MEMORANDUM

July 1, 2015
Revised July 28, 2015

TO: Brigitte Berger, PE – Village of Wilmette Director of Engineering Services

FROM: Darren Olson, PE, D.WRE
Dave Buckley, PE

SUBJECT: Wilmette Stormwater Action Plan
Above Ground Community Park Stormwater Storage Basin
Separate Storm Sewer System Stormwater Management Report
(CBBEL Project 130605.00002)

Christopher B. Burke Engineering, Ltd. (CBBEL) recently completed the Separate Storm Sewer System Stormwater Management Report (Report) for the Village of Wilmette (Village) in January 2015 as part of the Village's Stormwater Action Plan. The Report indicated that the existing separate storm sewer system has approximately a 2-year capacity and the depth of street flooding reaches up to 2.3 feet for the 10-year return interval storm event. Three long term capital improvement projects were identified to lower the 10-year hydraulic grade line (HGL) below the street pavement elevation throughout the entire west side of the Village that is served by the separate storm sewer system. This design criterion was determined through direction from Village staff and the Municipal Services Committee.

Alternative 2 included the conceptual design of approximately 55 ac-ft of below-ground storage at Community Playfield in Community Park (Park) and associated storm sewer improvements to convey water to the storage basin. A portion of the cost associated with Alternative 2 was due to the below-ground storage vault. The Village subsequently directed CBBEL to determine the feasibility of providing storage above ground at the Park in an effort to reduce the overall cost of Alternative 2 and the storage basin. The purpose of this memorandum is to summarize the cost and benefits resulting from the modification of the below-ground storage vault to an above ground storage basin.

A kickoff and an additional follow-up meeting was held with Wilmette Park District, School District and Village staff to obtain feedback on the feasibility of providing above ground storage at the Park. Park District staff explained that Community Park is the Park District's largest and most used amenity. The Park District and School District were interested in knowing the frequency at which stormwater would access the storage basin and duration the Park would have standing water as compared to the current condition in which portions of the Park hold water after rain events. The Park District was also interested in the duration of construction and how long certain areas of the Park would be unusable due to construction activities. It was also noted that an existing 24-inch watermain extends through the center of the park in an east-west direction.

CBBEL used the previously completed XP-SWMM modeling for Alternative 2 in the Report to analyze two additional options for above ground storage at the Park. The criterion used for the two above ground options was to reduce the 10-year hydraulic grade line (HGL)

below the street pavement elevation throughout the entire Village. This is the same criteria used in the previously prepared Report. The two above ground storage options include the following:

Alternative 2.1 (Exhibit 11-2.1)

- Primarily above ground storage with a small portion of underground storage.
- Above-ground portion is dry-bottom basin suitable to replace athletic fields and stormwater management areas currently located within the basin footprint.
- The below-ground portion would be pumped to the existing storm sewer along Locust Road following storm events.
- Large diameter (6.5-foot) Reinforced Concrete Pipe (RCP) storm sewers under Locust Road to convey water from Lake Avenue and Wilmette Avenue into the storage basin.

Alternative 2.2 (Exhibit 11-2.2)

- Above ground storage that is drained by gravity.
- The bottom of the basin would be dry and suitable to replace athletic fields and stormwater management areas currently located within the basin footprint.
- Large Reinforced Concrete Box Culverts (RCBCs) under Locust Road to provide conveyance to the centralized storage basin. The RCBCs would extend from Lake Avenue and Wilmette Avenue into the storage basin.

Both Alternatives (2.1 and 2.2) provide approximately 50 acre-ft of flood storage for the 10-year event at a high water level (HWL) of 618 feet and 619 feet respectively. Stormwater will enter the storage basins via gravity once flow in the separate storm sewer system reaches a certain elevation. The existing grade at the Park will be lowered approximately 10 feet with 4:1 side slopes to provide storage at the required elevations and provide the appropriate level service throughout the Village for both alternatives. Under this concept, the lowered storage area will be underdrained sodded athletic fields graded at 1% slope with the proposed grading set back 40 feet from the property lines along the south side of the Park. The conceptual bottom footprint is generally large enough to accommodate the soccer fields as shown on the current aerial photograph (CBBEL understands that the soccer field configuration changes on a regular basis). The conceptual design also includes the relocation of the existing path and 24-inch diameter watermain (Exhibits 11-2.1 and 11-2.2). The storm sewer conveyance improvements previously identified for Alternative 2 in the Report will remain for Alternatives 2.1 and 2.2. Exhibits 11-2.1 Overall and 11-2.2 Overall show the storm sewer conveyance improvements previously identified for Alternative 2 in the Report combined with Alternatives 2.1 and 2.2 identified in this memorandum. This has been included in the engineer's estimate of probable cost accordingly.

According to the XP-SWMM analysis, the above ground portion of the storage area for Alternative 2.1 will begin to fill with stormwater for events that exceed approximately the 6-month, 3-hour design storm frequency (1.3 inches over 3 hours). The duration for which the above ground storage at the Park is flooded is limited to approximately 1 hour at a depth of 0.1 feet for the 6-month, 3-hour design storm event. The duration for which the above

ground portion of the storage in Alternative 2.1 is inundated is shown on Table 1 and the attached hydrograph for additional design storms.

Results from the analysis of Alternative 2.2 (above ground storage only) show that the storage area will begin to fill with stormwater for the 6-month, 3-hour critical duration design storm event (1.3 inches over 3 hours) at a maximum depth of approximately 0.4 feet. The duration for which the above ground storage in Alternative 2.2 is inundated is shown on Table 1 and the attached hydrograph for additional 3-hour critical duration design storms. Results from the analysis of both alternatives for the April 2013 storm event are also included in Table 1 and the attached hydrographs.

TABLE 1
Proposed Conditions Alternatives 2.1 and 2.2 Community Park Inundation Duration and Frequency

Design Storm Event	Depth of Rain over 3 hours (in)	Alternative 2.1		Alternative 2.2	
		Maximum Depth (ft)	Total Duration of Inundation (hr)	Maximum Depth (ft)	Total Duration of Inundation (hr)
6-month	1.3	0.1	1	0.4	2
1-year	1.6	1.0	4	1.1	4
2-year	1.9	1.8	6	1.9	5.5
10-year	2.9	4.9	11	5.6	9.5
Measured Storm Event	**Depth of Rain over 24 hours (in)**	**Alternative 2.1**		**Alternative 2.2**	
		Maximum Depth (ft)	**Total Duration of Inundation (hr)**	**Maximum Depth (ft)**	**Total Duration of Inundation (hr)**
April 2013	5.6	8.7	21	8.2	19

The resulting water surface elevations for both storage Alternatives were mapped and the benefits were quantified using the same methodology discussed in the previous Report. This methodology included a desktop GIS analysis to determine the number of structures impacted by flooding based on the property elevation compared to the peak water surface elevation. A structure was considered impacted by flooding if the peak water surface elevation rose to within 1 foot of the highest elevation on the parcel. A summary of the engineer's estimate of probable cost in 2014 dollars has been provided in Table 2 and supporting information has been included with this memorandum.

