |
| 202.27 | 609.63 | r3rxs1 | 161.71 | 611.04 | R3PXS1 | 186.77 | 610.66 | XS | 204.9 | 608.293 | Ground | 207.38 | 609.293 | (ZXS)ZXS | | | |
| 203.68 | 609.31 | r3rxs1 | 169.33 | 611.1 | R3PXS1 | 187.6 | 610.21 | XS | 205.82 | 608.512 | Ground | 206.8 | 608.461 | (ZXS)ZXS | | | |
| 204.03 | 608.75 | r3rxs1 | 173.28 | 611.47 | R3PXS1 | 188.04 | 610.11 | XSRP09 | 206.94 | 609.64 | Ground | 206.31 | 608.38 | (ZXS)ZXS | | | |
| 205.03 | 608.6 | r3rxs1w | 178.57 | 611.24 | R3PXS1 | 188.47 | 610.09 | XS | 209.31 | 610.004 | Ground | 205.54 | 608.234 | (ZXS)ZXS | | | |
| 205.64 | 608.52 | r3rxs1 | 181.37 | 611.5 | R3PXS1 | 189.28 | 610.13 | XS | 215.85 | 610.412 | Ground | 204.94 | 608.204 | (ZXS)ZXS | | | |
| 205.95 | 608.57 | r3rxs1 | 183.75 | 611.54 | R3PXS1 | 191.09 | 610.08 | XS | 221.94 | 610.6 | Ground | 204.56 | 608.264 | (ZXS)ZXS | | | |
| 206.28 | 608.62 | r3rxs1w | 185.5 | 611.25 | R3PXS1 | 192.67 | 609.99 | XS | 222.58 | 610.567 | L PIN | 204.11 | 609.298 | (ZXS)ZXS | | | |
| 206.61 | 608.92 | r3rxs1 | 186.16 | 610.77 | R3PXS1 | 194.17 | 610.05 | XS | | | | 201.77 | 610.061 | (ZXS)ZXS | | | |
| 207.66 | 609.32 | r3rxs1 | 187.43 | 610.19 | R3PXS1 | 195.98 | 610.13 | XS | | | | 198.8 | 610.051 | (ZXS)ZXS | | | |
| 209.25 | 609.77 | r3rxs1 | 187.84 | 610.14 | R3RXS1PR | 197.47 | 609.85 | XS | | | | 195.75 | 610.378 | (ZXS)ZXS | | | |
| 211.66 | 609.86 | r3rxs1 | 188.98 | 609.98 | R3PXS1 | 199.29 | 609.71 | XS | | | | 190.4 | 610.431 | (ZXS)ZXS | | | |
| 212.48 | 609.59 | r3rxs1 | 190.88 | 610.1 | R3PXS1 | 200.48 | 609.88 | XS | | | | 188.13 | 610.521 | (ZXS)ZXS | | | |
| 213.75 | 609.94 | r3rxs1 | 193.28 | 610.01 | R3PXS1 | 201.68 | 610.03 | XS | | | | 188 | 610.257 | (ZXSRP)ZXSRP | | | |
| 215.93 | 610.42 | r3rxs1tob | 194.89 | 610.13 | R3PXS1 | 202.53 | 609.93 | XS | | | | 186.21 | 611.293 | (ZXS)ZXS | | | |
| 221.02 | 610.43 | r3rxs1 | 196.94 | 609.86 | R3PXS1 | 203.14 | 609.66 | XS | | | | 183.72 | 611.654 | (ZXS)ZXS | | | |
| 222.06 | 610.48 | r3rxs1l | 199.5 | 609.91 | R3PXS1 | 203.52 | 609.53 | XS | | | | | | | | | |
| | | | 200.91 | 609.94 | R3PXS1 | 203.84 | 609.37 | XS | | | | | | | | | |
| | | | 202.37 | 609.62 | R3PXS1 | 204.45 | 609.36 | XS | | | | | | | | | |
| | | | 203.74 | 609.37 | R3PXS1 | 204.44 | 608.66 | XS | | | | | | | | | |
| | | | 203.8 | 608.55 | R3RXS1WS | 204.85 | 608.42 | XS | | | | | | | | | |
| | | | 204.19 | 608.63 | R3PXS1 | 205.38 | 608.24 | XS | | | | | | | | | |
| | | | 204.42 | 608.3 | R3PXS1 | 205.81 | 608.19 | XS | | | | | | | | | |
| | | | 205.7 | 608.27 | R3PXS1 | 206.17 | 608.31 | XS | | | | | | | | | |
| | | | 205.84 | 608.31 | R3PXS1 | 206.57 | 608.38 | XS | | | | | | | | | |
| | | | 206.22 | 608.51 | R3PXS1 | 206.93 | 608.44 | XS | | | | | | | | | |
| | | | 207.17 | 609.26 | R3PXS1 | 207.13 | 608.69 | XS | | | | | | | | | |
| | | | 209.39 | 609.88 | R3PXS1 | 207.55 | 609.13 | XS | | | | | | | | | |
| | | | 210.92 | 610 | R3PXS1 | 208.33 | 609.19 | XS | | | | | | | | | |
| | | | 214.01 | 609.86 | R3PXS1 | 208.6 | 609.48 | XS | | | | | | | | | |
| | | | 216.06 | 610.3 | R3PXS1 | 210.02 | 609.64 | XS | | | | | | | | | |
| | | | 222.53 | 610.44 | R3PXS1 | 210.15 | 609.75 | XS | | | | | | | | | |
| | | | 222.58 | 610.49 | R3RXS1PL | 210.68 | 609.92 | XS | | | | | | | | | |
| | | | 225.54 | 611.03 | R3PXS1 | 211.88 | 610.01 | XS | | | | | | | | | |
| | | | 247.02 | 611.86 | R3PXS1 | 212.49 | 609.9 | XS | | | | | | | | | |
| | | | 259.18 | 612.28 | R3PXS1 | 213.63 | 609.89 | XS | | | | | | | | | |
| | | | | | | 214.48 | 609.99 | XS | | | | | | | | | |
| | | | | | | 215.68 | 610.24 | XS | | | | | | | | | |
| | | | | | | 216.75 | 610.32 | XS | | | | | | | | | |
| | | | | | | 219.13 | 610.31 | XS | | | | | | | | | |
| | | | | | | 221.16 | 610.49 | XS | | | | | | | | | |
| | | | | | | 222.58 | 610.49 | XSLP09 | | | | | | | | | |
| | | | | | | 222.69 | 610.4 | XS | | | | | | | | | |
| | | | | | | 224.56 | 610.73 | XS | | | | | | | | | |
| | | | | | | 226.06 | 610.92 | XS | | | | | | | | | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bankfull Width (ft.) | 20.1 | Bankfull Width (ft.) | 21.2 | Bankfull Width (ft.) | 25.2 | Bankfull Width (ft.) | 20.4 | Bankfull Width (ft.) | 12.24 | Bankfull Width (ft.) | |
| Bankfull Cross Sectional Area (sq ft) | 10.4 | Bankfull Cross Sectional Area (sq | 10.3 | Bankfull Cross Sectional Area (sq ft) | 9.7 | Bankfull Cross Sectional Area (sq ft) | 10.5 | Bankfull Cross Sectional Area (sq ft) | 10.4 | Bankfull Cross Sectional Area (sq ft) | |
| Bankfull Mean Depth (ft.) | 0.52 | Bankfull Mean Depth (ft.) | 0.49 | Bankfull Mean Depth (ft.) | 0.39 | Bankfull Mean Depth (ft.) | 0.5 | Bankfull Mean Depth (ft.) | 0.85 | Bankfull Mean Depth (ft.) | |
| Bankfull Max Depth (ft.) | 1.6 | Bankfull Max Depth (ft.) | 1.86 | Bankfull Max Depth (ft.) | 1.94 | Bankfull Max Depth (ft.) | 1.8 | Bankfull Max Depth (ft.) | 2.07 | Bankfull Max Depth (ft.) | |
| Flood Prone Width (ft) | 121 | Flood Prone Width (ft) | 121 | Flood Prone Width (ft) | 121 | Flood Prone Width (ft) | 121 | Flood Prone Width (ft) | 121 | Flood Prone Width (ft) | |
| Entrenchment Ratio (ft/ft) | 6.01 | Entrenchment Ratio (ft/ft) | 5.72 | Entrenchment Ratio (ft/ft) | 4.80 | Entrenchment Ratio (ft/ft) | 5.9 | Entrenchment Ratio (ft/ft) | 9.89 | Entrenchment Ratio (ft/ft) | |
| Width/Depth Ratio (ft/ft) | 39.10 | Width/Depth Ratio (ft/ft) | 43.35 | Width/Depth Ratio (ft/ft) | 65.17 | Width/Depth Ratio (ft/ft) | 39.8 | Width/Depth Ratio (ft/ft) | 14.4 | Width/Depth Ratio (ft/ft) | |
| D50 (mm) | 13.47 | D50 (mm) | 6.47 | D50 (mm) | 0.06 | D50 (mm) | 2.50 | D50 (mm) | 4.85 | D50 (mm) | |
| D84 (mm) | 22.6 | D84 (mm) | 20.95 | D84 (mm) | 5.70 | D84 (mm) | 12.87 | D84 (mm) | 12.08 | D84 (mm) | |

