TABLE OF CONTENTS

SECTION 1 - PROJECTS TO REMOVE

Orig. ID #	Source	Project Name	Issue/Problem	New ID #
0-5	1999 Master Plan	Ramblewood Lane	Sewer backups due to high groundwater and leaky joints	-
0-3	1999 Master Plan	Ambois Drive Sewers	Sewer backups due to high groundwater and leaky joints	-
1-3	1999 Master Plan	D'Artagnan Court	Damaged or inadequate storm sewers - sinkhole	-
1-2	1999 Master Plan	Robinview Court	Damaged or inadequate storm sewers - sinkhole	-
1-1	1999 Master Plan	Haverton Drive #812	Damaged or inadequate storm sewers - sinkhole	-
3-27	1999 Master Plan	Spoede Road at Ramblewood	Inadequate curb, gutter and inlets	-
3-24	1999 Master Plan	Foxbrook Drive	Terraced subdivisions - ponding in yards	-
4-9	1999 Master Plan	Somerton Court	Creek flooding and erosion - threatens maintained area	-
5-3	1999 Master Plan	Ridgecorde Place #485	Creek flooding and erosion - damaging landscaping	-
13-6	1999 Master Plan	Litchford Court	Terraced subdivisions - water entering home	-
N/A	N/A	12866 Nimes Drive	Property was highlighted in green as an unresolved issue from 1999 Master Plan. However, no site evaluation corresponds to this address.	-

SECTION 2 - PROJECTS PENDING TO REMOVE

No Visible Issue

Orig. ID #	Source	Project Name	Issue/Problem	New ID #
1-7	1999 Master Plan	Oak Park Drive	Minor yard flooding and erosion - erosion in yard	-
3-30	1999 Master Plan	Sackston Ridge Lane	Inadequate curb, gutter and inlets - ponding in yards	-
4-2	1999 Master Plan	Broadview Farm #9	Minor yard flooding and erosion - threatens maintained area	-
11-7	1999 Master Plan	Montauben Drive	Damaged or inadequate storm sewers - ponding in street	-
11-6	1999 Master Plan	Emerald Green & Emerson Intersection	Inadequate curb, gutter and inlets - ponding in street	-
11-3	1999 Master Plan	North Walling Drive	Inadequate curb, gutter and inlets - ponding in street	-
11-1	1999 Master Plan	Royal Gate-Royal Manor Drive	Damaged or inadequate storm sewers - ponding in street	-
10	2010 Questionnaire	12410 Conway Road	Yard ponding	-
N/A	N/A	12535, 12542, 12550 Mason Forest	Assessment of street drainage	-

Issue Appears Resolved

Orig. ID #	Source	Project Name	Issue/Problem	New ID #
3-32	1999 Master Plan	Conway Homes Circle	Minor yard flooding and erosion - ponding in yards	-
5-6	1999 Master Plan	Balcon Estates #7	Creek flooding and erosion - damaging landscaping	-
2	2010 Questionnaire	Balcon Estates #7	Creek flooding and erosion	-
5-5	1999 Master Plan	Stratford Ridge Court	Creek flooding and erosion - threatens yards and landscaping	-
5-1	1999 Master Plan	Winrock Drive	Inadequate curb, gutter and inlets - damaging landscaping	-

SECTION 3 - REMAINING PROJECTS

Creve Coeur Creek Main Branch (CC)

Orig. ID #	Source	Project Name	Issue/Problem	New ID #
5-8	1999 Master Plan	Fernview Drive #1009 and #1020	Creek flooding and erosion - threatens fences	CC-1/CC-2
3-2	1999 Master Plan	Fenway - 900 Block	Terraced subdivisions - ponding in yards	CC-3
13	2010 Questionnaire	12970 Ferntop	Creek flooding and erosion	CC-4
14	2010 Questionnaire	12921 Fernway	Yard ponding and erosion	CC-5

Smith Creek (SC)

Orig. ID #	Source	Project Name	Issue/Problem	New ID #
13-9	1999 Master Plan	Chasselle-Chamblee Lane	Creek flooding and erosion - water entering homes	SC-1
5	2010 Questionnaire	13 Chamblee	Creek flooding and erosion	
6	2010 Questionnaire	15 Chamblee	Creek flooding and erosion	
8	2010 Questionnaire	1 Chasselle	Creek flooding and erosion	
5-7	1999 Master Plan	Ladue Woods Drive	Terraced subdivisions	SC-2
4-4	1999 Master Plan	Royal Manor Drive	Creek flooding and erosion - threatens maintained area	SC-3
4-5	1999 Master Plan	Booth Bay Lane	Creek flooding and erosion - threatens maintained area	SC-4/SC-5
4-10	1999 Master Plan	Clion and Chamblee Lane	Creek flooding and erosion - threatens maintained area	SC-6/SC-7
19	2010 Questionnaire	287 Ladue Lake	Terraced subdivisions-yard erosion and flooding	SC-7
4-11	1999 Master Plan	Laduemont Drive	Creek flooding and erosion - threatens maintained area	SC-8

