2015

Spring Creek Valley

Section 206 Aquatic Ecosystem Restoration

Appendix A – H&H Analysis

Chicago District
US Army Corps of Engineers
4/15/2015

Appendix A – H&H Analysis

The following measures are proposed to support the ecological restoration of Spring Creek Valley Forest Preserve (see Civil Design Appendix and Planning Appendix for more details):

- Modification of the large western ditch by "pushing-in the remaining side cast berms in selected areas.
- 300 in-stream, woody structures along selected portions of Spring Creek.

Within the Spring Creek Valley Forest Preserve, Spring Creek is a mapped Zone A Special Flood Hazard Area (SFHA) on Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) panels 17031C0155J and 17031C0015J. Under the provisions of 17 Illinois Administrative Code, Part 3708, any construction within the regulatory floodway in Cook, DuPage, Kane, Lake, McHenry, and Will counties requires permit from the Illinois Department of Natural Resources (IDNR). Since Spring Creek is mapped as a Zone A SFHA (see Attachment 1) with no established BFE, it is necessary to consider the entire Zone A floodplain as the regulatory floodway. No numerical hydraulic or hydrologic models are known to exist.

A cursory investigation of the hydrology at the site was undertaken using USGS StreamStats. StreamStats performs interactive sub basin delineations and uses regression analysis to estimate flows. The table below summarizes the estimated flow rates at each project feature.

Restoration Measure	Sub Basin (mi^2)	Q2 (ft/s^3)	Q5 (ft/s^3)	Q10 (ft/s^3)	Q25 (ft/s^3)	Q50 (ft/s^3)	Q100 (ft/s^3)	Q500 (ft/s^3)
North Fill	2.51	135	231	300	385	452	513	659
South Fill	1.77	124	216	283	368	434	495	643
Donlea Road	15.83	366	595	754	947	1090	1230	1550
Riffles	7.81	249	413	528	669	778	877	1110

As seen from the above table and Attachment 1, Spring Creek carries fairly small flow rates in relation to its overbank storage potential. The proposed restoration features are presumed to have little effect on the stages during flood and bankfull conditions; however, further hydraulic analysis will be performed, as needed, during the design phase when coordination with the IDNR is initiated. Attachment 2 highlights the proposed project area in relationship to parcels which are owned by the Forest Preserve. Any hydraulic impacts that are contained within the Forest Preserve Property are considered to be acceptable for permitting purposes. Additional consideration to project features which may impact private property will be necessary during the design and permitting phase and those features may need to be reconsidered or modified.

Spring Creek Valley Floodplain - Attachment 1

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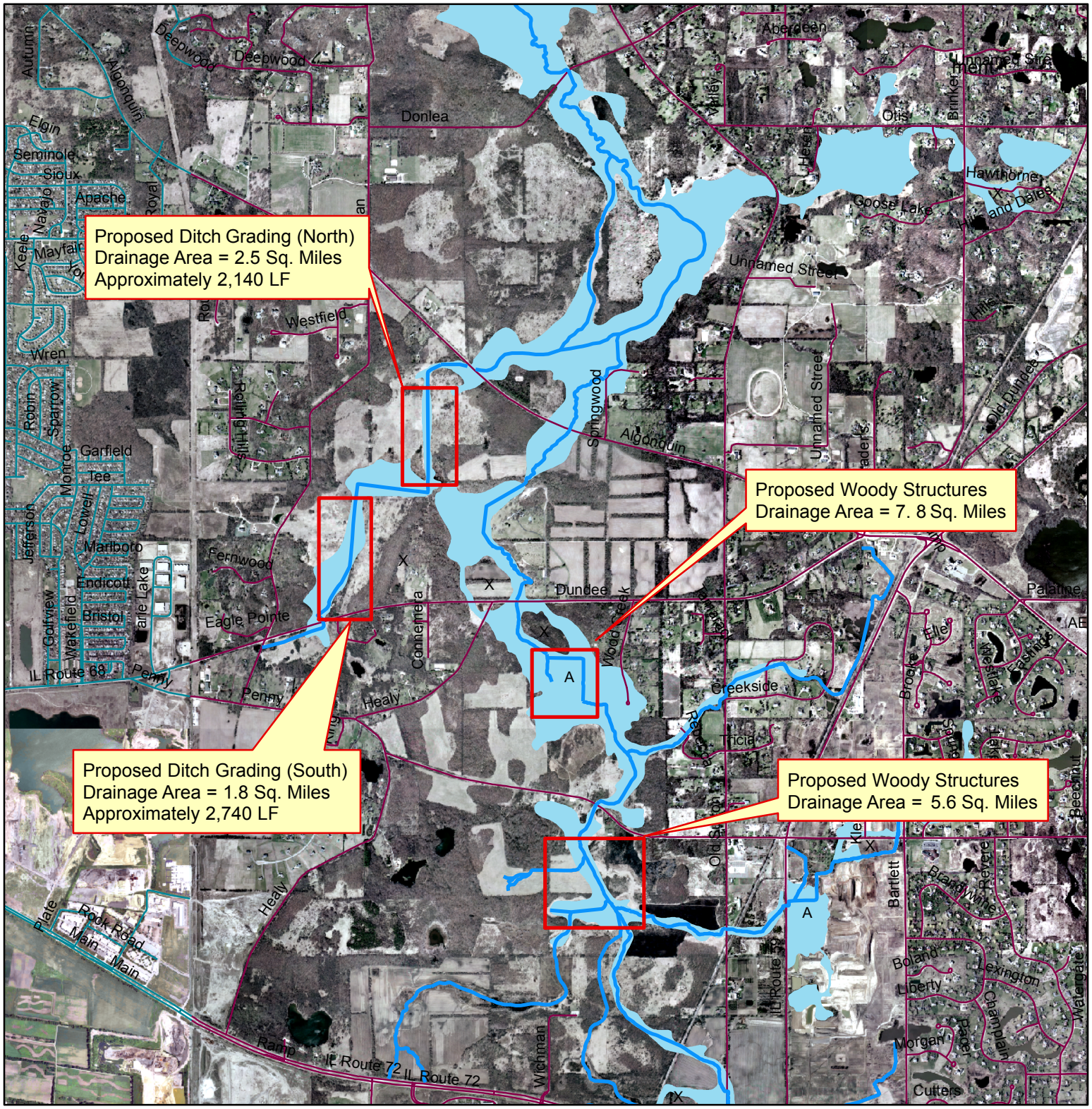
Chicago District