The added benefit for Alternatives 2.1 and 2.2 is that in events greater than the 10-year event, they will continue to provide additional flood storage up to a high water level (HWL) of approximately 623 ft, resulting in significant additional benefits for the 25-year to 100-year storm events as compared to Alternative 2.

TABLE 2
Summary of Benefits and Costs

Design Storm	Existing	Alternative 1	Alternative 2	Alternative 3	Alternative 2.1	Alternative 2.2
		Relief Storm Sewer System	Centralized Stormwater Storage at Community Playfield	Neighborhood Stormwater Storage	Centralized Stormwater Storage at Community Playfield Above & Below	Centralized Stormwater Storage at Community Playfield Above Only
Number of Structures Impacted by Flooding						
10-year	**120**	0	0	50	0	0
25-year	**280**	60	90	160	60	60
50-year	**480**	190	240	320	180	200
100-year	**700**	370	490	570	415	440
Project Costs (Millions)						
2014 $		**$75.0**	**$70.0**	**$44.0**	**$59.5**	**$53.0**

*Project costs for Alternatives 2.1 and 2.2 were also completed in 2015 dollars based on recent bid tabulations, which would increase the costs in Table 1 by approximately 2%.

The construction time is subject to weather, utility conflicts and other unforeseen circumstances that may arise during construction. It should be noted that the proposed storm sewer improvements for both alternatives include new storm sewer along Locust Road. It is recommended that any planned improvements should be incorporated into the upcoming Locust Road reconstruction project which could provide additional cost savings. The project costs shown in Table 2 include design engineering, construction observation and permitting.

DTO/DRB
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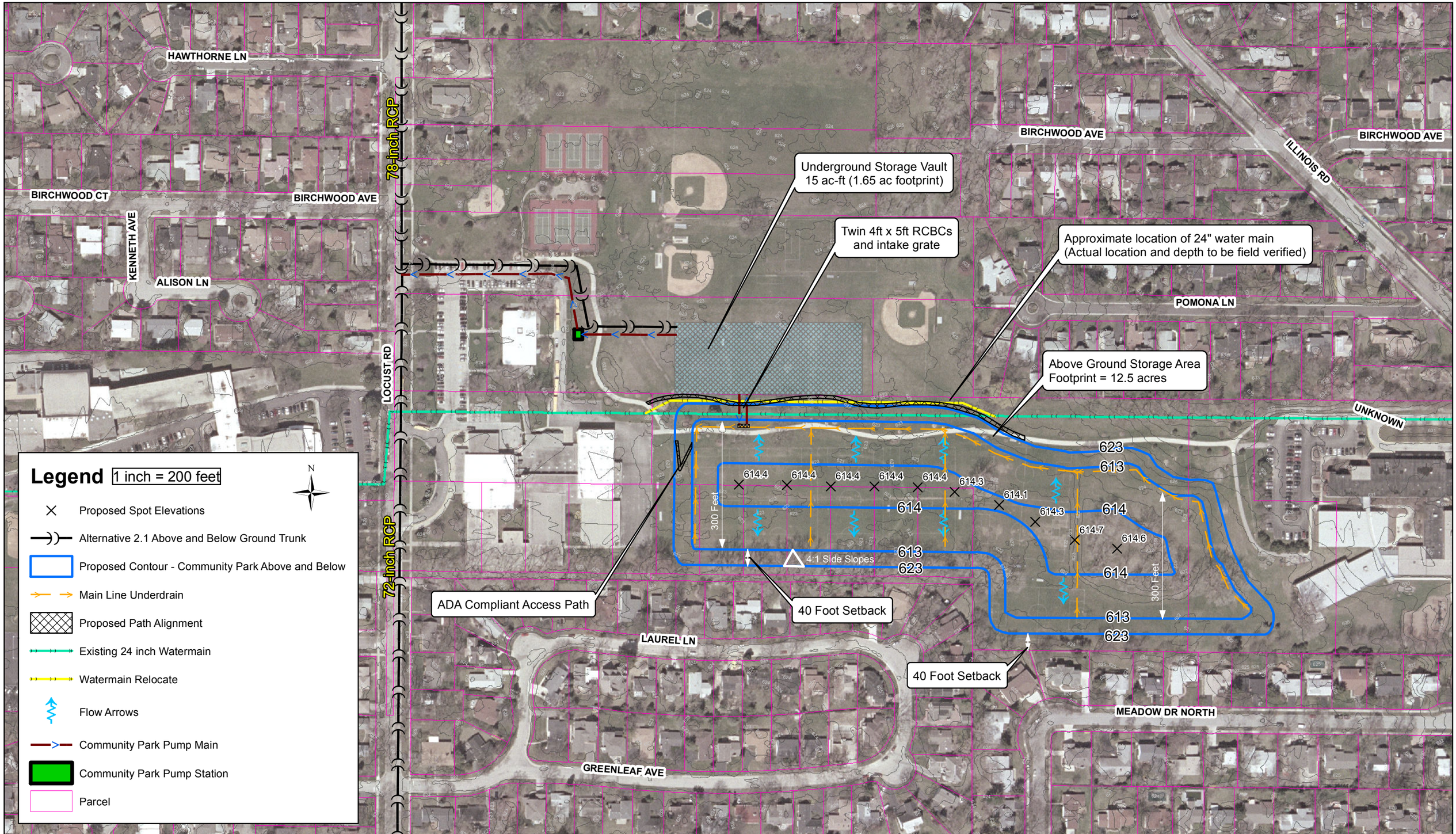

CHRISTOPHER B. BURKE ENGINEERING LTD.
9575 West Higgins Road, Suite 600
Rosemont, Illinois 60018
(847) 823-0500

CLIENT:

VILLAGE OF WILMETTE

NO.	DATE	NATURE OF REVISION	CHKD.

FILE NAME

DSGN.	DRB
DWN.	DRB
CHKD.	DTO
SCALE:	1"=
PLOT DATE:	
CAD USER:	
MODEL:	

TITLE:

ALTERNATIVE 2.1
ABOVE AND BELOW GROUND
CENTRALIZED STORAGE AT
COMMUNITY PLAYFIELD

PROJ. NO. 13-0605
DATE: 7-28-15
SHEET 0 OF 0
DRAWING NO.
EXH 11-2.1

Lake Avenue Stormwater Pump Station

Underground Storage Vault
15 ac-ft (1.65 ac footprint)
Pump Evacuated

Above Ground Storage Area
Footprint = 12.5 acres

Note: Wilmette Avenue was recently resurfaced. Depending on project timing, storm sewer route may be modified to be under Wilmette Avenue.