## Wolf Pond R3 PXS-1

**Photo C 12 - R3 PXS-1 Left Pin**

**Photo C 13 - R3 PXS-1 Right Pin**

**Photo C 14 - R3 PXS-1 Downstream**

**Figure C 8 - R3 PXS-1 Cross Section Plot**

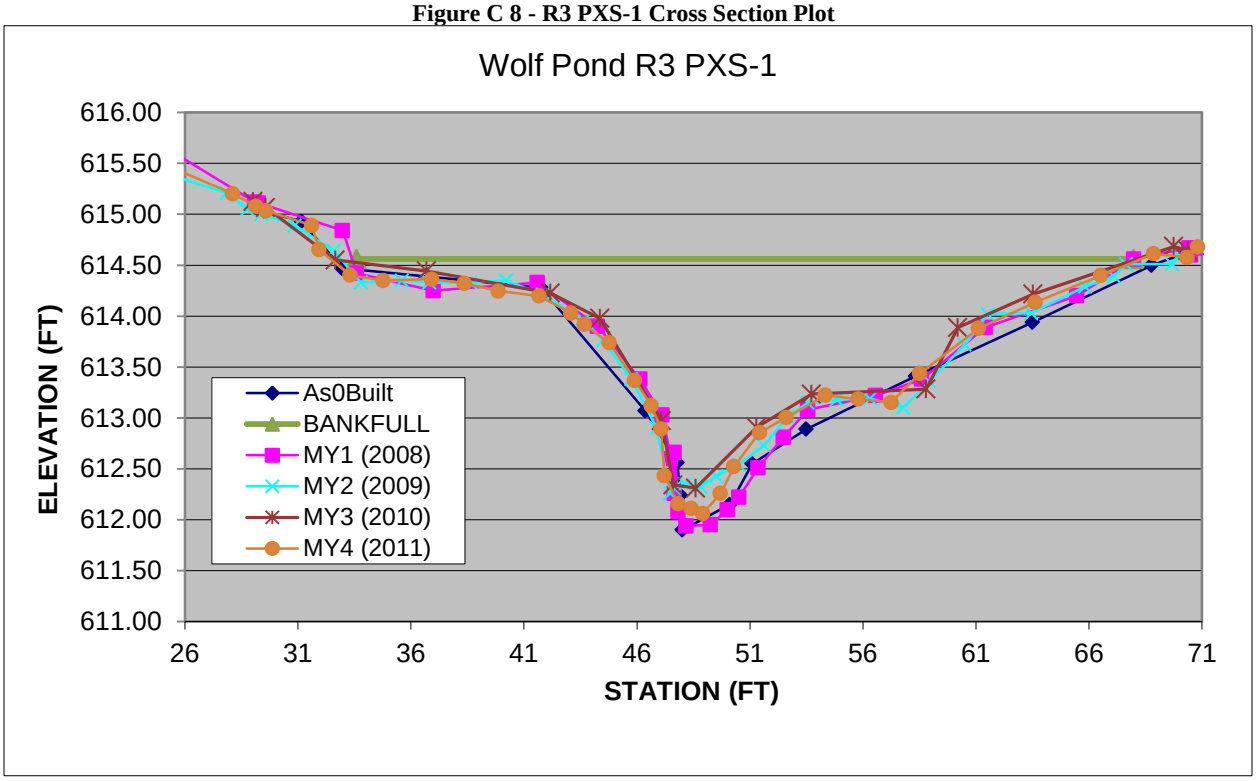


**Table C 7 - R3 PXS-1 Dimension Data**

| AS-BUILT | | | MY1 (2008) | | | MY2 (2009) | | | MY3 (2010) | | | MY4 (2011) | | | MY5 (2012) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Station | Elevation | Description | Station | Elevation | Description | Station | Elevation | Description | Station | Elevation | Description | Station | Elevation | Description | Station | Elevation | Description |
| 29.1 | 615.08 | r3pxs1r | 1.04 | 618.09 | R3PXS1 | 18.35 | 616.48 | XS | 29.03 | 615.127 | R PIN | 25.1 | 615.49 | (ZXS)ZXS | | | |
| 29.52 | 615.03 | r3pxs1 | 15.85 | 616.47 | R3PXS1 | 19.71 | 616.09 | XS | 29.58 | 615.066 | Ground | 28.12 | 615.202 | (ZXS)ZXS | | | |
| 31.16 | 614.93 | r3pxs1tob | 25.02 | 615.67 | R3PXS1 | 21.78 | 615.82 | XS | 32.66 | 614.551 | Ground | 29.15 | 615.077 | (ZXSLP)ZXSLP | | | |
| 32.96 | 614.47 | r3pxs1 | 29.09 | 615.12 | R3PXS1PR | 23.46 | 615.73 | XS | 36.7 | 614.442 | Ground | 29.59 | 615.036 | (ZXS)ZXS | | | |
| 41.76 | 614.28 | r3pxs1 | 29.26 | 615.11 | R3PXS1PR | 25.97 | 615.34 | XS | 42.18 | 614.226 | Ground | 31.61 | 614.891 | (ZXS)ZXS | | | |
| 46.37 | 613.07 | r3pxs1 | 32.98 | 614.84 | R3PXS1 | 27.86 | 615.21 | XS | 44.37 | 613.977 | Ground | 31.94 | 614.655 | (ZXS)ZXS | | | |
| 47.78 | 612.56 | r3pxs1w | 33.6 | 614.42 | R3PXS1 | 28.77 | 615.05 | XSRP09 | 47.09 | 612.974 | Ground | 33.31 | 614.402 | (ZXS)ZXS | | | |
| 47.93 | 612.24 | r3pxs1 | 36.99 | 614.25 | R3PXS1 | 29.39 | 615 | XS | 47.6 | 612.342 | Ground | 34.77 | 614.35 | (ZXS)ZXS | | | |
| 48.01 | 611.9 | r3pxs1 | 41.59 | 614.33 | R3PXS1 | 30.87 | 614.89 | XS | 48.6 | 612.31 | Ground | 36.93 | 614.362 | (ZXS)ZXS | | | |
| 50.11 | 612.15 | r3pxs1 | 44.26 | 613.9 | R3PXS1 | 32.59 | 614.64 | XS | 51.3 | 612.908 | Ground | 38.37 | 614.321 | (ZXS)ZXS | | | |
| 51.1 | 612.55 | r3pxs1w | 46.14 | 613.38 | R3PXS1 | 33.79 | 614.33 | XS | 53.73 | 613.235 | Ground | 39.87 | 614.246 | (ZXS)ZXS | | | |
| 53.49 | 612.89 | r3pxs1 | 47.11 | 613.03 | R3PXS1 | 35.61 | 614.35 | XS | 58.79 | 613.283 | Ground | 41.68 | 614.197 | (ZXS)ZXS | | | |
| 58.33 | 613.41 | r3pxs1 | 47.5 | 612.6 | R3PXS1 | 36.82 | 614.33 | XS | 60.2 | 613.888 | Ground | 43.08 | 614.029 | (ZXS)ZXS | | | |
| 63.5 | 613.94 | r3pxs1 | 47.65 | 612.26 | R3PXS1 | 38.63 | 614.33 | XS | 63.53 | 614.216 | Ground | 43.67 | 613.918 | (ZXS)ZXS | | | |
| 68.77 | 614.5 | r3pxs1tob | 47.66 | 612.66 | R3PXS1WS | 40.21 | 614.35 | XS | 69.76 | 614.685 | Ground | 44.78 | 613.739 | (ZXS)ZXS | | | |
| 70.31 | 614.62 | r3pxs1l | 47.83 | 612.08 | R3PXS1 | 41.85 | 614.21 | XS | 70.38 | 614.644 | L PIN | 45.9 | 613.369 | (ZXS)ZXS | | | |
| | | | 48.18 | 611.94 | R3PXS1 | 43.65 | 613.96 | XS | | | | 46.63 | 613.121 | (ZXS)ZXS | | | |
| | | | 49.26 | 611.95 | R3PXS1 | 44.51 | 613.76 | XS | | | | 47.07 | 612.892 | (ZXS)ZXS | | | |
| | | | 50.01 | 612.1 | R3PXS1 | 45.76 | 613.38 | XS | | | | 47.22 | 612.431 | (ZXS)ZXS | | | |
| | | | 50.51 | 612.22 | R3PXS1 | 46.87 | 612.9 | XS | | | | 47.83 | 612.158 | (ZXS)ZXS | | | |
| | | | 51.36 | 612.51 | R3PXS1 | 47.49 | 612.26 | XS | | | | 48.41 | 612.11 | (ZXS)ZXS | | | |
| | | | 52.48 | 612.81 | R3PXS1 | 47.65 | 612.31 | XS | | | | 48.91 | 612.061 | (ZXS)ZXS | | | |
| | | | 53.56 | 613.08 | R3PXS1 | 48.13 | 612.35 | XS | | | | 49.7 | 612.259 | (ZXS)ZXS | | | |
| | | | 56.56 | 613.22 | R3PXS1 | 48.83 | 612.32 | XS | | | | 50.29 | 612.523 | (ZXS)ZXS | | | |
| | | | 58.6 | 613.38 | R3PXS1 | 49.52 | 612.43 | XS | | | | 51.43 | 612.857 | (ZXS)ZXS | | | |
| | | | 61.41 | 613.89 | R3PXS1 | 50.51 | 612.54 | XS | | | | 52.61 | 613.004 | (ZXS)ZXS | | | |
| | | | 65.47 | 614.2 | R3PXS1 | 51.62 | 612.73 | XS | | | | 54.34 | 613.224 | (ZXS)ZXS | | | |
| | | | 67.99 | 614.56 | R3PXS1 | 52.66 | 613.01 | XS | | | | 55.8 | 613.186 | (ZXS)ZXS | | | |
| | | | 70.44 | 614.67 | R3PXS1PL | 53.56 | 613.15 | XS | | | | 57.25 | 613.152 | (ZXS)ZXS | | | |
| | | | 70.51 | 614.6 | R3PXS1 | 54.85 | 613.18 | XS | | | | 58.51 | 613.437 | (ZXS)ZXS | | | |
| | | | 73.83 | 614.66 | R3PXS1 | 56.32 | 613.19 | XS | | | | 61.12 | 613.88 | (ZXS)ZXS | | | |
| | | | 76.59 | 615.09 | R3PXS1 | 57.78 | 613.1 | XS | | | | 63.63 | 614.136 | (ZXS)ZXS | | | |
| | | | 84.08 | 615.12 | R3PXS1 | 58.94 | 613.36 | XS | | | | 66.52 | 614.399 | (ZXS)ZXS | | | |
| | | | 88.6 | 615.79 | R3PXS1 | 60.5 | 613.72 | XS | | | | 68.86 | 614.613 | (ZXS)ZXS | | | |
| | | | 98.31 | 615.86 | R3PXS1 | 61.53 | 614.02 | XS | | | | 70.35 | 614.576 | (ZXSLP)ZXSRP | | | |
| | | | 105.57 | 615.55 | R3PXS1 | 63.45 | 614.03 | XS | | | | 70.81 | 614.68 | (ZXS)ZXS | | | |
| | | | 115.46 | 615.07 | R3PXS1 | 65.84 | 614.29 | XS | | | | 73.26 | 614.655 | (ZXS)ZXS | | | |
| | | | 127.21 | 615.1 | R3PXS1 | 67.11 | 614.39 | XS | | | | | | | | | |
| | | | | | | 67.64 | 614.51 | XS | | | | | | | | | |
| | | | | | | 69.68 | 614.51 | XS | | | | | | | | | |
| | | | | | | 69.96 | 614.59 | XSLP09 | | | | | | | | | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Bankfull Width (ft.) | 35.8 | Bankfull Width (ft.) | 34.4 | Bankfull Width (ft.) | 37.1 | Bankfull Width (ft.) | 30.87 | Bankfull Width (ft.) | 33.21 | Bankfull Width (ft.) | |
| Bankfull Cross Sectional Area (sq ft) | 31.6 | Bankfull Cross Sectional Area (sq | 32.1 | Bankfull Cross Sectional Area (sq ft) | 31.4 | Bankfull Cross Sectional Area (sq ft) | 27.9 | Bankfull Cross Sectional Area (sq ft) | 31.0 | Bankfull Cross Sectional Area (sq ft) | |
| Bankfull Mean Depth (ft.) | 0.88 | Bankfull Mean Depth (ft.) | 0.93 | Bankfull Mean Depth (ft.) | 0.85 | Bankfull Mean Depth (ft.) | 0.90 | Bankfull Mean Depth (ft.) | 0.93 | Bankfull Mean Depth (ft.) | |
| Bankfull Max Depth (ft.) | 2.6 | Bankfull Max Depth (ft.) | 2.62 | Bankfull Max Depth (ft.) | 2.3 | Bankfull Max Depth (ft.) | 2.25 | Bankfull Max Depth (ft.) | 2.50 | Bankfull Max Depth (ft.) | |
| Flood Prone Width (ft) | - | Flood Prone Width (ft) | - | Flood Prone Width (ft) | - | Flood Prone Width (ft) | - | Flood Prone Width (ft) | - | Flood Prone Width (ft) | |
| Entrenchment Ratio (ft/ft) | - | Entrenchment Ratio (ft/ft) | - | Entrenchment Ratio (ft/ft) | - | Entrenchment Ratio (ft/ft) | - | Entrenchment Ratio (ft/ft) | - | Entrenchment Ratio (ft/ft) | |
| Width/Depth Ratio (ft/ft) | - | Width/Depth Ratio (ft/ft) | - | Width/Depth Ratio (ft/ft) | - | Width/Depth Ratio (ft/ft) | - | Width/Depth Ratio (ft/ft) | - | Width/Depth Ratio (ft/ft) | |
| D50 (mm) | 5.96 | D50 (mm) | 2.63 | D50 (mm) | 0.96 | D50 (mm) | 0.63 | D50 (mm) | 0.48 | D50 (mm) | |
| D84 (mm) | 12.71 | D84 (mm) | 5.70 | D84 (mm) | 5.70 | D84 (mm) | 4.00 | D84 (mm) | 7.14 | D84 (mm) | |