Legend

Spring Creek

FIRM

Flood Zone A

Location Map

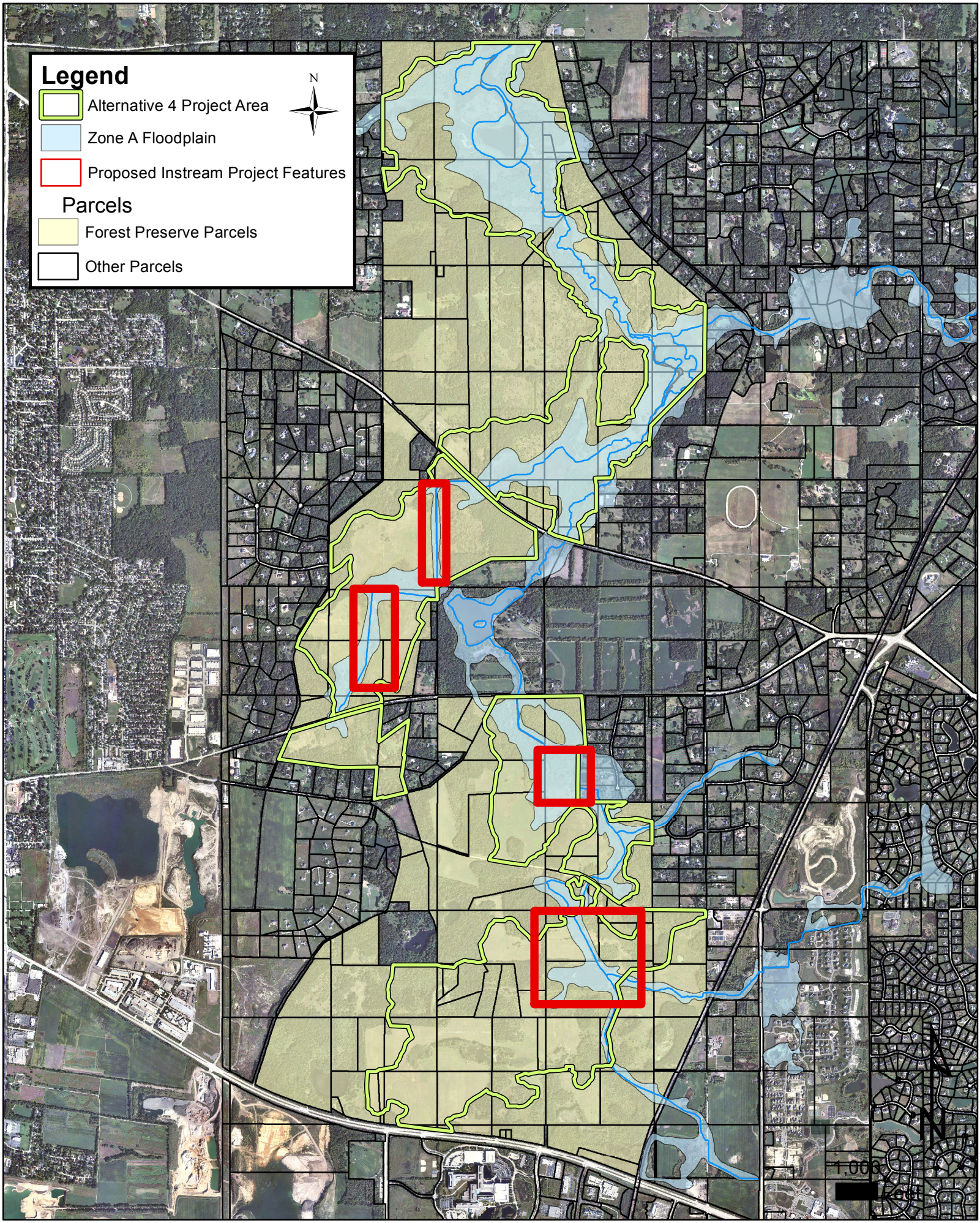
Date: 8/22/2013

N
W E
S

1 in = 3,000 feet

Coordinate System:
NAD83 / Illinois East
Projection: Transverse Mercator
Datum: North American 1983

Path: J:\Working\Arun\Spring_Creek\Spring_Creek_Valley.mxd

Spring Creek Valley Floodplain - Attachment 2

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