Note: All storm sewers are proposed to be parallel unless noted as remove and replace (R/R)

Legend

- Alternative 2.1 Trunk
- Alternative 2 Laterals
- Existing Village Storm Sewer Trunk
- Existing Village Storm Sewer Laterals
- Village of Wilmette Boundary

0 500 1,000 2,000 3,000 4,000 Feet

1 inch = 1,000 feet

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FILE NAME

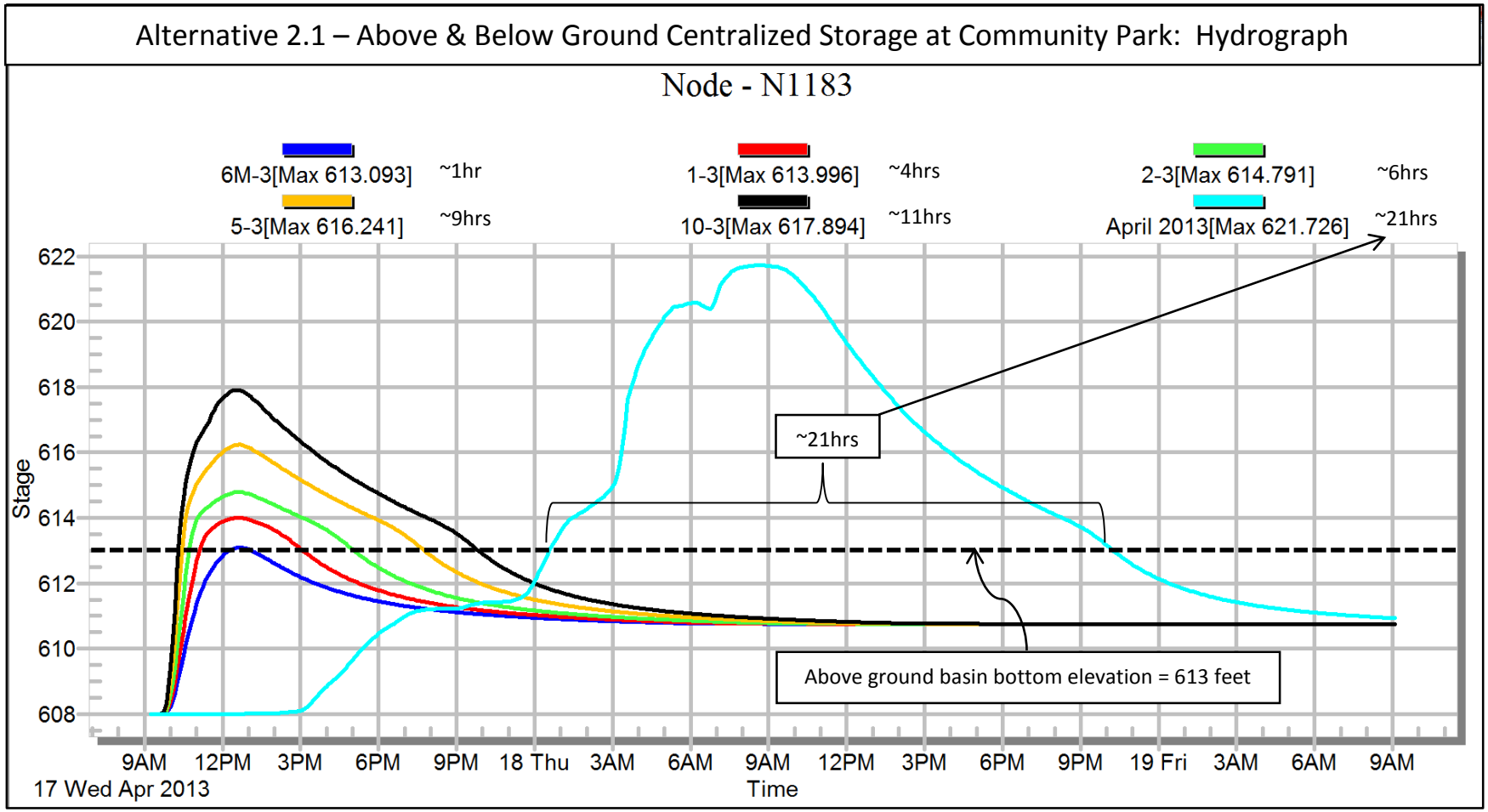
DSGN.	DRB
DWN.	DRB
CHKD.	DTO
SCALE:	1"= 1,000'
PLOT DATE:	11/25/2014
CAD USER:	
MODEL:	

TITLE: **ALTERNATIVE 2.1 ABOVE AND BELOW GROUND CENTRALIZED STORAGE AT COMMUNITY PLAYFIELD**

PROJ. NO. 13-0605
DATE: 7-28-15
SHEET 0 OF 0
DRAWING NO. EXH 11-2.1 (Overall)

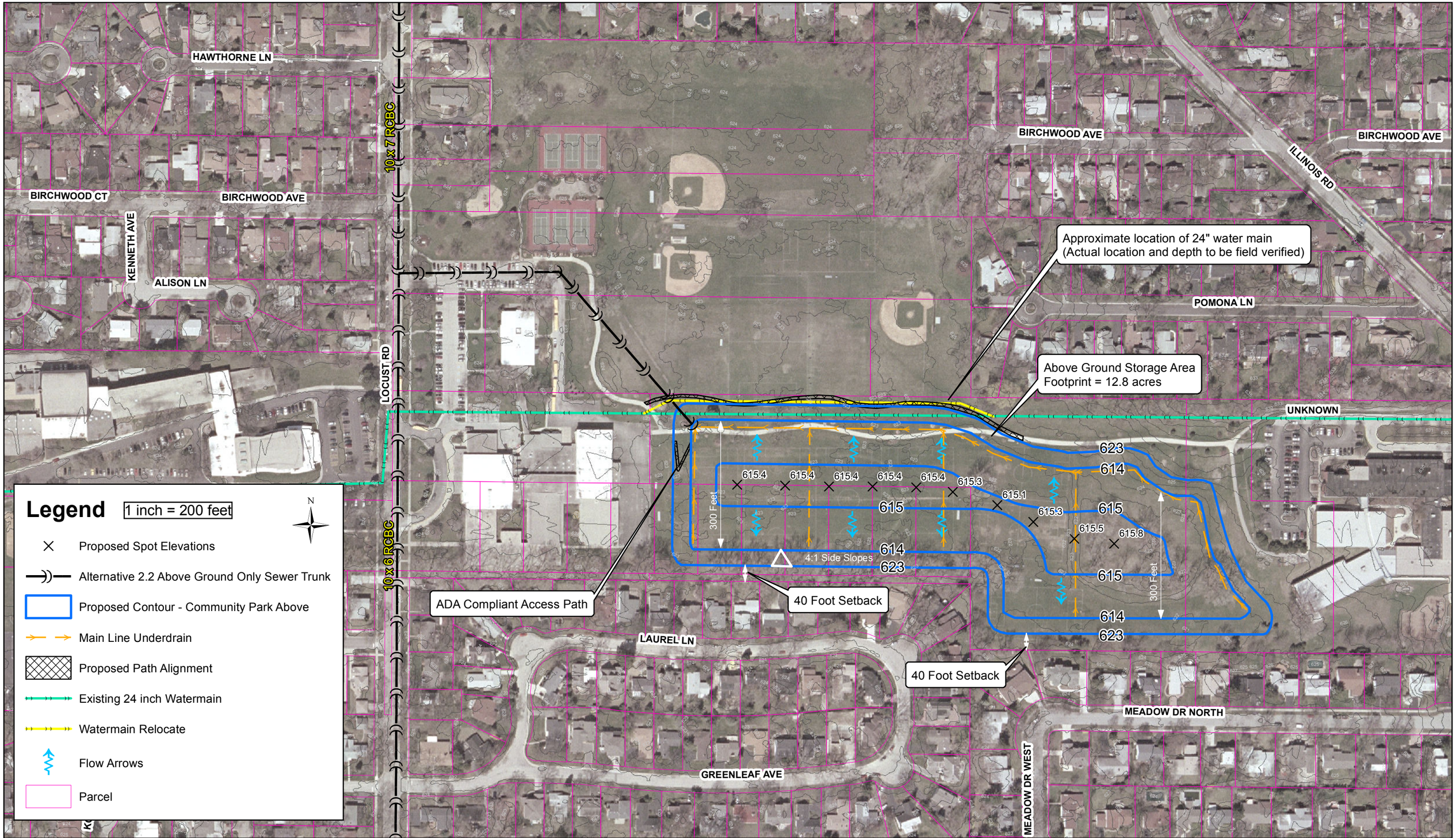
Stage Hydrograph - Length of time stormwater is in the storage basin (hours).