**Figure C 9 - Reach 1 Longitudinal Profile**

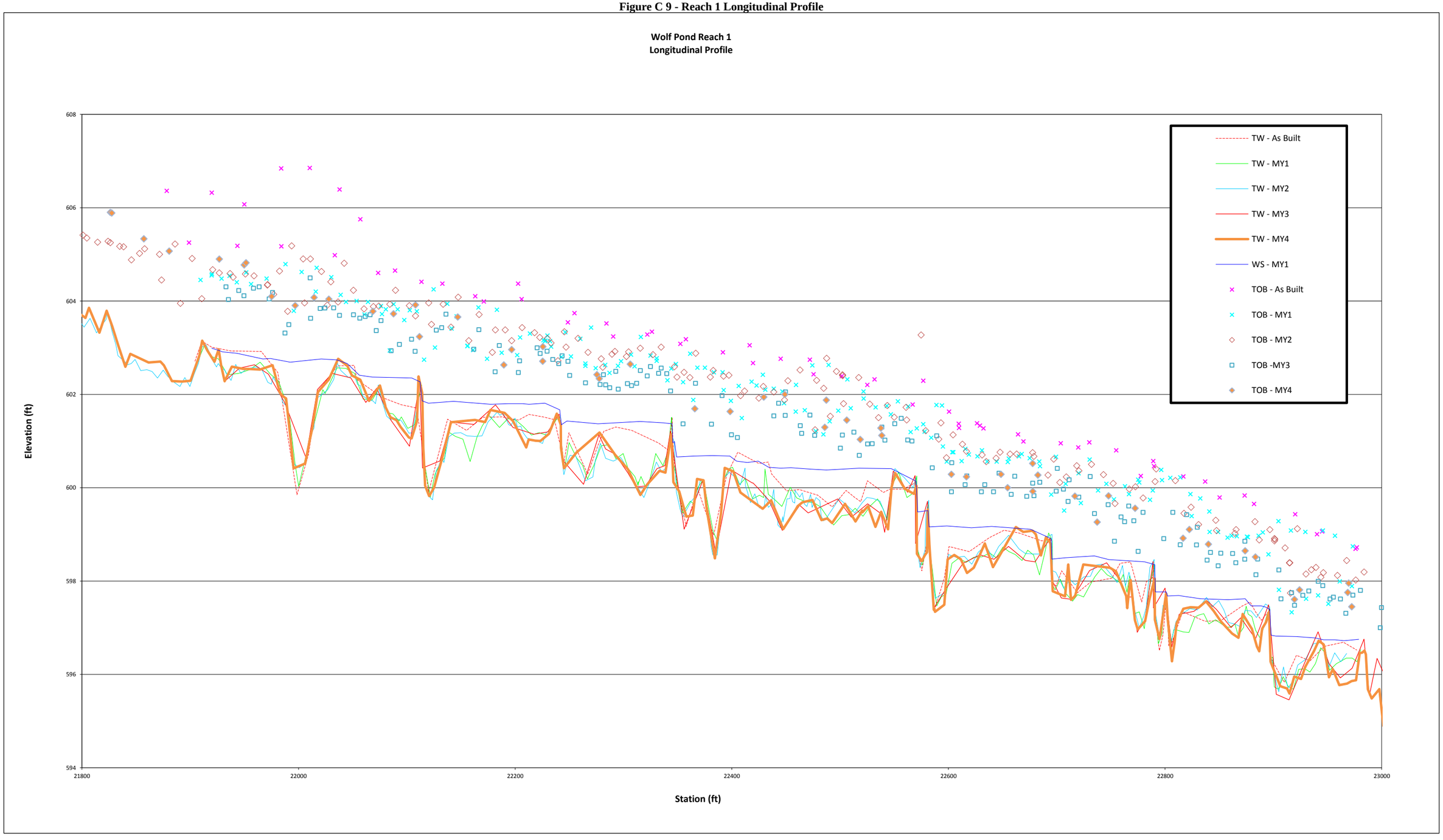


**Figure C 10 - Reach 2 Longitudinal Profile**

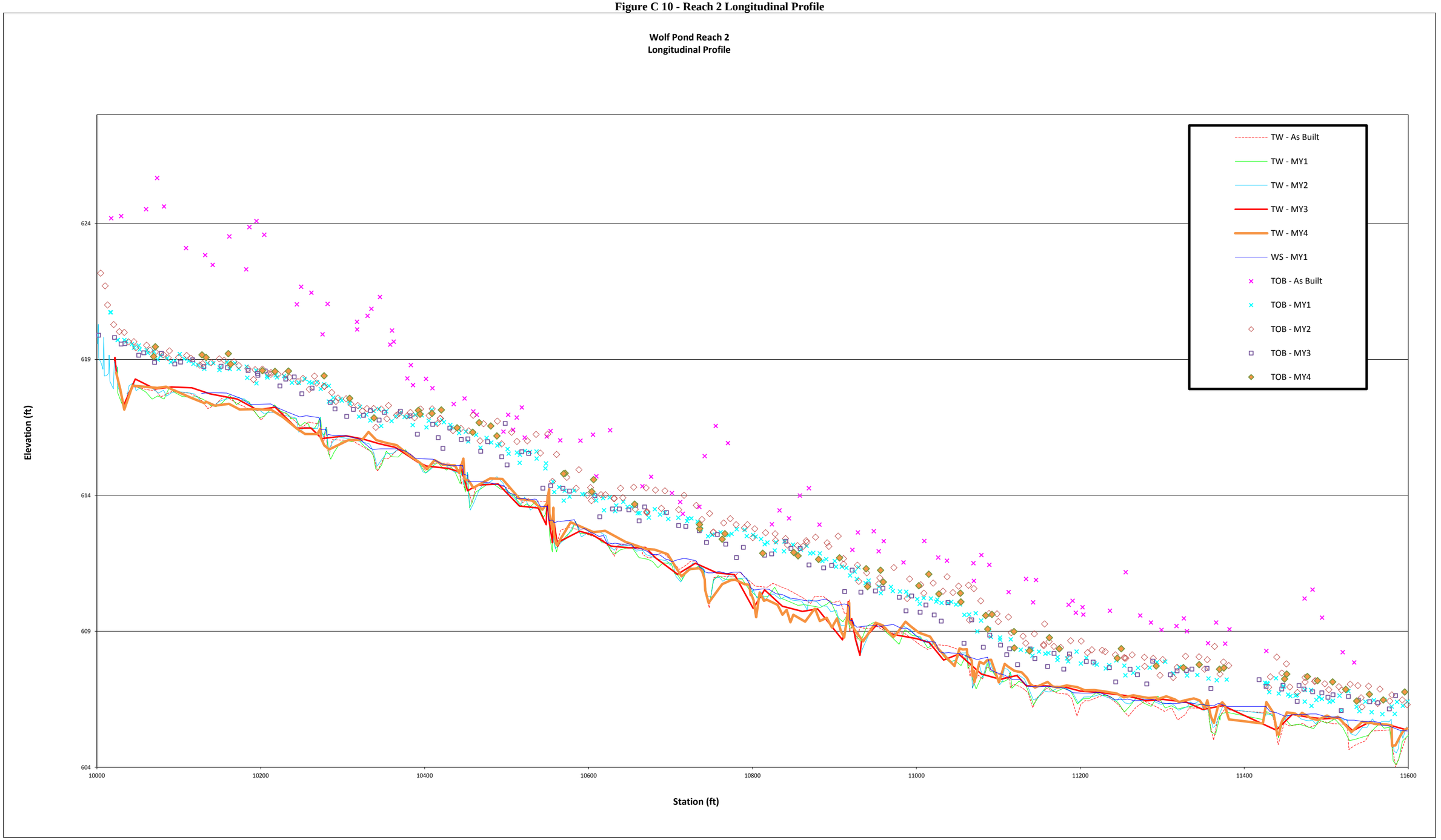


**Figure C 11 - Reach 3 Longitudinal Profile**

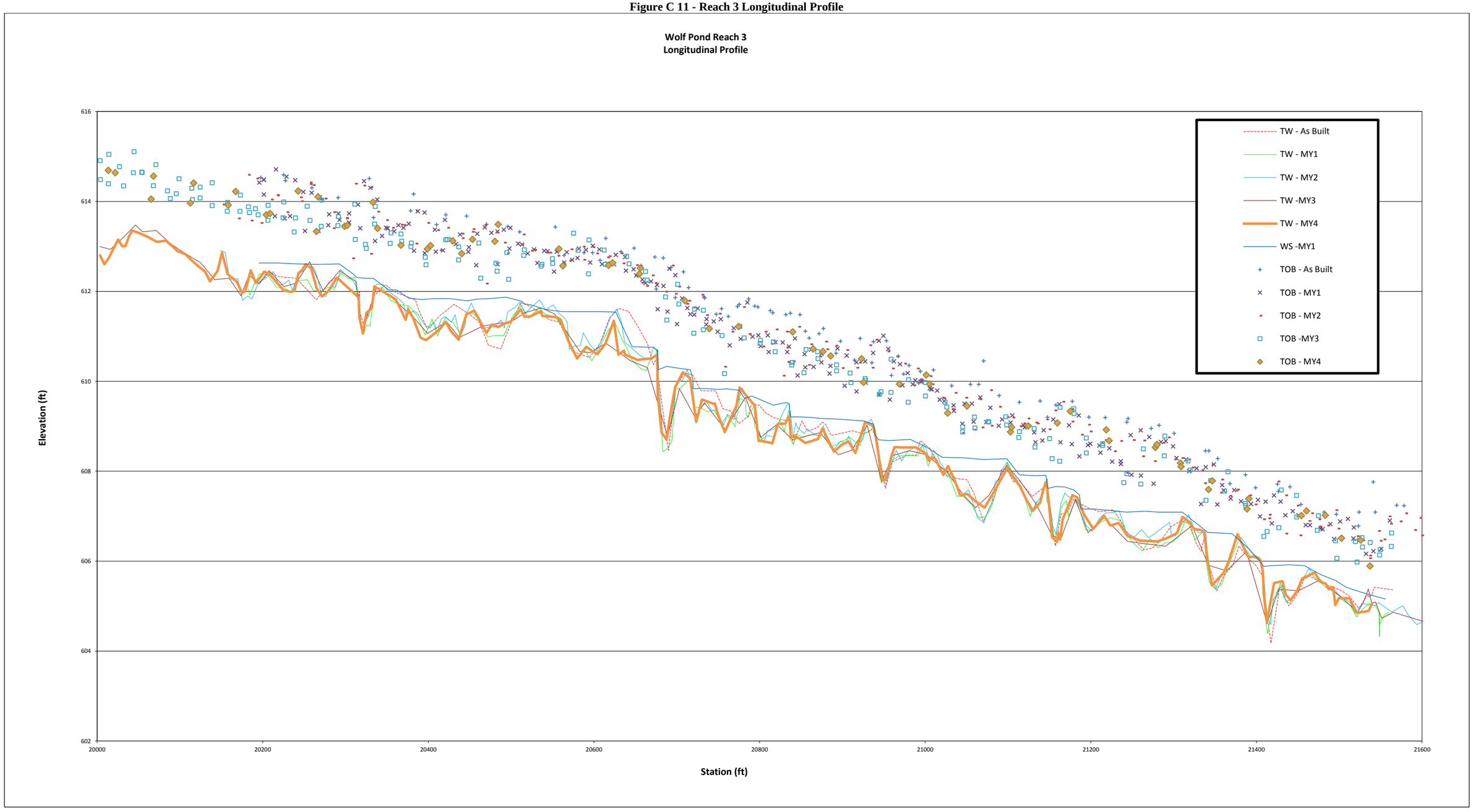