TABLE OF CONTENTS

Smith Creek (SC) (continued)

Orig. ID #	Source	Project Name	Issue/Problem	New ID #
2-1	1999 Master Plan	Hibler Oaks	Inadequate drainage swales - minor yard erosion	SC-9
3	2010 Questionnaire	24 Balcon Estates	Creek flooding and erosion	SC-10
4	2010 Questionnaire	26 Balcon Estates	Creek flooding and erosion	

Fernridge Creek (FC)

Orig. ID #	Source	Project Name	Issue/Problem	New ID #
13-4	1999 Master Plan	Fernridge Creek - Mason to D'Artagnan	Creek flooding and erosion - water entering homes	FC-1
1	2010 Questionnaire	12995 Ambois	Creek flooding threatens residential street	
15	2010 Questionnaire	13119 Gascogne	Creek erosion	
13-1	1999 Master Plan	Beauvais Court	Terraced subdivisions - water entering home	FC-2
3-10	1999 Master Plan	Hibler Court	Terraced subdivisions - ponding in yards	FC-3
11	2010 Questionnaire	12295 Country Manor	Yard erosion at discharge of storm pipe	FC-4
17	2010 Questionnaire	12318 Halsgame	Yard erosion	FC-5
26	2010 Questionnaire	12121 Royal Valley Drive	Yard erosion	FC-6

Deer Creek Main Branch (DC)

Orig. ID #	Source	Project Name	Issue/Problem	New ID #
4-8	1999 Master Plan	Tarrytown-Lakeshore Drive	Creek flooding and erosion - threatens maintained area	DC-1
29	2010 Questionnaire	11732 Tarrytown	Creek erosion	
3-7	1999 Master Plan	Fairways Circle - 600 Block	Inadequate drainage swales - ponding in yards	DC-2
2-4	1999 Master Plan	Villa Coublay Drive	Creek flooding and erosion - erosion in ravine	DC-3
2-5	1999 Master Plan	Fairways Circle - 500 Block	Creek flooding and erosion - erosion in ravine	DC-4
1-6	1999 Master Plan	Ladue Estates Dr. #5	Minor yard flooding and erosion - erosion in yard	DC-5
20	2010 Questionnaire	104 Ladue Meadows	Terraced subdivisions-yard erosion	DC-6
27	2010 Questionnaire	434 Runnymede Drive	Terraced subdivisions-yard flooding	DC-7

Windrush Creek (WC)

Orig. ID #	Source	Project Name	Issue/Problem	New ID #
7-1	1999 Master Plan	Mosely Acres	Dam failure or overtopping - threatens building	WC-1
16	2010 Questionnaire	11076 Graeser	Inadequate curb, gutter, inlets- yard flooding	WC-2
23	2010 Questionnaire	16 Mosley Acres	Inadequate curb and gutter-yard erosion	WC-3
24	2010 Questionnaire	121 Mystic Meadows	Terraced subdivisions-yard erosion and flooding	WC-4
30	2010 Questionnaire	11205 Tureen Drive	Yard erosion	WC-5
31	2010 Questionnaire	6 Wedgewood Lane	Yard ponding and erosion	WC-6
32	2010 Questionnaire	7 Wedgewood Lane	Yard ponding and erosion	
33	2010 Questionnaire	6 Windrush Creek, East	Creek erosion	WC-7
18	2010 Questionnaire	73 Ladue Estates, East	Yard ponding	WC-8

Monsanto Sunswept Creek (MS)

Orig. ID #	Source	Project Name	Issue/Problem	New ID #
4-6	1999 Master Plan	Spoede Acres	Creek flooding and erosion - threatens maintained area	MS-1
28	2010 Questionnaire	2 Spoede Acres Street	Yard ponding and erosion	
4-7	1999 Master Plan	Spoede View Court #10667	Creek flooding and erosion - threatens maintained area	MS-2
3-20	1999 Master Plan	Country View Drive #10671	Terraced subdivisions - ponding in yards	MS-3
12	2010 Questionnaire	10671 Country View	Yard erosion	
1-8	1999 Master Plan	Oak Park Court	Inadequate curb, gutter and inlets - ponding in street	MS-4
7	2010 Questionnaire	12-17 Chaminade	Creek erosion threatens pedestrian bridge	MS-5
9	2010 Questionnaire	77 Colonial Hills	Inadequate drainage swales-yard erosion and flooding	MS-6
21	2010 Questionnaire	859 Larkin	Inadequate drainage swales-yard erosion and flooding	MS-7
22	2010 Questionnaire	3-6 Middlebrook Lane	Creek erosion threatens residential culvert	MS-8
25	2010 Questionnaire	10835 Rondelay Drive	Yard erosion	MS-9
N/A	N/A	12, 13 Chilton Lane	Creek erosion- Culvert Damage	MS-10