Graph depicts the elevation of water (stage) on the y-axis versus time on the x-axis within the Communinty Playfield Storage Basin.



Note 1: Outflow elevation from above ground basin to the below ground vault is 611 feet. The below ground storage vault is pump evacuated.

Note 2: 6M-3 refers to the 6-month, 3-hour (1.3 inches over 3 hours) design storm event, 1-3 refers to the 1-year, 3-hour design storm event, 2-3 refers to 2-year, 3-hour storm event, etc.



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VILLAGE OF WILMETTE

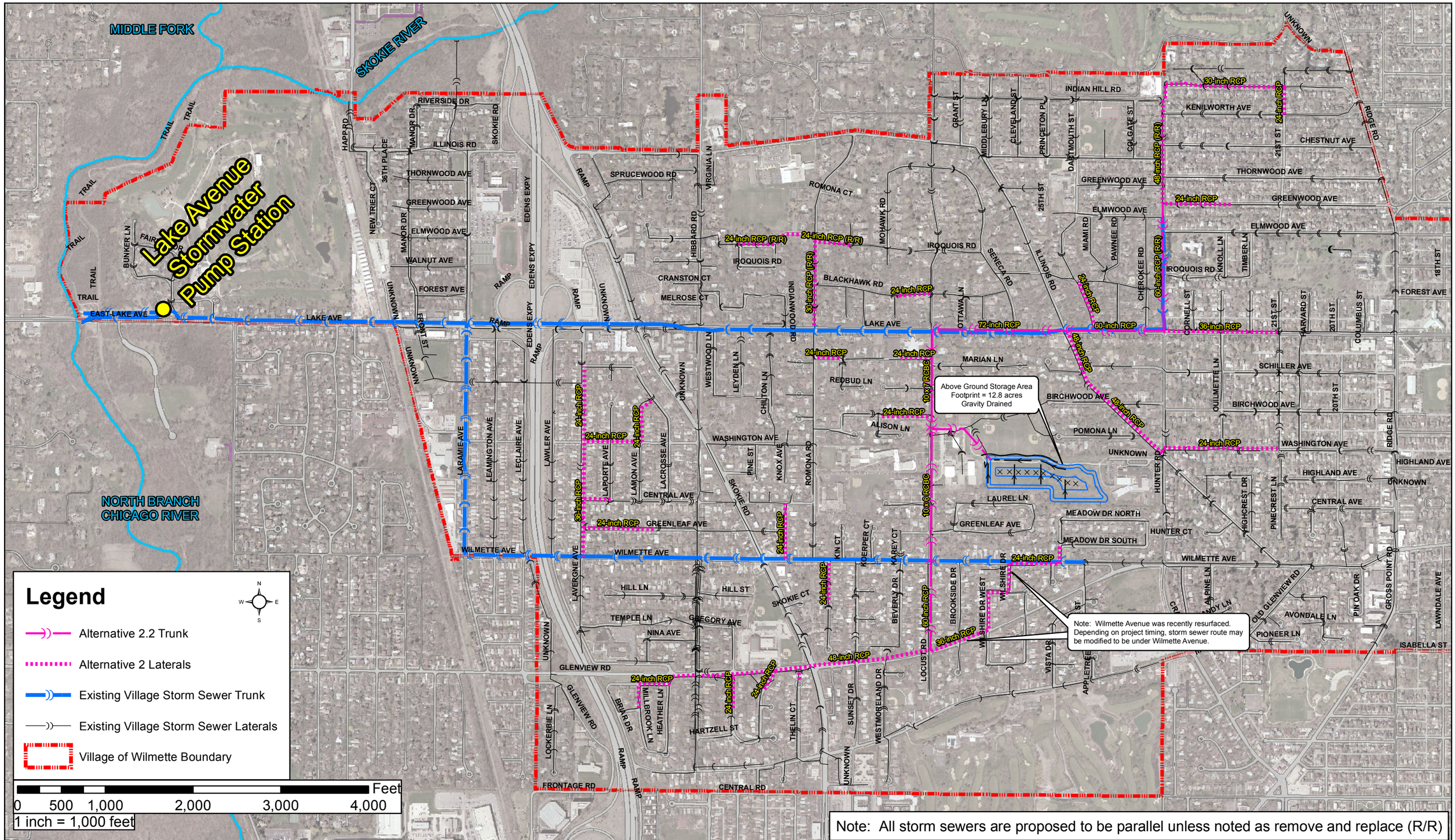
NO.	DATE	NATURE OF REVISION	CHKD.

FILE NAME

DSGN.	DRB
DWN.	DRB
CHKD.	DTO
SCALE:	1"= 200'
PLOT DATE:	
CAD USER:	
MODEL:	

TITLE:
ALTERNATIVE 2.2
ABOVE GROUND ONLY
CENTRALIZED STORAGE AT
COMMUNITY PLAYFIELD

PROJ. NO. 13-0605
DATE: 07-28-15
SHEET 0 OF 0
DRAWING NO.
EXH 11-2.2



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CLIENT:

VILLAGE OF WILMETTE

NO.	DATE	NATURE OF REVISION	CHKD.