**Figure C 12 - R1 RXS-1 Pebble Count**

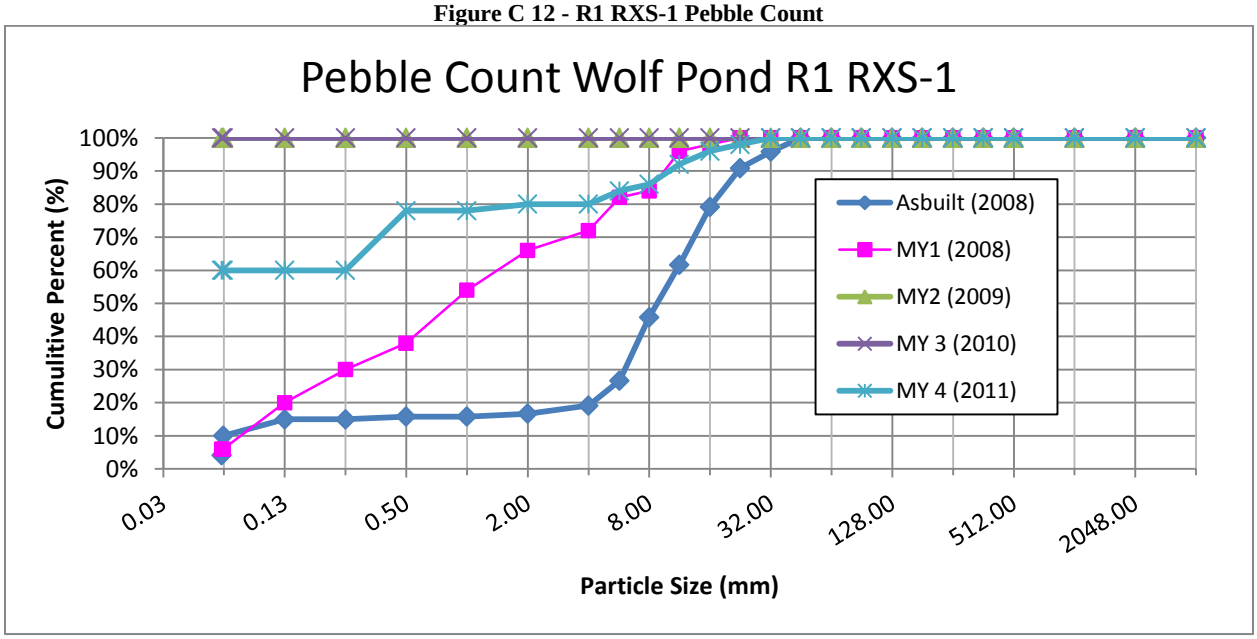



**Figure C 13 - R1 PXS-1 Pebble Count**

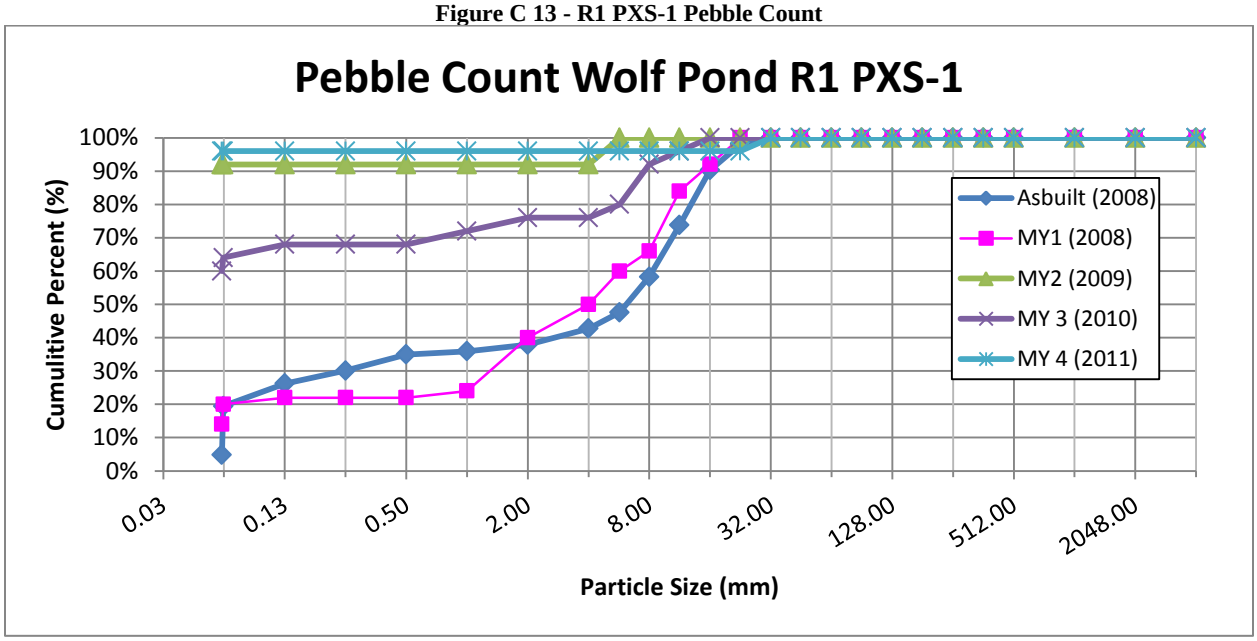


**Figure C 14 - R2 RXS-1 Pebble Count**

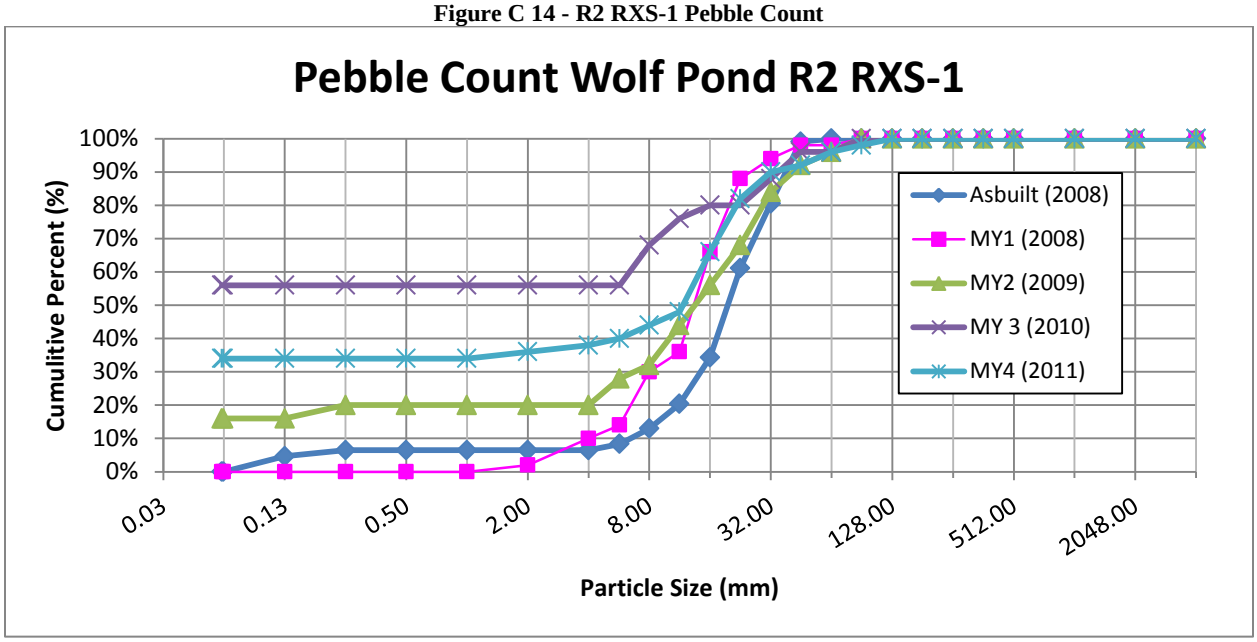



**Figure C 15 - R2 RXS-2 Pebble Count**

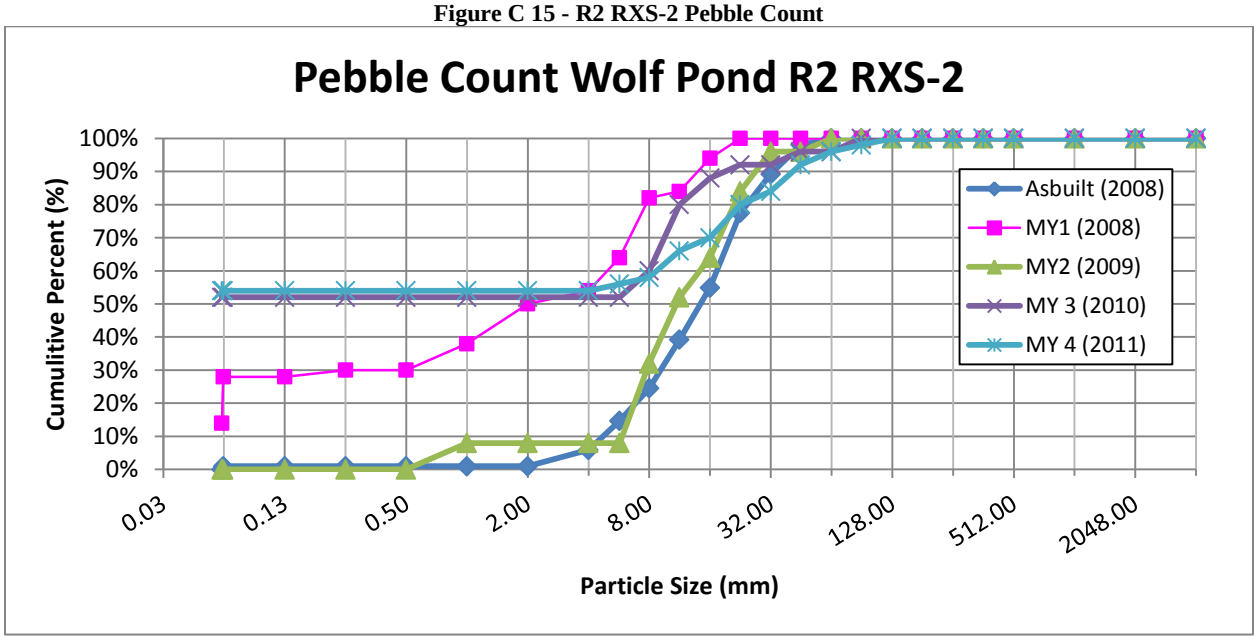


