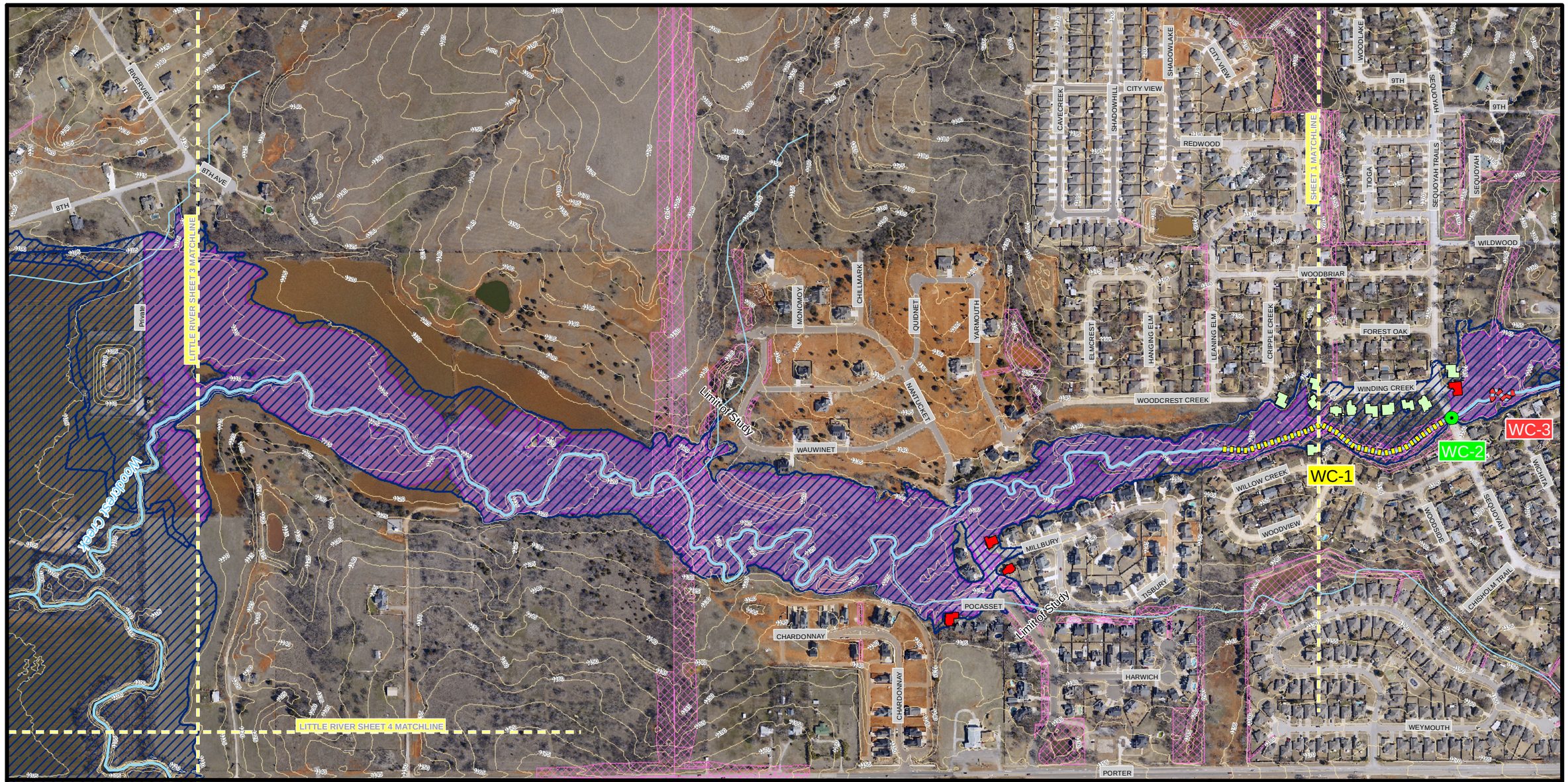


0 250 500 1,000 Feet

Aerial Photography: 2007
Coordinate System: Oklahoma State Plane, South Zone
Horizontal Datum: NAD 1983
Vertical Datum: NAVD 1988

Legend

City Boundary
Existing Drainage Easement

Stream Centerlines
Level 1 and 2 (Detailed)
Level 3 and 4 (General)

Floodplains
100-year Baseline
100-year Solution

Buildings in Floodplain
Buildings
100-year Solution

Recommended Solutions
Road Crossing Upgrade
Property Buyouts
Floodwall
Channel Stabilization
Channel Improvements
Storm Sewer Improvements
Storm Water Detention