FILE NAME

DSGN.	DRB
DWN.	DRB
CHKD.	DTO
SCALE:	1"= 1,000'
PLOT DATE:	11/25/2014
CAD USER:	
MODEL:	

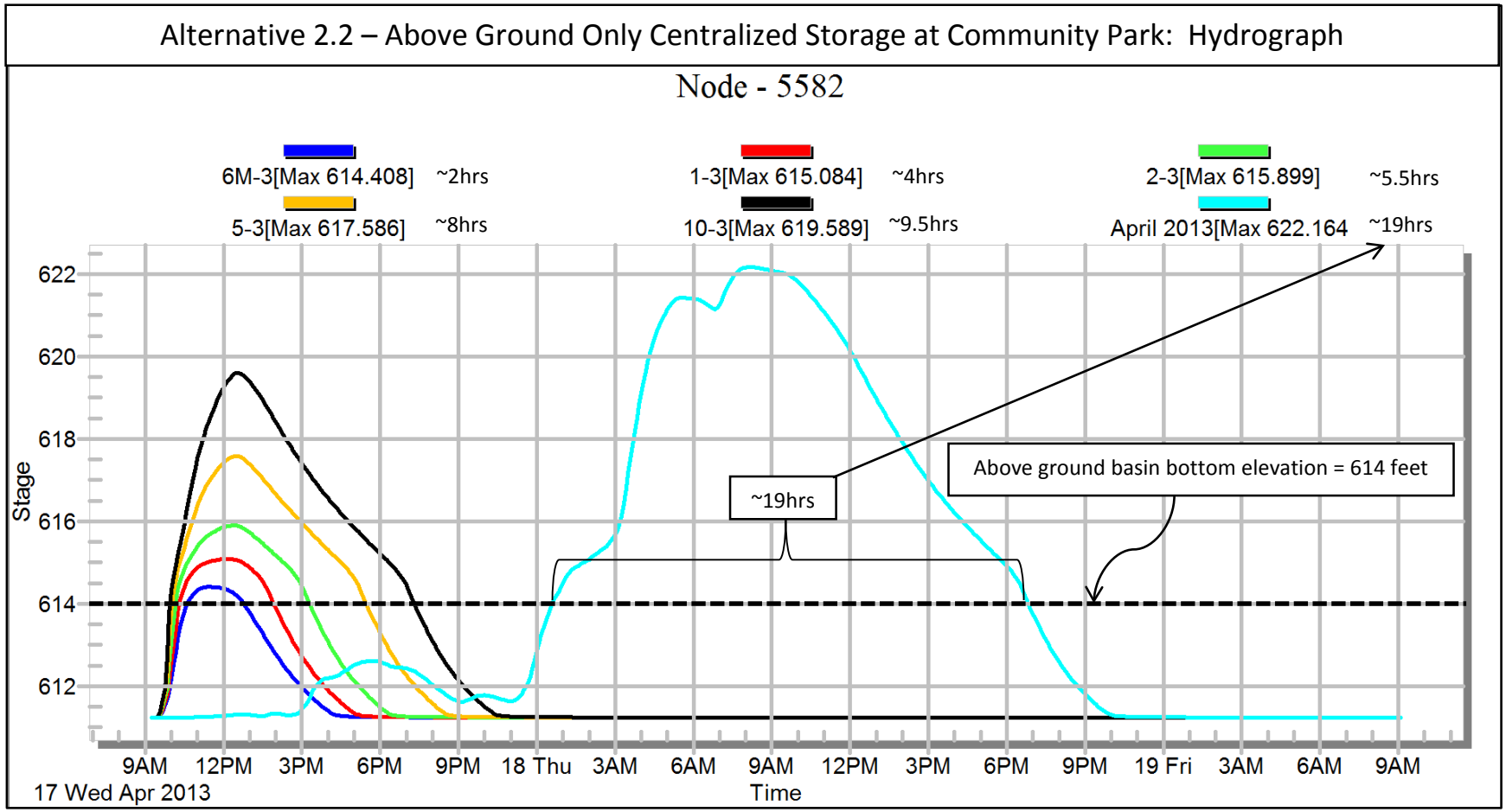
TITLE:

ALTERNATIVE 2.2
ABOVE GROUND ONLY
CENTRALIZED STORAGE AT
COMMUNITY PLAYFIELD

PROJ. NO. 13-0605
DATE: 7-28-15
SHEET 0 OF 0
DRAWING NO.
EXH 11-2.2 (Overall)

Stage Hydrograph - Length of time stormwater is in the storage basin (hours).

Graph depicts the elevation of water (stage) on the y-axis versus time on the x-axis within the Commuminty Playfield Storage Basin.



Note 1: Above ground only storage alternative is gravity drained.

Note 2: 6M-3 refers to the 6-month, 3-hour (1.3 inches over 3 hours) design storm event, 1-3 refers to the 1-year, 3-hour design storm event, 2-3 refers to 2-year, 3-hour storm event, etc.

Christopher B. Burke Engineering, Ltd.
9575 West Higgins Road, Suite 600
Rosemont, Illinois 60018
Project Number: 13-0605
Date: January 15, 2015
Revised: June 30, 2015

Village of Wilmette, Proposed Storm Sewer Improvements
ALTERNATIVE 2.1 - Centralized Storage at Community Playfield with Above/Below Ground Storage