**Figure C 16 - R2 PXS-1 Pebble Count**

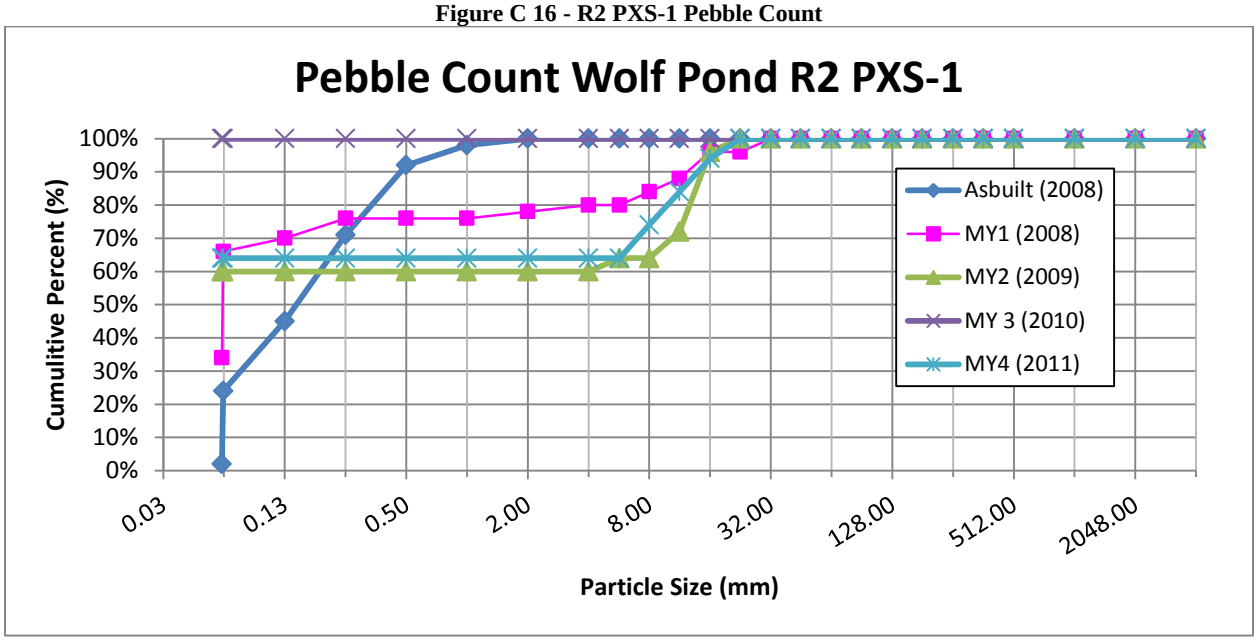



**Figure C 17 - R2 PXS-2 Pebble Count**

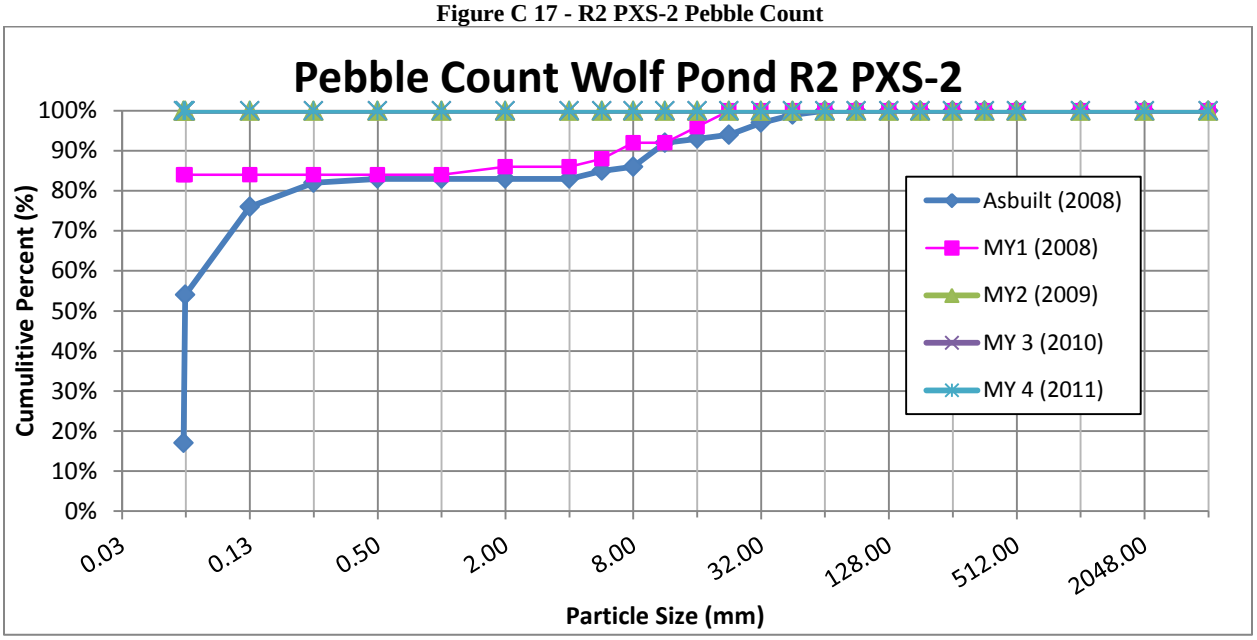


**Figure C 18 - R3 RXS-1 Pebble Count**

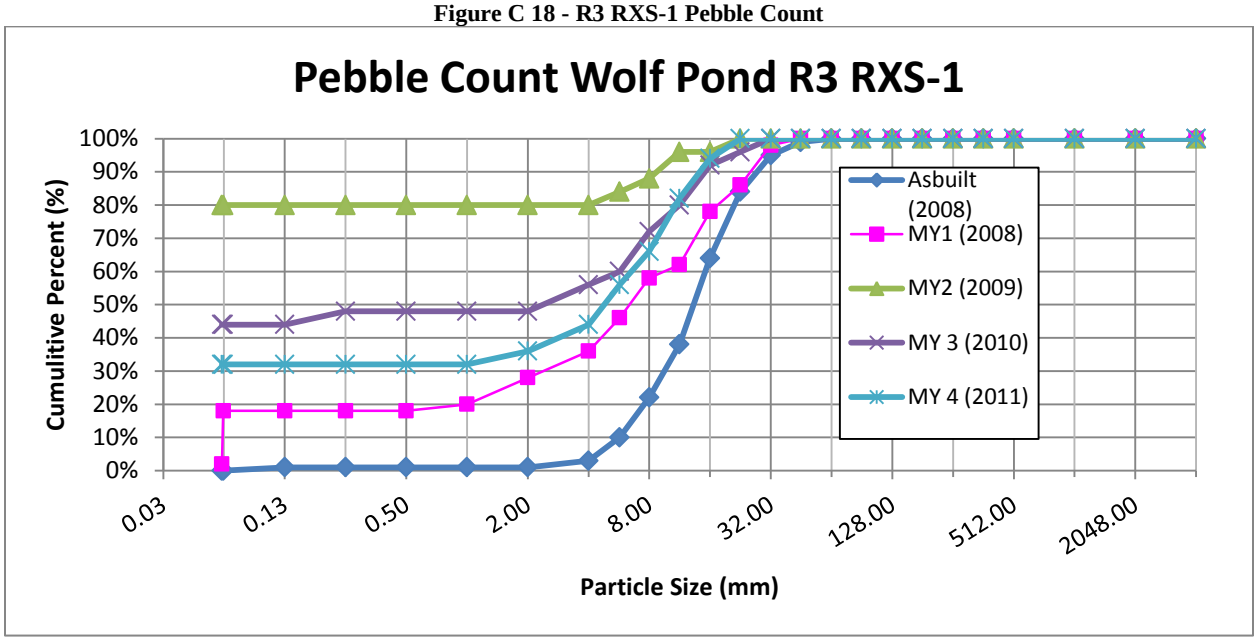
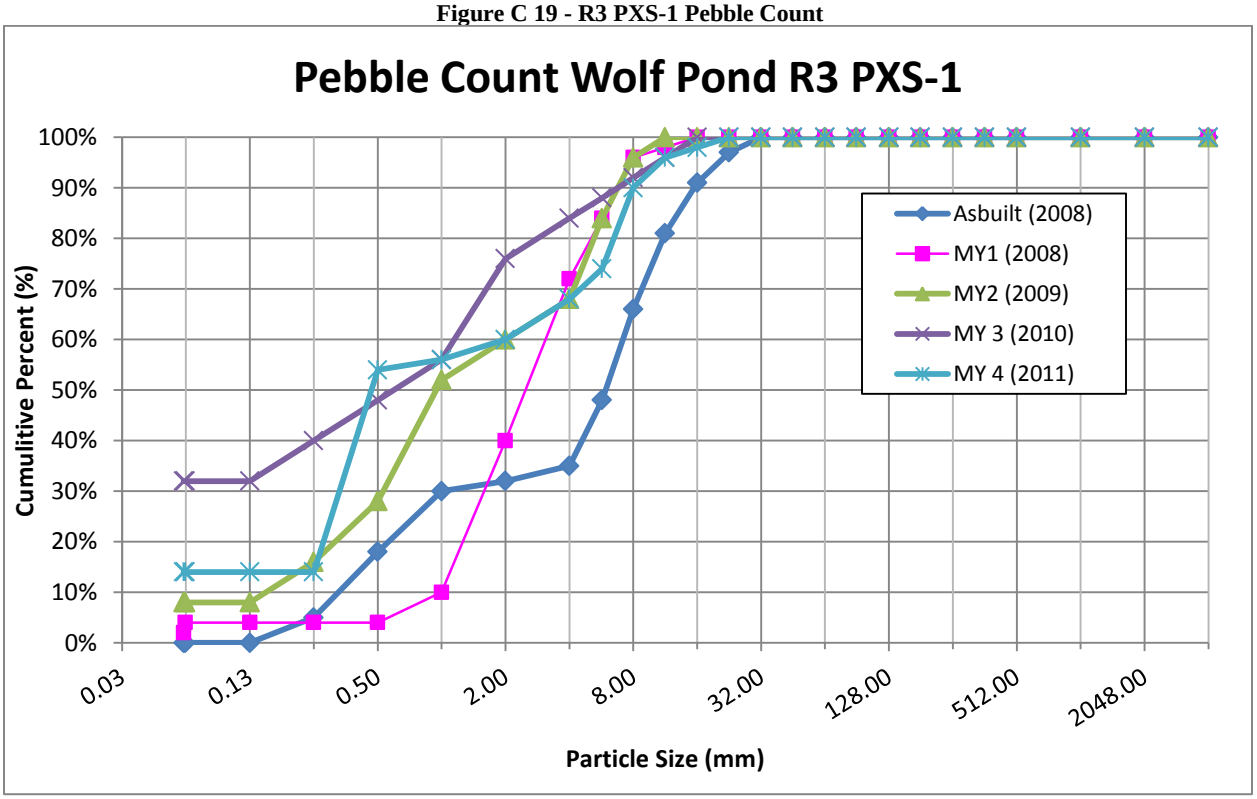