Storm Water Master Plan

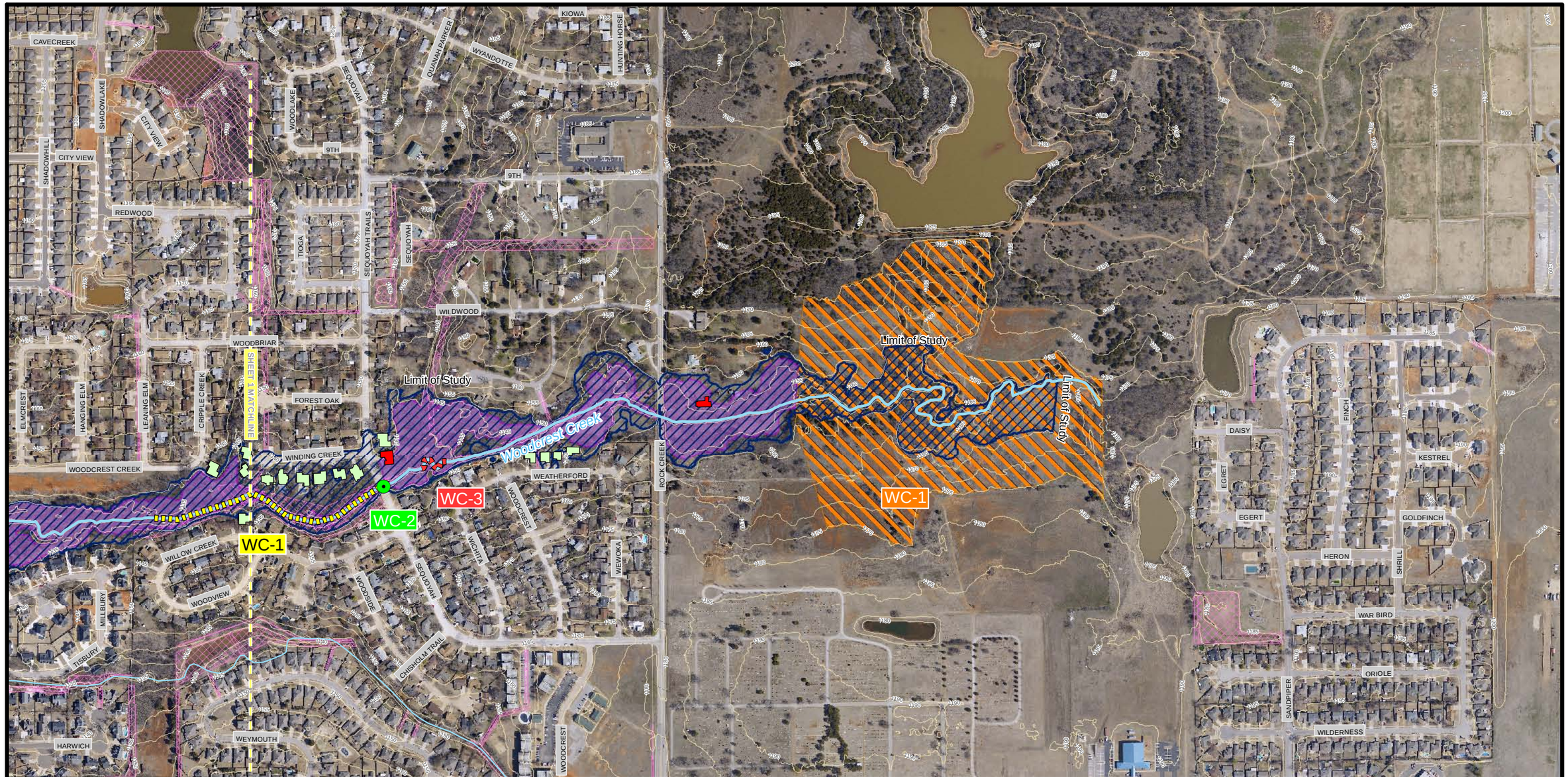
Exhibit 6-13

Baseline Floodplain and Recommended Solutions Overview Woodcrest Creek

Sheet 1 of 2

Job No.: 044194100	Date: 12-11-08	Scale: 1 inch = 500 Feet

File: W:/WR/proj/441941_Norman/Report/Figures/Woodcrest_2_x1.mxd



0 250 500 1,000 Feet

Aerial Photography: 2007
Coordinate System: Oklahoma State Plane, South Zone
Horizontal Datum: NAD 1983
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Legend