			2014 COSTS		2015 COSTS	
ITEMS	**UNIT**	**QUANTITY**	**UNIT PRICE**	**TOTAL COST**	**UNIT PRICE**	**TOTAL COST**
TREE ROOT PRUNING	EACH	100	$145.00	$14,500.00	$150.00	$15,000.00
TREE PRUNING (1 TO 10 INCH DIAMETER)	EACH	100	$129.00	$12,900.00	$135.00	$13,500.00
TREE PRUNING (OVER 10 INCH DIAMETER)	EACH	100	$170.00	$17,000.00	$175.00	$17,500.00
TREE PROTECTION	EACH	100	$100.00	$10,000.00	$125.00	$12,500.00
EARTH EXCAVATION	CU YD	180,000	$44.00	$7,920,000.00	$44.00	$7,920,000.00
UNDERGROUND STORAGE TANK	AC-FT	15	$300,000.00	$4,500,000.00	$300,000.00	$4,500,000.00
TOPSOIL FURNISH AND PLACE	SQ YD	65,000	$7.00	$455,000.00	$7.00	$455,000.00
SODDING, SPECIAL	SQ YD	55,000	$11.00	$605,000.00	$11.00	$605,000.00
WETLAND SEEDING	SQ YD	10,000	$4.00	$40,000.00	$4.00	$40,000.00
EROSION CONTROL BLANKET	SQ YD	10,000	$2.50	$25,000.00	$2.50	$25,000.00
UNDERDRAINS FOR ABOVE GROUND STORAGE, 6" PVC	FOOT	225	$18.00	$4,050.00	$18.00	$4,050.00
UNDERDRAINS FOR ABOVE GROUND STORAGE, 8" PVC	FOOT	1,650	$22.00	$36,300.00	$22.00	$36,300.00
UNDERDRAINS FOR ABOVE GROUND STORAGE, 24" PVC	FOOT	800	$30.00	$24,000.00	$30.00	$24,000.00
UNDERDRAIN CATCH BASIN WITH GRATE	EACH	12	$1,000.00	$12,000.00	$1,000.00	$12,000.00
CATCH BASIN, TYPE C, 2'-DIAMETER	EACH	1	$3,000.00	$3,000.00	$3,000.00	$3,000.00
STORM SEWER, 24" RCP (ABOVE GROUND STORAGE CONNECTION)	FOOT	75	$192.00	$14,400.00	$192.00	$14,400.00
REMOVAL AND DISPOSAL OF UNSUITABLE MATERIAL	CU YD	1,000	$45.00	$45,000.00	$50.00	$50,000.00
TRENCH BACKFILL, CA-7	CU YD	89,000	$30.00	$2,670,000.00	$32.00	$2,848,000.00
AGGREGATE SUBGRADE IMPROVEMENT	CU YD	1,000	$54.00	$54,000.00	$60.00	$60,000.00
AGGREGATE FOR TEMPORARY ACCESS	TON	500	$22.00	$11,000.00	$25.00	$12,500.00
BITUMINOUS MATERIALS (PRIME COAT)	GAL	10,500	$3.00	$31,500.00	$3.00	$31,500.00
AGGREGATE (PRIME COAT)	TON	230	$15.00	$3,450.00	$20.00	$4,600.00
LEVELING BINDER (MACHINE METHOD), N50	TON	2,100	$88.00	$184,800.00	$110.00	$231,000.00
HOT-MIX ASPHALT BINDER COURSE, IL-19.0, N50 6"	TON	6,500	$76.00	$494,000.00	$80.00	$520,000.00
HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N50 2.5"	TON	2,700	$89.00	$240,300.00	$95.00	$256,500.00
HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N50 1.5"	TON	7,850	$89.00	$698,650.00	$95.00	$745,750.00
AGGREGATE BASE COURSE, 10"	SQ YD	27,000	$12.00	$324,000.00	$12.00	$324,000.00
PORTLAND CEMENT CONCRETE PATH REMOVAL AND REPLACEMENT	SQ YD	1,000	$70.00	$70,000.00	$70.00	$70,000.00
PORTLAND CEMENT CONCRETE SIDEWALK 5 INCH	SQ FT	2,500	$6.00	$15,000.00	$6.50	$16,250.00
SIDEWALK REMOVAL	SQ FT	2,500	$2.00	$5,000.00	$3.00	$7,500.00
DETECTABLE WARNINGS	SQ FT	1,000	$43.00	$43,000.00	$50.00	$50,000.00
PAVEMENT REMOVAL	SQ YD	20,000	$13.50	$270,000.00	$15.00	$300,000.00
HOT-MIX ASPHALT SURFACE REMOVAL, 2"	SQ YD	90,000	$5.00	$450,000.00	$5.00	$450,000.00
COMBINATION CONCRETE CURB AND GUTTER REMOVAL AND REPLACEMENT	FOOT	33,500	$24.00	$804,000.00	$28.00	$938,000.00
CLASS B PATCH, SPECIAL	SQ YD	350	$90.00	$31,500.00	$95.00	$33,250.00
CLASS D PATCH, SPECIAL	SQ YD	31,200	$93.00	$2,901,600.00	$100.00	$3,120,000.00
STORM SEWER REMOVAL, 8"	FOOT	50	$10.00	$500.00	$10.00	$500.00
STORM SEWER REMOVAL, 12"	FOOT	29	$10.00	$290.00	$10.00	$290.00
STORM SEWER REMOVAL, 15"	FOOT	100	$10.00	$1,000.00	$10.00	$1,000.00
STORM SEWER REMOVAL, 21"	FOOT	144	$10.00	$1,440.00	$10.00	$1,440.00
STORM SEWER REMOVAL, 36"	FOOT	665	$20.00	$13,300.00	$20.00	$13,300.00
STORM SEWER REMOVAL, 48"	FOOT	635	$20.00	$12,700.00	$20.00	$12,700.00
STORM SEWER REMOVAL, 54"	FOOT	791	$20.00	$15,820.00	$20.00	$15,820.00
STORM SEWER REMOVAL, 60"	FOOT	503	$20.00	$10,060.00	$20.00	$10,060.00
STORM SEWERS, 24" RCP	FOOT	12,795	$192.00	$2,456,640.00	$192.00	$2,456,640.00
STORM SEWERS, 30" RCP	FOOT	2,225	$218.00	$485,050.00	$218.00	$485,050.00
STORM SEWERS, 36" RCP	FOOT	3,300	$252.00	$831,600.00	$252.00	$831,600.00
STORM SEWERS, 48" RCP	FOOT	5,940	$328.00	$1,948,320.00	$328.00	$1,948,320.00
STORM SEWERS, 60" RCP	FOOT	3,675	$414.00	$1,521,450.00	$414.00	$1,521,450.00
STORM SEWERS, 72" RCP	FOOT	1,110	$650.00	$721,500.00	$650.00	$721,500.00
STORM SEWERS, 78" RCP	FOOT	3,250	$875.00	$2,843,750.00	$875.00	$2,843,750.00
STORM SEWERS, 84" RCP	FOOT	650	$1,000.00	$650,000.00	$1,000.00	$650,000.00
PRECAST CONCRETE BOX CULVERTS 4' x 5'	FOOT	200	$1,100.00	$220,000.00	$1,100.00	$220,000.00
JUNCTION CHAMBER FOR UNDERGROUND VAULT CONNECTION WITH GRATE	EACH	1	$300,000.00	$300,000.00	$300,000.00	$300,000.00
MANHOLES, TYPE A, 4'-DIAMETER, TYPE 1 FRAME, CLOSED LID	EACH	55	$3,600.00	$198,000.00	$3,600.00	$198,000.00
MANHOLES, TYPE A, 5'-DIAMETER, TYPE 1 FRAME, CLOSED LID	EACH	27	$5,200.00	$140,400.00	$5,200.00	$140,400.00
MANHOLES, TYPE A, 6'-DIAMETER, TYPE 1 FRAME, CLOSED LID	EACH	18	$7,300.00	$131,400.00	$7,300.00	$131,400.00
MANHOLES, TYPE A, 7'-DIAMETER, TYPE 1 FRAME, CLOSED LID	EACH	19	$11,000.00	$209,000.00	$11,000.00	$209,000.00
MANHOLES, TYPE A, 8'-DIAMETER, TYPE 1 FRAME, CLOSED LID	EACH	9	$16,500.00	$148,500.00	$16,500.00	$148,500.00
MANHOLES, TYPE A, 9'-DIAMETER, TYPE 1 FRAME, CLOSED LID	EACH	5	$20,000.00	$100,000.00	$20,000.00	$100,000.00
MANHOLES, TYPE A, 10'x10', TYPE 1 FRAME, CLOSED LID	EACH	9	$48,000.00	$432,000.00	$48,000.00	$432,000.00
PUMP FOR UNDERGROUND STORAGE BASIN	L. SUM	1	$750,000.00	$750,000.00	$750,000.00	$750,000.00
PUMP STATION UPDATED - 6th PUMP	L. SUM	1	$750,000.00	$750,000.00	$750,000.00	$750,000.00
STABILIZED CONSTRUCTION ENTRANCE	L. SUM	1	$15,000.00	$15,000.00	$15,000.00	$15,000.00
WATER MAIN RELOCATION, 24"	FOOT	1,000	$300.00	$300,000.00	$300.00	$300,000.00
RELOCATE WATER SERVICE LINE, LONG SIDE	EACH	197	$3,600.00	$709,200.00	$3,600.00	$709,200.00
REMOVE AND REPLACE WATER MAIN	FOOT	11,000	$240.00	$2,640,000.00	$240.00	$2,640,000.00
RELOCATE SANITARY SEWER SERVICE LINE	EACH	201	$1,900.00	$381,900.00	$1,900.00	$381,900.00
REMOVE AND REPLACE SANITARY MAIN	FOOT	5,840	$150.00	$876,000.00	$150.00	$876,000.00
SOIL EROSION/SEDIMENT CONTROL	L. SUM	1	$250,000.00	$250,000.00	$250,000.00	$250,000.00
THERMOPLASTIC PAVEMENT MARKINGS	L. SUM	1	$25,000.00	$25,000.00	$25,000.00	$25,000.00
TRAFFIC CONTROL	L. SUM	1	$750,000.00	$750,000.00	$750,000.00	$750,000.00
CONSTRUCTION LAYOUT	L. SUM	1	$200,000.00	$200,000.00	$200,000.00	$200,000.00
			SUBTOTAL =	$44,079,770.00		$44,805,920.00
			CONTINGENCY (20%) =	$8,815,954.00		$8,961,184.00
			CONSTRUCTION TOTAL =	**$52,895,724.00**		**$53,767,104.00**
			DESIGN ENGINEERING (6%) =	$3,173,743.44		$3,226,026.24
			CONSTRUCTION OBSERVATION (6%) =	$3,173,743.44		$3,226,026.24
			PERMITTING =	$250,000.00		$250,000.00
			TOTAL PROJECT COST INCLUDING ENGINEERING =	**$59,493,210.88**		**$60,469,156.48**