**Figure C 19 - R3 PXS-1 Pebble Count**



# Appendix D – Site Photos

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## List of Photos

## Photo Points

**Photo Point 1**

**Photo Point 2**

**Photo Point 3**

**Photo Point 4**

**Photo Point 5**

**Photo Point 6**

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**Photo Point 9**

**Photo Point 10**

**Photo Point 11**

**Photo Point 12**

**Photo Point 13**

**Photo Point 14**

**Photo Point 15**

**Photo Point 16**

**Photo Point 17**

**Photo Point 18**

**Photo Point 19**

**Photo Point 20**

**Photo Point 21**

**Photo Point 22**

**Photo Point 23**

**Photo Point 24**

**Photo Point 25**

**Photo Point 26**

**Photo Point 27**

**Photo Point 28**

**Photo Point 29**

**Photo Point 30**

**Photo Point 31**

**Photo Point 32**

**Photo Point 33**

## Problem Area Photos

**Problem Area MY4 PA-1**

**Problem Area MY4 PA-2**

**Problem Area MY4 PA-3**

**Problem Area MY4 PA-4**

**Problem Area MY4 PA-5**

**Problem Area MY4 PA-6**

**Typical Problem Area from MY3 before and after**

## Vegetation Photos

**Photo D 1 - Vegetation Plot WP1**

**Photo D 2 - Vegetation Plot WP2**

**Photo D 3 - Vegetation Plot WP3**


**Photo D 4 - Vegetation Plot WP4**


**Photo D 5 - Vegetation Plot WP5**

# Appendix E – Vegetation Data

## Table of Contents

## Table E 1 – MY4 (2011) Plot WP1 Data

| | | | | Spring Data | | | | Fall Data | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No | Species | Coordinates | | ddh | Height | DBH | Vigor | ddh | Height | DBH | Vigor | |
| | | X (m) | Y (m) | (mm) | (cm) | (cm) | | (mm) | (cm) | (cm) | | |
| 1 | FP | 0.29 | 9.59 | | 307 | 30 | 4 | | 307 | 35 | 4 | |
| 2 | FP | 0.35 | 2.49 | | 159 | 4 | 4 | 16 | 178 | 6 | 4 | |
| 3 | FP | 0.39 | 0.28 | | 230 | 10 | 4 | | 253 | 12 | 4 | |
| 4 | AT | 0.62 | 4.51 | 2 | 24 | | 4 | | 5 | | 2 | Browsed |
| 5 | FP | 1.57 | 6.73 | | 156 | 20 | 4 | | 299 | 26 | 4 | |
| 6 | FP | 2.67 | 9.00 | | 267 | 23 | 3 | | 338 | 31 | 4 | |
| 7 | CO | 2.93 | 1.19 | | | | | | | | | |
| 8 | Q | 3.32 | 3.46 | | | | | | | | | |
| 9 | QP | 3.90 | 5.33 | | | | | | | | | |
| 10 | BN | 4.70 | 7.21 | | 442 | 33 | 4 | | 531 | 43 | 4 | |
| 11 | BN | 5.59 | 2.50 | | 322 | 21 | 4 | | 397 | 29 | 4 | |
| 12 | QN | 5.61 | 9.14 | | | | | | | | | |
| 13 | BN | 6.13 | 5.04 | | 265 | 13 | 4 | | 358 | 23 | 4 | |
| 14 | BN | 6.97 | 7.60 | | | | | | | | | |
| 15 | QP | 8.26 | 2.43 | | | | | | | | | |
| 16 | QP | 8.53 | 5.05 | 6 | 114 | | 4 | 9 | 155 | 2 | 4 | Base gnawed |
| 17 | QP | 9.81 | 7.56 | | 202 | 5 | 3 | 18 | 206 | 5 | 3 | |

## Table E 2 – MY4 (2011) Plot WP2 Data

| | | | | Spring Data | | | | Fall Data | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No | Species | Coordinates | | ddh | Height | DBH | Vigor | ddh | Height | DBH | Vigor | |
| | | X (m) | Y (m) | (mm) | (cm) | (cm) | | (mm) | (cm) | (cm) | | |
| 1 | AT | 0.22 | 5.02 | | | | | | | | | |
| 2 | CO | 0.26 | 7.97 | 3 | 17 | | 4 | 3 | 17 | | 4 | |
| 3 | CO | 0.35 | 0.41 | | | | | | | | | |
| 4 | FP | 1.97 | 2.76 | | 225 | 10 | 4 | 26 | 237 | 12 | 4 | |
| 5 | QM | 2.48 | 5.21 | 12 | 96 | | 4 | 15 | 96 | | 4 | |
| 6 | CO | 3.01 | 0.37 | 6 | 24 | | 4 | 6 | 24 | | 4 | |
| 7 | QM | 3.25 | 8.07 | | | | | | | | | |
| 8 | FP | 4.44 | 2.83 | | 185 | 7 | 4 | 25 | 185 | 9 | 4 | |
| 9 | QM | 5.03 | 5.14 | | | | | | | | | |
| 10 | QN | 5.55 | 0.56 | | | | | | | | | |
| 11 | QP | 6.18 | 8.00 | 3 | 47 | | 4 | 5 | 47 | | 4 | |
| 12 | QM | 7.01 | 2.96 | | 150 | 3 | 4 | 25 | 158 | 4 | 4 | |
| 13 | QM | 7.73 | 5.52 | 8 | 49 | | 4 | 8 | 54 | | 4 | |
| 14 | QN | 8.20 | 0.84 | | 268 | 9 | 4 | | 315 | 12 | 4 | |
| 15 | AT | 8.99 | 8.06 | 2 | 25 | | 4 | | | | | |
| 16 | QN | 9.58 | 2.13 | | | | | | | | | |

## Table E 3 – MY4 (2011) Plot WP3 Data

| | | | | Spring Data | | | | Fall Data | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No | Species | Coordinates | | ddh | Height | DBH | Vigor | ddh | Height | DBH | Vigor | |
| | | X (m) | Y (m) | (mm) | (cm) | (cm) | | (mm) | (cm) | (cm) | | |
| 1 | FP | 0.15 | 7.12 | | 228 | 9 | 4 | 22 | 240 | 10 | 4 | Trunk gnawed |
| 2 | AT | 0.29 | 1.45 | | | | | | | | | |
| 3 | QM | 0.30 | 9.80 | 9 | 96 | | 4 | 10 | 96 | | 4 | |
| 4 | QP | 0.37 | 4.29 | 5 | 56 | | 4 | 5 | 63 | | 4 | |
| 5 | FP | 2.31 | 7.16 | | 274 | 13 | 4 | | 288 | 16 | 4 | |
| 6 | CO | 2.86 | 9.91 | 10 | 58 | | 4 | 10 | 60 | | 4 | |
| 7 | BN | 2.87 | 1.65 | 11 | 108 | | 3 | 11 | 38 | | 2 | Browsed |
| 8 | QM | 3.13 | 4.21 | 10 | 120 | | 4 | 11 | 180 | 3 | 4 | |
| 9 | AT | 4.58 | 7.21 | | | | | | | | | |
| 10 | BN | 5.29 | 1.81 | | 246 | 8 | 4 | | 277 | 9 | 4 | |
| 11 | CO | 5.65 | 9.85 | | | | | | | | | |
| 12 | QN | 5.82 | 4.47 | 6 | 81 | | 4 | 7 | 81 | | 4 | Trunk gnawed |
| 13 | CO | 6.65 | 7.28 | 5 | 15 | | 4 | | | | | |
| 14 | BN | 7.46 | 1.68 | | 236 | 9 | 4 | | 269 | 9 | 4 | |
| 15 | QP | 8.48 | 4.42 | 4 | 67 | | 4 | 6 | 94 | | 4 | Trunk gnawed |
| 16 | QM | 8.62 | 9.86 | | 144 | 5 | 4 | 21 | 161 | 7 | 4 | |
| 17 | QN | 8.82 | 7.25 | | 212 | 6 | 4 | 18 | 245 | 8 | 4 | |
| 18 | BN | 9.90 | 1.68 | | 199 | 5 | 3 | 16 | 212 | 5 | 3 | |

## Table E 4 – MY4 (2011) Plot WP4 Data

| | | | | Spring Data | | | | Fall Data | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No | Species | Coordinates | | ddh | Height | DBH | Vigor | ddh | Height | DBH | Vigor | |
| | | X (m) | Y (m) | (mm) | (cm) | (cm) | | (mm) | (cm) | (cm) | | |
| 1 | CO | 0.87 | 0.22 | | | | | | | | | |
| 2 | QM | 0.95 | 9.83 | | 177 | 8 | 4 | 22 | 218 | 12 | 4 | |
| 3 | QN | 1.01 | 7.32 | | | | | | | | | |
| 4 | FP | 1.03 | 4.62 | | 251 | 12 | 4 | | 267 | 18 | 4 | |
| 5 | Q | 1.23 | 2.40 | | | | | | | | | |
| 6 | Q | 3.06 | 9.49 | | | | | | | | | |
| 7 | Q | 3.17 | 0.34 | | | | | | | | | |
| 8 | QM | 3.20 | 6.91 | | 267 | 15 | 4 | | 321 | 23 | 4 | |
| 9 | QP | 3.32 | 2.56 | | 193 | 6 | 4 | | 270 | 12 | 4 | |
| 10 | QM | 3.36 | 4.72 | | 255 | 12 | 4 | | 292 | 18 | 4 | |
| 11 | BN | 5.59 | 5.70 | | 257 | 13 | 4 | | 344 | 20 | 4 | |
| 12 | BN | 5.66 | 9.70 | | 177 | 5 | 4 | | 269 | 15 | 4 | |
| 13 | BN | 5.70 | 7.65 | | 282 | 17 | 4 | | 352 | 25 | 4 | |
| 14 | BN | 6.00 | 3.63 | | 302 | 23 | 4 | | 395 | 34 | 4 | |
| 15 | BN | 6.01 | 1.54 | | 312 | 16 | 4 | | 388 | 24 | 4 | |
| 16 | FP | 8.30 | 8.38 | | 262 | 16 | 4 | | 280 | 21 | 4 | |
| 17 | AT | 8.86 | 3.86 | | | | | | | | | |
| 18 | QN | 8.90 | 1.65 | | | | | | | | | |
| 19 | QP | 9.00 | 6.04 | | 157 | 2 | 4 | 19 | 248 | 12 | 4 | |

**Table E 5 – MY4 (2011) Plot WP5 Data**

| | | | | Spring Data | | | | Fall Data | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No | Species | Coordinates | | ddh | Height | DBH | Vigor | ddh | Height | DBH | Vigor | |
| | | X (m) | Y (m) | (mm) | (cm) | (cm) | | (mm) | (cm) | (cm) | | |
| 1 | AT | 0.32 | 7.22 | 1 | 13 | | 4 | 2 | 17 | | 4 | |
| 2 | AT | 1.38 | 2.12 | 7 | 76 | | 4 | 9 | 77 | | 4 | |
| 3 | AT | 1.40 | 4.89 | | | | | | | | | |
| 4 | FP | 2.49 | 9.88 | | 309 | 23 | 4 | | 355 | 32 | 4 | |
| 5 | QP | 3.65 | 7.74 | | | | | | | | | |
| 6 | QP | 4.35 | 5.29 | | 246 | 10 | 4 | | 295 | 16 | 4 | |
| 7 | FP | 4.47 | 2.61 | | 279 | 18 | 4 | | 328 | 27 | 4 | |
| 8 | CO | 5.60 | 9.50 | 6 | 48 | | 4 | 6 | 22 | | 2 | Browsed |
| 9 | CO | 6.67 | 7.21 | | | | | | | | | |
| 10 | Q | 6.95 | 2.18 | | | | | | | | | |
| 11 | CO | 7.18 | 4.73 | 4 | 21 | | 4 | 4 | 14 | | 2 | Browsed |
| 12 | BN | 8.91 | 8.37 | | | | | | | | | |
| 13 | BN | 9.57 | 0.48 | | 312 | 20 | 4 | | 369 | 25 | 4 | |
| 14 | BN | 9.88 | 3.00 | | 283 | 14 | 4 | | 329 | 16 | 4 | |
| 15 | BN | 9.95 | 5.40 | | 340 | 19 | 4 | | 352 | 21 | 4 | |