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100-year Baseline
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Storm Water Master Plan

Exhibit 6-13

Baseline Floodplain and Recommended Solutions Overview Woodcrest Creek

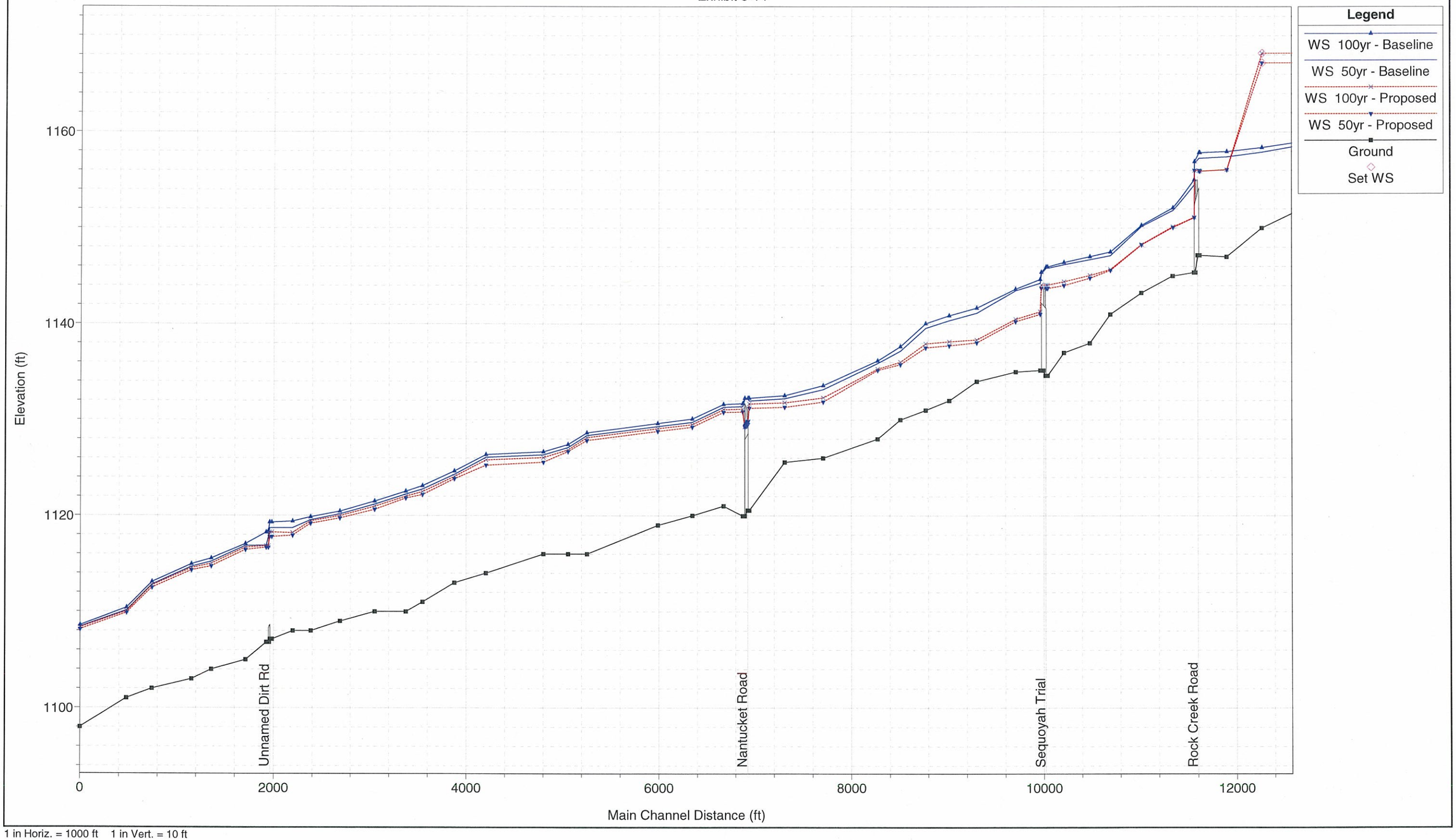
Sheet 2 of 2

Job No.: 044194100	Date: 12-11-08	Scale: 1 inch = 500 Feet

File: W:/WR/proj/441941_Norman/Report/Figures/Woodcrest_1_x2.mxd

Woodcrest Creek (Little River)