CATEGORY	2014 TOTAL COST	2015 TOTAL COST
UNDERGROUND	$15,542,720.00	$15,720,720.00
UNDERGROUND STORAGE	$7,396,000.00	$7,396,000.00
ABOVE GROUND STORAGE	$8,380,750.00	$8,380,750.00
PAVING	$6,568,800.00	$7,102,100.00
WM RELOCATION	$3,475,200.00	$3,475,200.00
SANITARY RELOCATION	$1,383,900.00	$1,383,900.00
MISCELLANEOUS	$1,332,400.00	$1,347,250.00
TOTAL	$44,079,770.00	$44,805,920.00

NOTES:
1. THIS ESTIMATE DOES NOT INCLUDE ROW ACQUISTION, TEMPORARY OR CONSTRUCTION EASEMENTS, OR RELOCATING ANY EXISTING UTILITIES.
2. THE 2014 UNIT PRICES ARE BASED ON OUR DESIGN MEMO DATED DECEMBER 5, 2014.
3. PAVEMENT THICKNESS REMOVAL WAS ASSUMED TO BE 21".
4. TRENCH BACKFILL IS INCLUDED IN THE COST OF THE WATER MAIN AND SANITARY MAIN REMOVAL AND REPLACEMENT.

Christopher B. Burke Engineering, Ltd.
9575 West Higgins Road, Suite 600
Rosemont, Illinois 60018
Project Number: 13-0605
Date: January 15, 2015
Revised: June 30, 2015

Village of Wilmette, Proposed Storm Sewer Improvements
ALTERNATIVE 2.2 - Centralized Storage at Community Playfield with Above Ground Storage