# Appendix F – Rainfall Data

## EBX Wolf Pond MY 4 2011 Rainfall Daily Summary

| Date | Rainfall (in.) |
|---|---|
| 9/26/2010 | 0.85 |
| 9/27/2010 | 0.51 |
| 9/29/2010 | 1.34 |
| 9/30/2010 | 0.29 |
| 10/14/2010 | 0.03 |
| 10/20/2010 | 0.09 |
| 10/22/2010 | 0.01 |
| 10/25/2010 | 0.09 |
| 10/30/2010 | 0.04 |
| 11/4/2010 | 0.24 |
| 11/16/2010 | 0.28 |
| 11/17/2010 | 0.36 |
| 11/23/2010 | 0.1 |
| 11/25/2010 | 0.02 |
| 11/26/2010 | 0.16 |
| 11/30/2010 | 0.17 |
| 12/1/2010 | 0.26 |
| 12/2/2010 | 0.15 |
| 12/11/2010 | 0.06 |
| 12/12/2010 | 0.39 |
| 12/16/2010 | 0.05 |
| 12/18/2010 | 0.24 |
| 12/25/2010 | 0.11 |
| 12/26/2010 | 0.06 |
| 12/27/2010 | 0.15 |
| 1/1/2011 | 0.26 |
| 1/2/2011 | 0.05 |
| 1/5/2011 | 0.03 |
| 1/6/2011 | 0.02 |
| 1/11/2011 | 0.1 |
| 1/12/2011 | 0.15 |
| 1/13/2011 | 0.09 |
| 1/14/2011 | 0.06 |
| 1/16/2011 | 0.01 |
| 1/17/2011 | 0.24 |
| 1/18/2011 | 0.02 |
| 1/25/2011 | 0.02 |
| 1/26/2011 | 0.08 |
| 2/1/2011 | 0.09 |
| 2/2/2011 | 0.34 |
| 2/3/2011 | 0.04 |
| 2/4/2011 | 1.13 |
| 2/5/2011 | 0.44 |
| 2/7/2011 | 0.04 |
| 2/10/2011 | 0.1 |
| 2/25/2011 | 0.06 |
| 2/28/2011 | 1.45 |
| 3/5/2011 | 0.02 |
| 3/6/2011 | 0.83 |
| 3/9/2011 | 0.89 |
| 3/10/2011 | 0.16 |
| 3/15/2011 | 0.08 |
| 3/16/2011 | 0.03 |
| 3/24/2011 | 0.05 |
| 3/26/2011 | 1.04 |
| 3/27/2011 | 0.36 |
| 3/28/2011 | 0.19 |
| 3/30/2011 | 0.82 |
| 3/31/2011 | 0.1 |
| 4/5/2011 | 0.85 |
| 4/9/2011 | 1.14 |
| 4/12/2011 | 0.01 |
| 4/16/2011 | 0.3 |
| 4/22/2011 | 0.18 |
| 4/23/2011 | 0.01 |
| 4/26/2011 | 0.01 |
| 4/28/2011 | 0.29 |
| 5/3/2011 | 0.2 |
| 5/4/2011 | 1.1 |
| 5/6/2011 | 0.14 |
| 5/11/2011 | 0.83 |
| 5/12/2011 | 0.04 |
| 5/13/2011 | 0.24 |
| 5/14/2011 | 0.65 |
| 5/15/2011 | 0.01 |
| 5/16/2011 | 0.08 |
| 5/17/2011 | 0.35 |
| 5/20/2011 | 0.02 |
| 5/27/2011 | 1.91 |
| 5/28/2011 | 0.01 |
| 6/5/2011 | 0.04 |
| 6/9/2011 | 0.57 |
| 6/10/2011 | 1.21 |
| 6/11/2011 | 0.54 |
| 6/12/2011 | 0.42 |
| 6/15/2011 | 0.09 |
| 6/16/2011 | 0.01 |
| 6/18/2011 | 0.06 |
| 6/21/2011 | 0.3 |
| 6/22/2011 | 0.27 |
| 6/27/2011 | 0.01 |
| 6/28/2011 | 0.86 |
| 7/4/2011 | 0.12 |
| 7/7/2011 | 0.23 |
| 7/8/2011 | 0.03 |
| 7/9/2011 | 0.12 |
| 7/12/2011 | 0.1 |
| 7/13/2011 | 1.87 |
| 7/15/2011 | 0.08 |
| 7/24/2011 | 1.14 |
| 7/25/2011 | 0.16 |
| 7/26/2011 | 0.59 |
| 7/31/2011 | 1.3 |
| 8/1/2011 | 0.01 |
| 8/5/2011 | 0.98 |
| 8/6/2011 | 0.06 |
| 8/7/2011 | 0.01 |
| 8/8/2011 | 0.2 |
| 8/9/2011 | 0.08 |
| 8/10/2011 | 0.05 |
| 8/11/2011 | 0.32 |
| 8/12/2011 | 0.06 |
| 8/15/2011 | 0.01 |
| 8/21/2011 | 0.21 |
| 8/22/2011 | 0.39 |
| 8/29/2011 | 0.52 |
| 9/2/2011 | 0.09 |
| 9/3/2011 | 0.03 |
| 9/5/2011 | 0.03 |
| 9/6/2011 | 0.04 |
| 9/7/2011 | 0.01 |
| 9/9/2011 | 0.01 |
| 9/21/2011 | 0.07 |
| 9/22/2011 | 0.05 |
| 9/23/2011 | 0.02 |
| 9/24/2011 | 0.12 |
| 9/25/2011 | 0.42 |
| 9/26/2011 | 0.01 |
| 9/27/2011 | 0.42 |
| 9/28/2011 | 0.77 |
| | |

# Appendix G – Morphology Tables

## Table G-1 – MY4 (2011) Wolfpond Reach 1 Morphology and Hydraulic Monitoring Summary

| **Parameter** | R1 RXS-1 Riffle | | | | | | R1 PXS-1 Pool | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dimension** | MY0 | MY1 | MY2 | MY3 | MY4 | MY5 | MY0 | MY1 | MY2 | MY3 | MY4 | MY5 |
| BF Width (ft) | 23.7 | 22.0 | 26.4 | 21.2 | 19.8 | - | 33.0 | 35.1 | 43.8 | 37.9 | 30.2 | - |
| Floodprone Width (ft) | 97 | 97 | 97 | 97 | 97 | - | - | - | - | - | - | - |
| BF Cross Sectional Area ($ft^2$) | 20.4 | 24.2 | 24.7 | 22.7 | 22.9 | - | 40.0 | 48.6 | 52.2 | 46.7 | 42.4 | - |
| BF Mean Depth (ft) | 0.86 | 1.10 | 0.94 | 1.07 | 1.16 | - | 1.21 | 1.3831 | 1.19 | 1.23 | 1.41 | - |
| BF Max Depth (ft) | 2.24 | 2.83 | 2.84 | 2.86 | 2.31 | - | 3.06 | 3.39 | 3.52 | 3.44 | 3.35 | - |
| Width/Depth Ratio | 27.50 | 19.95 | 28.15 | 19.80 | 17.00 | - | - | - | - | - | - | - |
| Entrenchment Ratio | 4.09 | 4.42 | 3.68 | 4.6 | 4.91 | - | - | - | - | - | - | - |
| Bank Height Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | - | - | - | - | - | - | - |
| **Substrate** | | | | | | | | | | | | |
| d50 (mm) | 8.88 | 0.88 | 0.06 | 0.06 | 0.06 | - | 6.21 | 4.00 | 0.06 | 0.06 | 0.06 | - |
| d84 (mm) | 18.75 | 8.00 | 0.06 | 0.06 | 4.68 | - | 14.21 | 11.30 | 0.06 | 6.47 | 0.06 | - |

| **Parameter** | MY0 (2008) | | | MY1 (2008) | | | MY2 (2009) | | | MY3 (2010) | | | MY4 (2011) | | | MY5 (2012) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Pattern** | Min | Max | Med | Min | Max | Med | Min | Max | Med | Min | Max | Med | Min | Max | Med | Min | Max | Med |
| Channel Beltwidth (ft) | 56.02 | 94.54 | 79.61 | 55 | 98 | 81 | 50.72 | 90.9 | 74.52 | 47.3 | 84.14 | 70.8 | 52.81 | 89.26 | 76.59 | - | - | - |
| Radius of Curvature (ft) | 36.57 | 66.6 | 39.06 | 35 | 70 | 40 | 37.1 | 69.36 | 39.89 | 31.77 | 63.92 | 37.4 | 34.37 | 66.45 | 38.23 | - | - | - |
| Meander Wavelength (ft) | 160.5 | 233.4 | 179.37 | 158 | 230 | 177 | 167.1 | 221.05 | 180.6 | 171.3 | 234.11 | 189 | 169.5 | 231.1 | 185.66 | - | - | - |
| Meander Width ratio | 2.36 | 3.99 | 3.36 | 2.5 | 4.45 | 3.68 | 1.924 | 3.45 | 2.83 | 2.23 | 3.97 | 3.34 | 2.67 | 4.52 | 3.878 | - | - | - |
| **Profile** | | | | | | | | | | | | | | | | | | |
| Riffle length (ft) | 21.96 | 62.85 | 40.81 | 20.83 | 52.6 | 38.8 | 14.42 | 78.37 | 43.64 | 17.58 | 84.1 | 42.6 | 4.437 | 33.25 | 6.82 | - | - | - |
| Riffle slope (ft/ft) | 0.0093 | 0.0401 | 0.0134 | 0.006 | 0.04 | 0.01 | 0.011 | 0.020 | 0.011 | 0.014 | 0.028 | 0.015 | 0.009 | 0.051 | 0.029 | - | - | - |
| Pool length (ft) | 49.25 | 84.26 | 73.26 | 59.28 | 82.7 | 72.6 | 34.32 | 139.45 | 47.07 | 40.22 | 90.25 | 51.8 | 29.09 | 148.5 | 47.89 | - | - | - |
| Pool spacing (ft) | 94.75 | 136.1 | 113.19 | 92 | 145 | 119 | 91.17 | 124.71 | 105.41 | 90.34 | 133.67 | 99.9 | 26.31 | 232.98 | 129.57 | - | - | - |
| Additional Reach Parameters | | | | | | | | | | | | | | | | | | |
| Valley Length (ft) | 835 | | | | | | | | | | | | | | | | | |
| Channel Length (ft) | 1056 | | | 1056 | | | 1056 | | | 1056 | | | 1056 | | | - | | |
| Sinuosity | 1.26 | | | 1.26 | | | 1.26 | | | 1.26 | | | 1.26 | | | - | | |
| Water Surface Slope (ft/ft) | 0.0062 | | | 0.0058 | | | 0.0058 | | | N/A | | | N/A | | | - | | |
| BF slope (ft/ft) | 0.0068 | | | 0.0059 | | | 0.0059 | | | 0.0056 | | | 0.0061 | | | - | | |
| Rosgen Classification | C4 | | | C4 | | | C4 | | | C4 | | | C4 | | | - | | |
| Habitat Index* | N/A | | | N/A | | | N/A | | | N/A | | | N/A | | | N/A | | |
| Macrobenthos* | N/A | | | N/A | | | N/A | | | N/A | | | N/A | | | N/A | | |

