

Elgin O'Hare – West Bypass: Floodplain Encroachments

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Purpose

Compensatory storage requirements due to fill in floodplains will be analyzed in accordance with Drainage Manual, Section 3-400 "Flood Plain Storage (Compensatory Storage)". Additionally, local floodplain management ordinances will be considered. The purpose is to recommend viable land sizes and locations of possible compensatory storage sites based on the local ordinances of Cook and DuPage Counties.

Typical Parameters

- Typical cross sections were used to determine quantity of lanes, shoulders and other features inside of the proposed footprints.
- Fill volumes are estimated based on the proposed roadway width, (shoulder to shoulder), between the 100-yr flood elevation and existing ground.
- A 12' lane width has been assumed for all lanes, existing and proposed.
- All shoulders were assumed to be paved and 12' wide.
- Fill volumes in Cook County are estimated based on proposed encroachment in the floodway.
- Fill volumes in DuPage County are estimated based on proposed encroachment in the floodplain.
- "Acres of 100 year floodplain impacted" are the results of fill volumes for the 10-100 year flood events divided by the average depth.

Compensatory Storage Criteria

Compensatory storage shall be provided at the same incremental flood frequency elevation. The respective ratio between fill and cut is as follows:

- IDOT - 1:1 in floodway
- Cook County - 1:1 in floodway
- DuPage County - 1:1.5 in floodplain

Preliminary Fill Volume Calculations

During the preliminary calculation of fill in the floodways and floodplains, proposed roadways were separated by county, Cook or DuPage, and compensatory storage requirements due to fill in floodplains were analyzed in accordance with the respective local stormwater management ordinance. DuPage County is bounded on the north side by

Devon Avenue and on the east side by County Line Road, all other project areas are inside Cook County.

Potential floodplain encroachments were identified by overlaying proposed roadway locations onto Flood Insurance Rate Maps (FIRMs) published by the Federal Emergency Management Agency. Due to the absence of a proposed roadway profile, all floodplains were assumed to be impacted as high as the 100-year flood elevation. The width of encroachment area was based on proposed roadway width from proposed typical cross sections. Impacted floodplain and floodway areas were calculated using GIS software and overlaying proposed roadways onto FIRM maps. To develop a volume, this previous value was multiplied by the depth of the 100-year flood elevation. Table 1 attached summarizes fill volumes for each alternative.

Due to a reconfiguration of the proposed layouts for Alternatives 203 and 402, fill volumes of these two alternatives were not calculated to include the bypass to I-294 south of Green Street. Also, both South Connection A and South Connection D, that begin at Green Street and continue to I-294 is to be used in conjunction with Alternatives 203 and 402.

Preliminary Compensatory Storage Volume

Once the fill in the floodway and floodplain has been calculated, the compensatory storage volume for each impacted area can be calculated. For impacted areas in DuPage County, the amount of fill in the floodplain was multiplied by a factor of 1.5 to determine the required storage volume. In Cook County, the amount of fill in the floodway was multiplied by a factor of 1. Table 2 attached gives the totals for compensatory storage for each alternative.

Potential Compensatory Storage Sites

A compensatory storage site for an identified floodway/floodplain will be established within its own watershed. Ideally, the required compensatory volume will be provided through regrading a floodplain or its nearby right of way.

Floodplain Encroachments

Table 3 attached summaries types and categories of potential floodplain encroachments within the project study areas.

TABLE 1
Floodway & Floodplain Fill Volume

| | Floodway & Floodplain Fill Volume (AC-FT) | | | | | | | | | | | | | | | | | |
|---|---|---------------|---------------|---------------|---------------|--------------|---------------|-------------|-------------|-----------|---------|-----------|---------|-----------|--------------------|-----------|--------------------|-----------|
| | 202 | | 203 | | 401 | | 402 | | 403 | | 404 | | 501 | | South Connection A | | South Connection D | |
| | 0-10 YR | 10-100 YR | 0-10 YR | 10-100 YR | 0-10 YR | 10-100 YR | 0-10 YR | 10-100 YR | 0-10 YR | 10-100 YR | 0-10 YR | 10-100 YR | 0-10 YR | 10-100 YR | 0-10 YR | 10-100 YR | 0-10 YR | 10-100 YR |
| North Connections | | | | | | | | | | | | | | | | | | |
| Higgins Creek | 2.28 | 3.08 | 2.28 | 3.08 | | | 1.48 | 2.00 | | | 2.28 | 3.08 | | | | | | |
| Higgins Creek Trib A at IL-83/Busse Road | 20.91 | 3.64 | | | 20.91 | 3.64 | | | 20.91 | 3.64 | | | 20.91 | 3.64 | | | | |
| Higgins Creek Trib A at I-90 | 4.32 | 5.08 | 4.32 | 5.08 | | | 2.17 | 2.56 | | | 4.32 | 5.08 | | | | | | |
| Elgin O'Hare Extension and Interchange | | | | | | | | | | | | | | | | | | |
| Salt Creek at Elgin O'Hare*** | 22.59 | 9.74 | 22.59 | 9.74 | 22.59 | 9.74 | 22.59 | 9.74 | 22.59 | 9.74 | 22.59 | 9.74 | 22.59 | 9.74 | | | | |
| Meacham Creek at Elgin O'Hare | 10.89 | 12.02 | 10.89 | 12.02 | 10.89 | 12.02 | 10.89 | 12.02 | 10.89 | 12.02 | 10.89 | 12.02 | 10.89 | 12.02 | | | | |
| Willow Creek South Trib at Thorndale*** | 10.24 | 16.63 | 10.24 | 16.63 | 10.24 | 16.63 | 10.24 | 16.63 | 10.24 | 16.63 | 10.24 | 16.63 | 10.24 | 16.63 | | | | |
| South Connections | | | | | | | | | | | | | | | | | | |
| Bensenville Ditch at West Bypass to I-294*** | 12.99 | 3.98 | 12.99 | 3.98 | 12.99 | 3.98 | 12.99 | 3.98 | 12.99 | 3.98 | | | | | | | | |
| Addison Creek at I-294 | 3.90 | 1.30 | | | 3.90 | 1.30 | | | 3.90 | 1.30 | | | | | 3.90 | 1.30 | 3.90 | 1.30 |
| Other Connection Options | | | | | | | | | | | | | | | | | | |
| Bensenville Ditch at Irving Park Road | | | | | | | | | | | | | | 18.42 | 4.74 | | | |
| Bensenville Ditch at York Road*** | | | | | | | | | | | | | | 0.97 | 0.27 | | | |
| Crystal Creek at I-294 | | | | | | | | | | | | | | 11.75 | 6.01 | | | |
| Totals | 143.59 | 113.84 | 128.83 | 107.29 | 128.83 | 96.87 | 148.82 | 5.20 | 5.20 | | | | | | | | | |