			2014 COSTS		2015 COSTS	
ITEMS	**UNIT**	**QUANTITY**	**UNIT PRICE**	**TOTAL COST**	**UNIT PRICE**	**TOTAL COST**
TREE ROOT PRUNING	EACH	100	$145.00	$14,500.00	$150.00	$15,000.00
TREE PRUNING (1 TO 10 INCH DIAMETER)	EACH	100	$129.00	$12,900.00	$135.00	$13,500.00
TREE PRUNING (OVER 10 INCH DIAMETER)	EACH	100	$170.00	$17,000.00	$175.00	$17,500.00
TREE PROTECTION	EACH	100	$100.00	$10,000.00	$125.00	$12,500.00
EARTH EXCAVATION	CU YD	125,000	$44.00	$5,500,000.00	$44.00	$5,500,000.00
TOPSOIL FURNISH AND PLACE	SQ YD	56,000	$7.00	$392,000.00	$7.00	$392,000.00
SODDING, SPECIAL	SQ YD	46,000	$11.00	$506,000.00	$11.00	$506,000.00
WETLAND SEEDING	SQ YD	10,000	$4.00	$40,000.00	$4.00	$40,000.00
EROSION CONTROL BLANKET	SQ YD	10,000	$2.50	$25,000.00	$2.50	$25,000.00
UNDERDRAINS FOR ABOVE GROUND STORAGE, 6" PVC	FOOT	225	$18.00	$4,050.00	$18.00	$4,050.00
UNDERDRAINS FOR ABOVE GROUND STORAGE, 8" PVC	FOOT	1,650	$22.00	$36,300.00	$22.00	$36,300.00
UNDERDRAINS FOR ABOVE GROUND STORAGE, 24" PVC	FOOT	800	$30.00	$24,000.00	$30.00	$24,000.00
UNDERDRAIN CATCH BASIN WITH GRATE	EACH	12	$1,000.00	$12,000.00	$1,000.00	$12,000.00
REMOVAL AND DISPOSAL OF UNSUITABLE MATERIAL	CU YD	1,000	$45.00	$45,000.00	$50.00	$50,000.00
TRENCH BACKFILL, CA-7	CU YD	90,000	$30.00	$2,700,000.00	$32.00	$2,880,000.00
AGGREGATE SUBGRADE IMPROVEMENT	CU YD	1,000	$54.00	$54,000.00	$60.00	$60,000.00
AGGREGATE FOR TEMPORARY ACCESS	TON	500	$22.00	$11,000.00	$25.00	$12,500.00
BITUMINOUS MATERIALS (PRIME COAT)	GAL	10,500	$3.00	$31,500.00	$3.00	$31,500.00
AGGREGATE (PRIME COAT)	TON	230	$15.00	$3,450.00	$20.00	$4,600.00
LEVELING BINDER (MACHINE METHOD), N50	TON	2,100	$88.00	$184,800.00	$110.00	$231,000.00
HOT-MIX ASPHALT BINDER COURSE, IL-19.0, N50 6"	TON	6,500	$76.00	$494,000.00	$80.00	$520,000.00
HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N50 2.5"	TON	2,700	$89.00	$240,300.00	$95.00	$256,500.00
HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N50 1.5"	TON	7,850	$89.00	$698,650.00	$95.00	$745,750.00
AGGREGATE BASE COURSE, 10"	SQ YD	27,000	$12.00	$324,000.00	$12.00	$324,000.00
PORTLAND CEMENT CONCRETE PATH REMOVAL AND REPLACEMENT	SQ YD	1,000	$70.00	$70,000.00	$70.00	$70,000.00
PORTLAND CEMENT CONCRETE SIDEWALK 5 INCH	SQ FT	2,500	$6.00	$15,000.00	$6.50	$16,250.00
SIDEWALK REMOVAL	SQ FT	2,500	$2.00	$5,000.00	$3.00	$7,500.00
DETECTABLE WARNINGS	SQ FT	1,000	$43.00	$43,000.00	$50.00	$50,000.00
PAVEMENT REMOVAL	SQ YD	20,000	$13.50	$270,000.00	$15.00	$300,000.00
HOT-MIX ASPHALT SURFACE REMOVAL, 2"	SQ YD	90,000	$5.00	$450,000.00	$5.00	$450,000.00
COMBINATION CONCRETE CURB AND GUTTER REMOVAL AND REPLACEMENT	FOOT	33,500	$24.00	$804,000.00	$28.00	$938,000.00
CLASS B PATCH, SPECIAL	SQ YD	350	$90.00	$31,500.00	$95.00	$33,250.00
CLASS D PATCH, SPECIAL	SQ YD	31,200	$93.00	$2,901,600.00	$100.00	$3,120,000.00
STORM SEWER REMOVAL, 8"	FOOT	50	$10.00	$500.00	$10.00	$500.00
STORM SEWER REMOVAL, 12"	FOOT	29	$10.00	$290.00	$10.00	$290.00
STORM SEWER REMOVAL, 15"	FOOT	100	$10.00	$1,000.00	$10.00	$1,000.00
STORM SEWER REMOVAL, 21"	FOOT	144	$10.00	$1,440.00	$10.00	$1,440.00
STORM SEWER REMOVAL, 36"	FOOT	665	$20.00	$13,300.00	$20.00	$13,300.00
STORM SEWER REMOVAL, 48"	FOOT	635	$20.00	$12,700.00	$20.00	$12,700.00
STORM SEWER REMOVAL, 54"	FOOT	791	$20.00	$15,820.00	$20.00	$15,820.00
STORM SEWER REMOVAL, 60"	FOOT	503	$20.00	$10,060.00	$20.00	$10,060.00
STORM SEWERS, 24" RCP	FOOT	12,795	$192.00	$2,456,640.00	$192.00	$2,456,640.00
STORM SEWERS, 30" RCP	FOOT	2,225	$218.00	$485,050.00	$218.00	$485,050.00
STORM SEWERS, 36" RCP	FOOT	3,300	$252.00	$831,600.00	$252.00	$831,600.00
STORM SEWERS, 48" RCP	FOOT	5,940	$328.00	$1,948,320.00	$328.00	$1,948,320.00
STORM SEWERS, 60" RCP	FOOT	3,675	$414.00	$1,521,450.00	$414.00	$1,521,450.00
STORM SEWERS, 78" RCP	FOOT	850	$875.00	$743,750.00	$875.00	$743,750.00
STORM SEWERS, 84" RCP	FOOT	650	$1,000.00	$650,000.00	$1,000.00	$650,000.00
PRECAST CONCRETE BOX CULVERTS 10' X 6'	FOOT	1,540	$1,700.00	$2,618,000.00	$1,700.00	$2,618,000.00
PRECAST CONCRETE BOX CULVERTS 10' X 7'	FOOT	2,000	$1,800.00	$3,600,000.00	$1,800.00	$3,600,000.00
MANHOLES, TYPE A, 4'-DIAMETER, TYPE 1 FRAME, CLOSED LID	EACH	55	$3,600.00	$198,000.00	$3,600.00	$198,000.00
MANHOLES, TYPE A, 5'-DIAMETER, TYPE 1 FRAME, CLOSED LID	EACH	27	$5,200.00	$140,400.00	$5,200.00	$140,400.00
MANHOLES, TYPE A, 6'-DIAMETER, TYPE 1 FRAME, CLOSED LID	EACH	18	$7,300.00	$131,400.00	$7,300.00	$131,400.00
MANHOLES, TYPE A, 7'-DIAMETER, TYPE 1 FRAME, CLOSED LID	EACH	19	$11,000.00	$209,000.00	$11,000.00	$209,000.00
MANHOLES, TYPE A, 8'-DIAMETER, TYPE 1 FRAME, CLOSED LID	EACH	9	$16,500.00	$148,500.00	$16,500.00	$148,500.00
MANHOLES, TYPE A, 9'-DIAMETER, TYPE 1 FRAME, CLOSED LID	EACH	5	$20,000.00	$100,000.00	$20,000.00	$100,000.00
MANHOLES, TYPE A, 10'x10', TYPE 1 FRAME, CLOSED LID	EACH	9	$48,000.00	$432,000.00	$48,000.00	$432,000.00
JUNCTION BOX	EACH	1	$150,000.00	$150,000.00	$150,000.00	$150,000.00
PUMP STATION UPDATED - 6th PUMP	L. SUM	1	$750,000.00	$750,000.00	$750,000.00	$750,000.00
STABILIZED CONSTRUCTION ENTRANCE	L. SUM	1	$15,000.00	$15,000.00	$15,000.00	$15,000.00
WATER MAIN RELOCATION, 24"	FOOT	1,000	$300.00	$300,000.00	$300.00	$300,000.00
RELOCATE WATER SERVICE LINE, LONG SIDE	EACH	197	$3,600.00	$709,200.00	$3,600.00	$709,200.00
REMOVE AND REPLACE WATER MAIN	FOOT	11,000	$240.00	$2,640,000.00	$240.00	$2,640,000.00
RELOCATE SANITARY SEWER SERVICE LINE	EACH	201	$1,900.00	$381,900.00	$1,900.00	$381,900.00
REMOVE AND REPLACE SANITARY MAIN	FOOT	5,840	$150.00	$876,000.00	$150.00	$876,000.00
SOIL EROSION/SEDIMENT CONTROL	L. SUM	1	$250,000.00	$250,000.00	$250,000.00	$250,000.00
THERMOPLASTIC PAVEMENT MARKINGS	L. SUM	1	$25,000.00	$25,000.00	$25,000.00	$25,000.00
TRAFFIC CONTROL	L. SUM	1	$750,000.00	$750,000.00	$750,000.00	$750,000.00
CONSTRUCTION LAYOUT	L. SUM	1	$200,000.00	$200,000.00	$200,000.00	$200,000.00
			SUBTOTAL =	$39,286,870.00		$40,015,020.00
			CONTINGENCY (20%) =	$7,857,374.00		$8,003,004.00
			CONSTRUCTION TOTAL =	**$47,144,244.00**		**$48,018,024.00**
			DESIGN ENGINEERING (6%) =	$2,828,654.64		$2,881,081.44
			CONSTRUCTION OBSERVATION (6%) =	$2,828,654.64		$2,881,081.44
			PERMITTING =	$250,000.00		$250,000.00
			TOTAL PROJECT COST INCLUDING ENGINEERING =	**$53,051,553.28**		**$54,030,186.88**

CATEGORY	2014 TOTAL COST	2015 TOTAL COST
UNDERGROUND	$18,969,220.00	$19,149,220.00
ABOVE GROUND STORAGE	$7,557,350.00	$7,557,350.00
PAVING	$6,568,800.00	$7,102,100.00
WM RELOCATION	$3,475,200.00	$3,475,200.00
SANITARY RELOCATION	$1,383,900.00	$1,383,900.00
MISCELLANEOUS	$1,332,400.00	$1,347,250.00
TOTAL	$39,286,870.00	$40,015,020.00

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