**Table G-2 – MY4 (2011) Wolfpond Reach 2 Morphology and Hydraulic Monitoring Summary**

| Parameter | | Wolf Pond R2 RXS-1 | | | | | Wolf Pond R2 PXS-1 | | | | | | Wolf Pond R2 RXS-2 | | | | | | Wolf Pond R2 PXS-2 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Riffle | | | | | Pool | | | | | | Riffle | | | | | | Pool | | | | | |
| **Dimension** | M | MY1 | MY2 | MY3 | MY4 | MY5 | MY0 | MY1 | MY2 | MY3 | MY4 | MY5 | MY0 | MY1 | MY2 | MY3 | MY4 | MY5 | MY0 | MY1 | MY2 | MY3 | MY4 | MY5 |
| BF Width (ft) | 2 | 22.8 | 26.5 | 25.8 | 24.3 | - | 25.2 | 28.5 | 27.9 | 21.7 | 20.4 | - | 30.6 | 30.4 | 30.8 | 26.6 | 28.9 | - | 21.6 | 21.3 | 17.3 | 18.5 | 11.3 | - |
| Floodprone Width | 9 | 94 | 94 | 94 | 94 | - | - | - | - | - | - | - | 203 | 203 | 203 | 203 | 203 | - | - | - | - | - | - | - |
| BF Cross Sectional | 2 | 22.4 | 20.6 | 21.0 | 27.1 | - | 21.9 | 27.7 | 32.4 | 29.6 | 30.7 | - | 42.5 | 41.4 | 41.7 | 40.8 | 39.4 | - | 11.4 | 12.2 | 11.8 | 8.3 | 6.7 | - |
| BF Mean Depth (ft) | 0 | 0.99 | 0.78 | 0.81 | 0.9 | - | 0.87 | 0.97 | 1.16 | 1.36 | 1.5 | - | 1.39 | 1.36 | 1.35 | 1.53 | 1.36 | - | 0.53 | 0.57 | 0.68 | 0.45 | 0.59 | - |
| BF Max Depth (ft) | 2 | 2.09 | 2.07 | 2.07 | 2.17 | - | 2.35 | 2.84 | 2.86 | 2.65 | 2.8 | - | 2.93 | 3.06 | 2.86 | 2.81 | 2.85 | - | 1.51 | 1.56 | 1.46 | 0.99 | 0.98 | - |
| Width/Depth Ratio | 2 | 23.10 | 34.01 | 31.70 | 27.10 | - | - | - | - | - | - | - | 22.07 | 22.36 | 22.71 | 17.30 | 21.30 | - | - | - | - | - | - | - |
| Entrenchment Ratio | 3 | 4.13 | 3.55 | 3.65 | 3.88 | - | - | - | - | - | - | - | 6.63 | 6.68 | 6.6 | 7.63 | 7.02 | - | - | - | - | - | - | - |
| Bank Height Ratio | 1 | 1.00 | 1.00 | 1.00 | 1.00 | - | - | - | - | - | - | - | 1.00 | 1.02 | 1.02 | 1.00 | 1.00 | - | - | - | - | - | - | - |
| **Substrate** | | | | | | | | | | | | | | | | | | | | | | | | |
| d50 (mm) | 1 | 13.49 | 13.65 | 0.06 | 14.4 | - | 0.15 | 0.06 | 0.06 | 0.06 | 0.06 | - | 14.53 | 2.00 | 10.97 | 0.06 | 0.06 | - | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | - |
| d84 (mm) | 3 | 21.40 | 32.00 | 27.3 | 30.1 | - | 0.40 | 8.00 | 13.65 | 0.06 | 11.3 | - | 27.85 | 11.30 | 22.60 | 13.65 | 32 | - | 4.85 | 0.06 | 0.06 | 0.06 | 0.06 | - |

| Parameter | | MY0 (2008) | | MY1 (2008) | | | MY2 (2009) | | | MY3 (2010) | | | MY4 (2011) | | | MY5 (2012) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Pattern** | M | Max | Med | Min | Max | Med | Min | Max | Med | Min | Max | Med | Min | Max | Med | Min | Max | Med |
| Channel Beltwidth | 2 | 50.55 | 39.92 | 23 | 48 | 40 | 28.36 | 57.94 | 40.44 | 26.45 | 53.63 | 38.4 | 28.16 | 58.74 | 37.6 | - | - | - |
| Radius of Curvature | 1 | 38.46 | 25.26 | 18 | 40 | 28 | 19.41 | 39.89 | 25.26 | 13.62 | 33.76 | 20.7 | 19.97 | 38.73 | 26.3 | - | - | - |
| Meander Wavelength | 8 | 147.9 | 104.23 | 85 | 140 | 100 | 85.4 | 123.5 | 99.83 | 81.52 | 130.8 | 104.7 | 89.68 | 144.22 | 86.3 | - | - | - |
| Meander Width ratio | 0 | 1.85 | 1.46 | 1.01 | 2.11 | 1.75 | 0.991 | 2.025 | 1.413 | 1.009 | 2.047 | 1.466 | 1.06 | 2.21 | 1.41 | - | - | - |
| **Profile** | | | | | | | | | | | | | | | | | | |
| Riffle length (ft) | 1 | 54.61 | 32.17 | 15 | 60 | 35 | 9.1 | 79.53 | 27.67 | 11.09 | 85.34 | 26.98 | 7.83 | 86.03 | 18.2 | - | - | - |
| Riffle slope (ft/ft) | 0 | 0.0502 | 0.0114 | 0 | 0.05 | 0.01 | 0.001 | 0.028 | 0.006 | 0.001 | 0.039 | 0.008 | 0.004 | 0.0521 | 0.02 | - | - | - |
| Pool length (ft) | 9 | 59.93 | 23.94 | 15 | 60 | 36 | 7.25 | 79.53 | 25.89 | 8.496 | 51.47 | 28.5 | 10.47 | 99.81 | 24.5 | - | - | - |
| Pool spacing (ft) | 2 | 94.77 | 58.87 | 30 | 105 | 66 | 34.99 | 105.1 | 54.33 | 34.67 | 112.6 | 51.47 | 107.7 | 420.36 | 162 | - | - | - |
| **Additional Reach Parameters** | | | | | | | | | | | | | | | | | | |
| Valley Length (ft) | | 1332 | | | | | | | | | | | | | | | | |
| Channel Length (ft) | | 1590 | | 1590 | | | 1590 | | | 1590 | | | 1590 | | | - | | |
| Sinuosity | | 1.19 | | 1.19 | | | 1.19 | | | 1.19 | | | 1.18 | | | - | | |
| Water Surface Slope | | 0.0099 | | 0.0089 | | | 0.0089 | | | N/A | | | N/A | | | - | | |
| Water Surface Slope | | 0.0041 | | 0.0039 | | | 0.0039 | | | N/A | | | N/A | | | - | | |
| BF slope 1 (ft/ft) | | 0.0103 | | 0.01 | | | 0.01 | | | 0.01 | | | 0.01 | | | - | | |
| BF slope 2 (ft/ft) | | 0.0043 | | 0.004 | | | 0.004 | | | 0.004 | | | 0.004 | | | - | | |
| Rosgen Classification | | C4 | | C4 | | | C4 | | | C4 | | | C4 | | | - | | |
| Habitat Index* | | N/A | | N/A | | | N/A | | | N/A | | | N/A | | | N/A | | |
| Macrobenthos* | | N/A | | N/A | | | N/A | | | N/A | | | N/A | | | N/A | | |

**Table G-3 – MY4 (2011) Wolfpond Reach 3 Morphology and Hydraulic Monitoring Summary**

| **Parameter** | Wolfpond R3 RXS-1 | | | | | | Wolfpond R3 PXS-1 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Riffle | | | | | | Pool | | | | | |
| **Dimension** | MY0 | MY1 | MY2 | MY3 | MY4 | MY5 | MY0 | MY1 | MY2 | MY3 | MY4 | MY5 |
| BF Width (ft) | 20.1 | 21.2 | 25.2 | 16.8 | 12.2 | - | 35.8 | 34.4 | 37.1 | 30.9 | 33.2 | - |
| Floodprone | 121 | 121 | 121 | 121 | 121 | - | - | - | - | - | - | - |
| BF Cross | 10.4 | 10.3 | 9.7 | 11.2 | 10.4 | - | 31.6 | 32.1 | 31.4 | 27.9 | 31.0 | - |
| BF Mean | 0.52 | 0.49 | 0.39 | 0.67 | 0.85 | - | 0.88 | 0.93 | 0.85 | 0.9 | 0.93 | - |
| BF Max Depth | 1.6 | 1.86 | 1.94 | 1.98 | 2.07 | - | 2.6 | 2.62 | 2.3 | 2.25 | 2.5 | - |
| Width/Depth | 39.10 | 43.35 | 65.17 | 25.30 | 14.40 | - | - | - | - | - | - | - |
| Entrenchment | 6.01 | 5.72 | 4.80 | 7.19 | 9.87 | - | - | - | - | - | - | - |
| Bank Height | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | - | - | - | - | - | - | - |
| **Substrate** | | | | | | | | | | | | |
| d50 (mm) | 13.47 | 6.47 | 0.06 | 2.5 | 4.85 | - | 5.96 | 2.63 | 0.96 | 0.63 | 0.048 | - |
| d84 (mm) | 22.60 | 20.95 | 5.70 | 12.8 | 12.1 | - | 12.71 | 5.70 | 5.70 | 4 | 7.14 | - |

| **Parameter** | MY0 (2008) | | | MY1 (2008) | | | MY2 (2009) | | | MY3 (2010) | | | MY4 (2011) | | | MY5 (2012) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Pattern** | Min | Max | Med | Min | Max | Med | Min | Max | Med | Min | Max | Med | Min | Max | Med | Min | Max | Med |
| Channel | 49.12 | 97.21 | 69.46 | 47 | 100 | 72 | 43.3 | 87.52 | 61.08 | 42.7 | 98.44 | 70.34 | 46.62 | 103 | 66.78 | - | - | - |
| Radius of | 22.52 | 41.45 | 31.91 | 25 | 44 | 33 | 28.4 | 59.06 | 35.96 | 24.53 | 38.85 | 32.73 | 29.14 | 48.53 | 34.7 | - | - | - |
| Meander | 129.6 | 203.7 | 158.46 | 135 | 206 | 165 | 128 | 178 | 159 | 121.6 | 170.2 | 158.8 | 129.6 | 186.1 | 167.3 | - | - | - |
| Meander | 2.44 | 4.83 | 3.45 | 2.13 | 4.72 | 3.40 | 1.72 | 3.473 | 2.424 | 2.542 | 5.86 | 4.19 | 3.81 | 8.42 | 5.46 | - | - | - |
| **Profile** | | | | | | | | | | | | | | | | | | |
| Riffle length | 21.73 | 65.62 | 44.5 | 25 | 60 | 42 | 3.05 | 65.66 | 20.83 | 5.73 | 59.47 | 31.33 | 9.51 | 32.61 | 13.73 | - | - | - |
| Riffle slope | 0.0006 | 0.0309 | 0.0107 | 0.01 | 0.03 | 0.011 | 0.001 | 0.068 | 0.018 | 0.0017 | 0.041 | 0.0214 | 0.0124 | 0.0378 | 0.0267 | - | - | - |
| Pool length (ft) | 30.54 | 74.55 | 42.32 | 32 | 78 | 45 | 21.3 | 97.79 | 58.68 | 28.42 | 72.98 | 40.84 | 20.00 | 97.62 | 49.84 | - | - | - |
| Pool spacing | 64.93 | 119.90 | 92.23 | 66 | 122 | 94 | 29.8 | 122.1 | 79.28 | 46.16 | 118 | 91.69 | 66.21 | 264 | 118.2 | - | - | - |
| **Additional Reach Parameters** | | | | | | | | | | | | | | | | | | |
| Valley Length | 1129 | | | | | | | | | | | | | | | | | |
| Channel | 1351 | | | 1351 | | | 1351 | | | 1351 | | | 1351 | | | - | | |
| Sinuosity | 1.20 | | | 1.2 | | | 1.2 | | | 1.2 | | | 1.2 | | | - | | |
| Water Surface | 0.0019 | | | 0.002 | | | 0.002 | | | 0.002 | | | 0.002 | | | - | | |
| Water Surface | 0.0068 | | | 0.007 | | | 0.007 | | | 0.007 | | | 0.007 | | | - | | |
| BF slope 1 | 0.0040 | | | 0.004 | | | 0.004 | | | 0.004 | | | 0.004 | | | - | | |
| BF slope 2 | 0.0063 | | | 0.006 | | | 0.006 | | | 0.006 | | | 0.006 | | | - | | |
| Rosgen | C4 | | | C4 | | | C4 | | | C4 | | | C4 | | | - | | |
| Habitat Index* | N/A | | | N/A | | | N/A | | | N/A | | | N/A | | | N/A | | |
| Macrobenthos* | N/A | | | N/A | | | N/A | | | N/A | | | N/A | | | N/A | | |