TABLE 2
Compensatory Storage Volume

| | Compensatory Storage Volume (AC-FT) | | | | | | | | | | | | | | | | | |
|---|-------------------------------------|---------------|--------------|--------------|--------------|--------------|--------------|-------------|-------------|-----------|---------|-----------|---------|-----------|--------------------|-----------|--------------------|-----------|
| | 202 | | 203 | | 401 | | 402 | | 403 | | 404 | | 501 | | South Connection A | | South Connection D | |
| | 0-10 YR | 10-100 YR | 0-10 YR | 10-100 YR | 0-10 YR | 10-100 YR | 0-10 YR | 10-100 YR | 0-10 YR | 10-100 YR | 0-10 YR | 10-100 YR | 0-10 YR | 10-100 YR | 0-10 YR | 10-100 YR | 0-10 YR | 10-100 YR |
| North Connections | | | | | | | | | | | | | | | | | | |
| Higgins Creek | 2.28 | 3.08 | 2.28 | 3.08 | | | 1.48 | 2.00 | | | 2.28 | 3.08 | | | | | | |
| Higgins Creek Trib A at IL-83/Busse Road | 20.91 | 3.64 | | | 20.91 | 3.64 | | | 20.91 | 3.64 | | | 20.91 | 3.64 | | | | |
| Higgins Creek Trib A at I-90 | 4.32 | 5.08 | 4.32 | 5.08 | | | 2.17 | 2.56 | | | 4.32 | 5.08 | | | | | | |
| Elgin O'Hare Extension and Interchange | | | | | | | | | | | | | | | | | | |
| Salt Creek at Elgin O'Hare*** | 33.89 | 14.61 | 33.89 | 14.61 | 33.89 | 14.61 | 33.89 | 14.61 | 33.89 | 14.61 | 33.89 | 14.61 | 33.89 | 14.61 | | | | |
| Meacham Creek at Elgin O'Hare*** | 16.34 | 18.03 | 16.34 | 18.03 | 16.34 | 18.03 | 16.34 | 18.03 | 16.34 | 18.03 | 16.34 | 18.03 | 16.34 | 18.03 | | | | |
| Willow Creek South Trib at Thorndale*** | 15.36 | 24.95 | 15.36 | 24.95 | 15.36 | 24.95 | 15.36 | 24.95 | 15.36 | 24.95 | 15.36 | 24.95 | 15.36 | 24.95 | | | | |
| South Connections | | | | | | | | | | | | | | | | | | |
| Bensenville Ditch at West Bypass to I-294*** | 19.49 | 5.97 | 19.49 | 5.97 | 19.49 | 5.97 | 19.49 | 5.97 | 19.49 | 5.97 | | | | | | | | |
| Addison Creek at I-294 | 5.85 | 1.95 | | | 5.85 | 1.95 | | | 5.85 | 1.95 | | | | | 5.85 | 1.95 | 5.85 | 1.95 |
| Other Connection Options | | | | | | | | | | | | | | | | | | |
| Bensenville Ditch at Irving Park Road | | | | | | | | | | | | | | 18.42 | 4.75 | | | |
| Bensenville Ditch at York Road*** | | | | | | | | | | | | | | 1.46 | 0.41 | | | |
| Crystal Creek at I-294 | | | | | | | | | | | | | | 11.75 | 6.01 | | | |
| Totals | 195.7 | 163.38 | 181.0 | 156.8 | 181.0 | 137.9 | 190.5 | 7.80 | 7.80 | | | | | | | | | |

TABLE 3

Potential Floodplain Encroachments

| FLOODPLAIN | POTENTIAL TRANSVERSE ENCROACHMENT | POTENTIAL LONGITUDINAL ENCROACHMENT |
|------------------------------|--|--|
| Meacham Creek | X | |
| Salt Creek | X | |
| Higgins Creek | X | |
| Higgins Creek Tributary A | X | X |
| Higgins Creek tributary B | | X |
| Willow Creek | X | |
| Willow Creek North Tributary | X | X |
| Willow Creek South Tributary | X | X |
| Bensenville Ditch | X | |
| Addison Creek | X | |
| Crystal Creek | X | X |