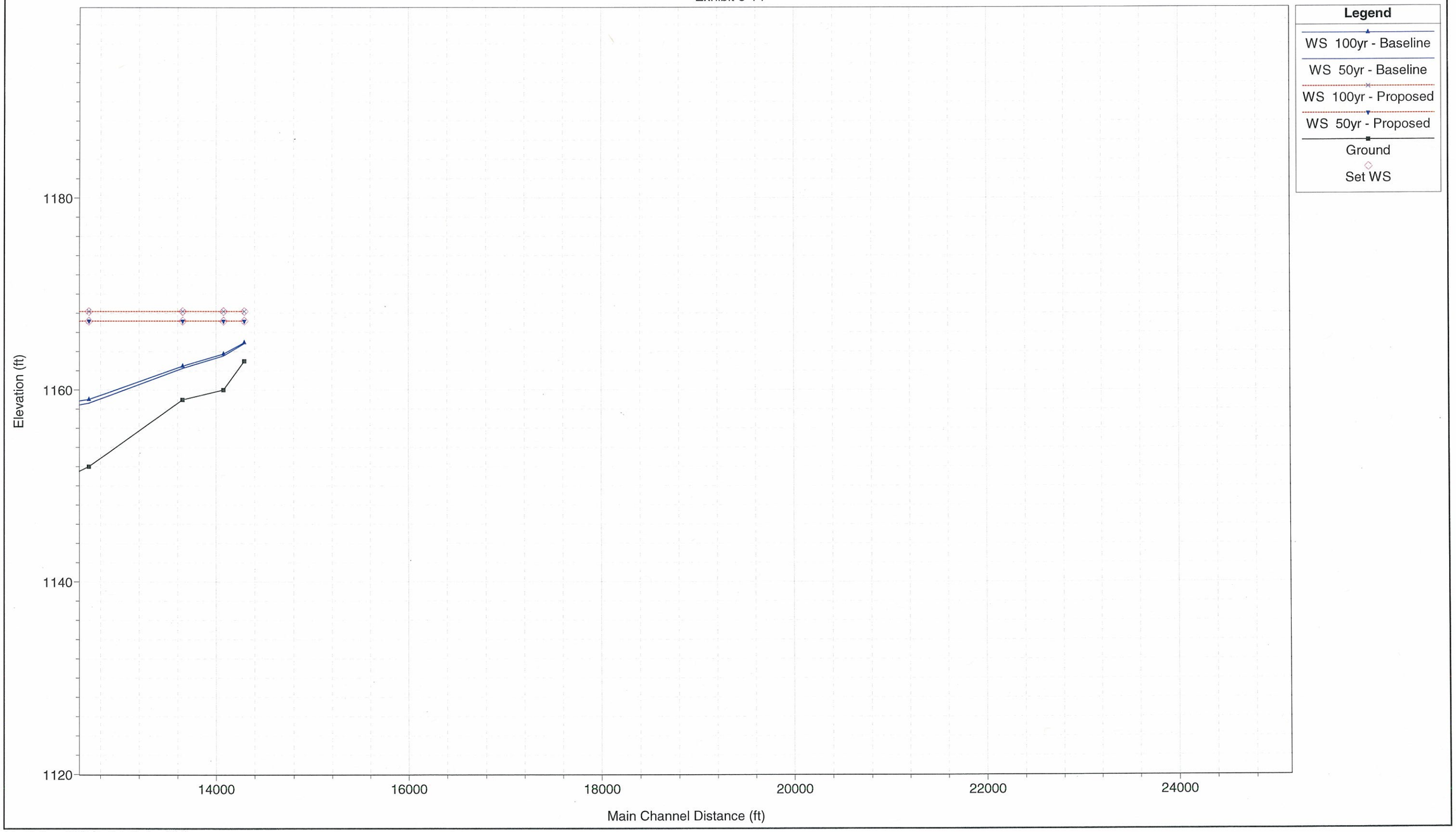
Exhibit 6-14



1 in Horiz. = 1000 ft 1 in Vert. = 10 ft

Woodcrest Creek (Little River)

Exhibit 6-14



1 in Horiz. = 1000 ft 1 in Vert. = 10 ft

510 cfs. This peak flow reduction progressively dissipates in downstream reaches but the facility still has a significant impact on peak flows and proposed improvements in downstream reaches. Other pertinent information conceptually developed for the WC-1A facility includes:

- Contributing drainage area – 576 acres
- Facility footprint – approximately 43 acres
- Outflow pipe – one 72-inch RCP, with invert elevation at 1,151.5 ft
- Elevations:
  - Top of Dam – 1,175 ft
  - Spillway elevation/width – 1,170 ft, width 28 ft
  - Outflow invert – 1151.5 ft
  - Peak storage elevation for 100-year baseline event – 1,168.2 ft
- Dam height – 18.5 ft
- Peak Inflow – 2,050 cfs
- Peak outflow – 510 cfs
- Peak storm water storage – 144 ac-ft

The WC-1A facility was conceptually designed as a "dry" detention facility so that the area could basically remain in its natural state for a vast majority of the time. The facility area would be inundated only briefly (a few hours) following large runoff events. Recreational trails could be built in the facility area including along the dam's top which would offer a point to view the general area. Due to the significant nature of the WC-1A facility, it is realized that a more detailed look at storm water detention design options in the upper Woodcrest Creek watershed may result in the facility being downsized or replaced with the possibility of making up the needed detention from other locations. One such location to incorporate future storm water detention might be in the existing lake in the Sutton Wilderness area to the east of the WC-1A facility. Additionally, ultimate designs will need to insure that water does not back up into upstream areas outside of the facility area without making accommodations. It is pointed out that costs to purchase the property is included in the solution's cost estimate even though the City may have recently obtained a large portion of the needed land area. Including the land cost was done since use of the property as a detention facility may require that the area be funded with storm water funds. If the City wants to forego that "purchase" with storm water funds for a large part of the needed land area, the costs could be reduced by over $600,000 of the estimated $2.5 million project total as shown in the cost estimate for WC-1A in Appendix H.

The WC-1B channel improvements consist of a benched channel with 3:1 side slopes for a 1,200 ft stream reach below Sequoyah Trail. These improvements were sized assuming that the upstream WC-1A detention facility is in place which indicates the magnitude of the flooding condition along the creek in this reach. Section 6.2 below outlines the types of stream stabilization techniques typically planned for such improvements.

As mentioned above, the WC-2 solution for flood overtopping of Sequoyah Trail was developed for a provisional solution if the WC-1A detention facility was not built. If the detention facility is built, then the WC-2 upgrade would not be needed. This solution calls for adding one 8-x-7-ft RCB to the existing culvert system in order to provide protection for the 10-year flood event. It was determined that protection to a higher level would require raising the roadway profile which would block high flows requiring a very large culvert system to be built.

The WC-3 stream erosion (WC-3) solution is located in a short 200-ft reach upstream of Sequoyah Road and represents only a moderate problem although it could get worse in the future. If final design of the WC-1A solution includes control of small frequent runoff events, future stream erosion could be significantly reduced in the downstream reaches of the creek including the WC-3 reach.

No localized problems were identified in the watershed.

Merkle Creek

An important part in assessing the impact that proposed solutions make in Merkle Creek involves the consideration of the large storm water detention facility recently completed by private interests and located immediately upstream of W. Robinson Street. Since this detention facility has such a positive impact on reducing peak flows and downstream flooding, it was decided that it should be considered when determining the impact that proposed solutions make on reducing flooding in the watershed. Therefore, the hydrologic and hydraulic models developed and used for analyzing flooding conditions for post-solution conditions included the flow reductions caused by the detention facility. Primary performance information about the storm water detention facility is:

- Peak 100-year baseline inflow – 1,642 cfs
- Peak 100-year baseline outflow – 580 cfs
- Maximum storm water storage volume, 100-year event – 155 ac-ft

There are 51 structures that are located in the 100-year baseline floodplain and two road crossings that are overtopped by floodwaters. As shown in Exhibit 6-15, the four solutions developed for Merkle Creek involve alleviating or mitigating these stream flooding problems and all take advantage of the peak flow reduction afforded by the storm water detention facility located immediately upstream of W. Robinson Street. The 100-year and 50-year baseline flood profiles shown in Exhibit 6-16 indicate the degree in which the solutions drop the baseline water surface elevation along the creek through the reaches impacted by the watershed's four solutions. Property acquisitions for the solutions conceptualized in the Merkle Creek watershed are quite expensive so later, more detailed, design efforts should further evaluate the costs versus benefits associated with these buyouts and look for ways to avoid some or all of these costs, if possible.

The MC-1 solution addresses the 15 structures that are in the baseline 100-year floodplain footprint and located between 24th Avenue SW and Main Street. Currently, there are three 10-x-11-ft RCBs that span 80 ft across 24th Avenue SW. The proposed solution is to add an additional box of the same size on the left side of the existing culvert.