Pebble Creek (PC)

Orig. ID #	Source	Project Name	Issue/Problem	New ID #
5-4	1999 Master Plan	Tealwood North #47	Creek flooding and erosion - damaging driveway retaining wall	PC-1

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: SPOEDE AT RAMBLEWOOD / RAMBLEWOOD LANE

Street Address: 830 & 833 SPOEDE

MSD Map No. 17 N2 **Complaint Reference:** ☒ **1999 Master Plan** 3-27/0-5

☐ **2010 Survey Response** _____

Original Description: ☒ **Erosion** ☒ **Flooding** ☒ **Inadequate Sewer Capacity** ☐ **Other**

inadequate curb gutter & inlets, runoff from commercial properties on Olive sheet flows onto Spoede causing erosion & street flooding on Spoede, residents report sewer backups through basement floor drains during heavy rains.

Site Description and Observations (include creek or tributary name, if known):

No visible signs of erosion or flooding. Storm water is not an impact on home owners sewer backups.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

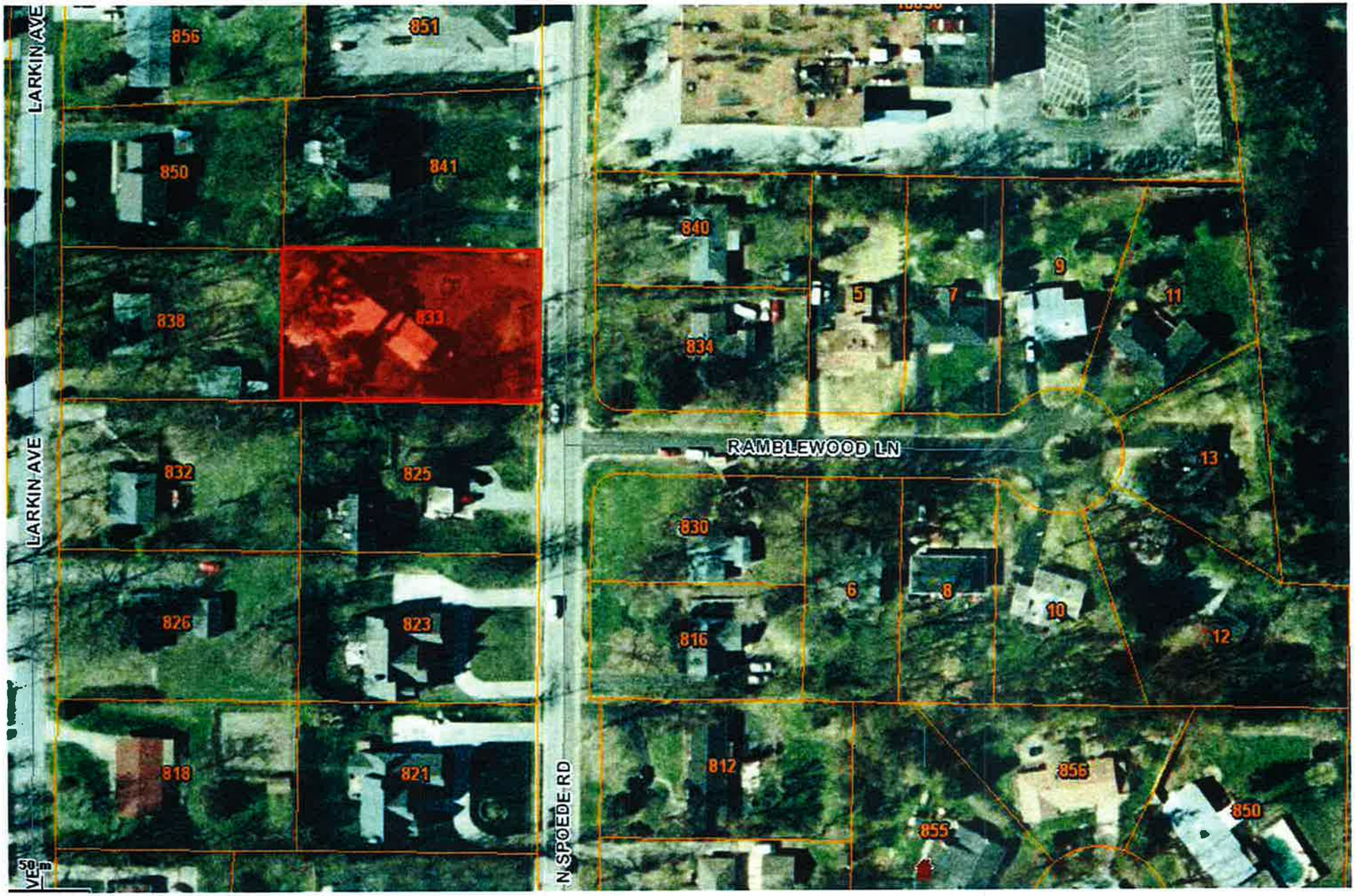
☒ **Aerial photo**

☒ **Site photos**

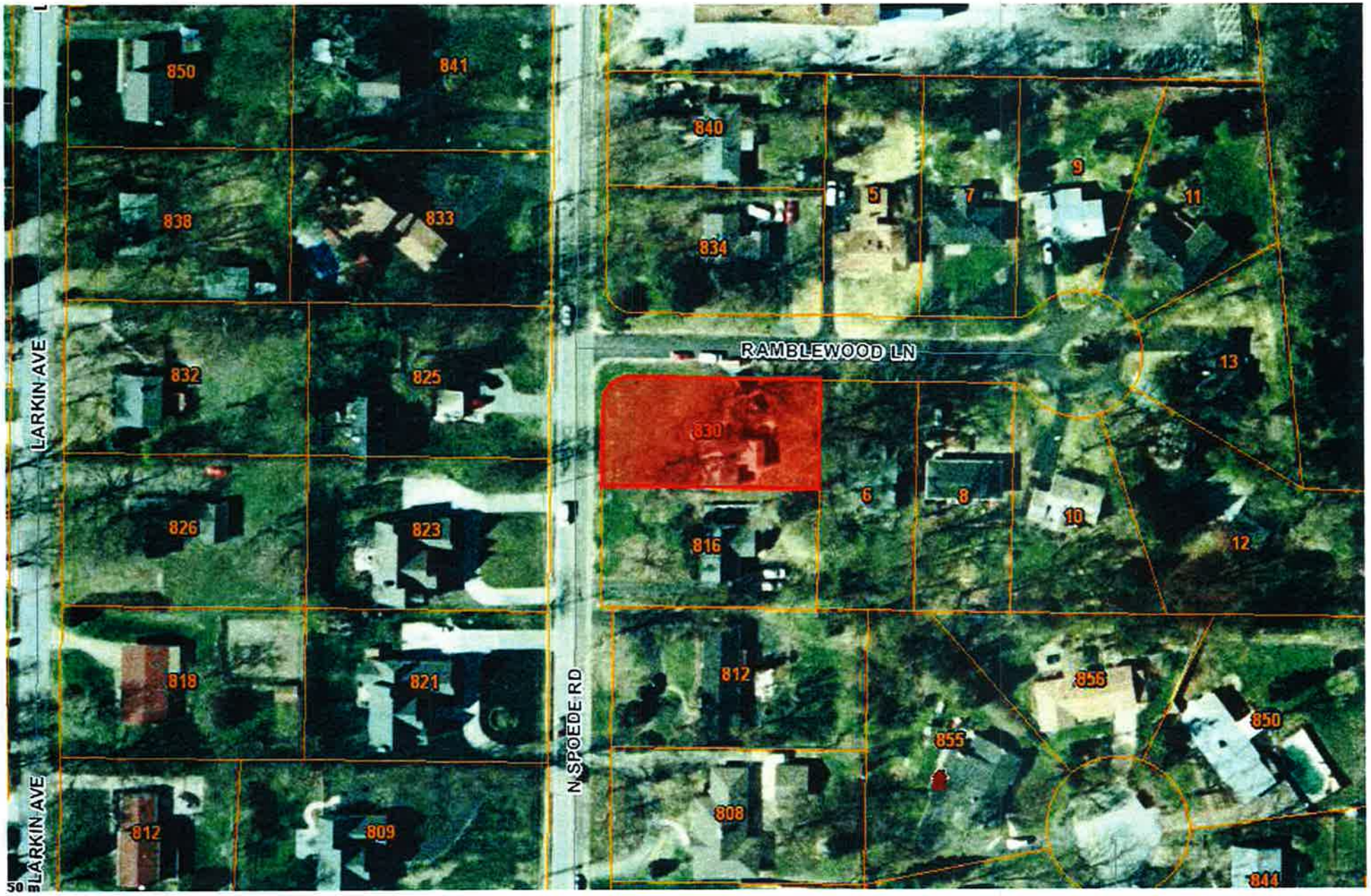
Field Crew: SR / TJS

Date: 9-29-11

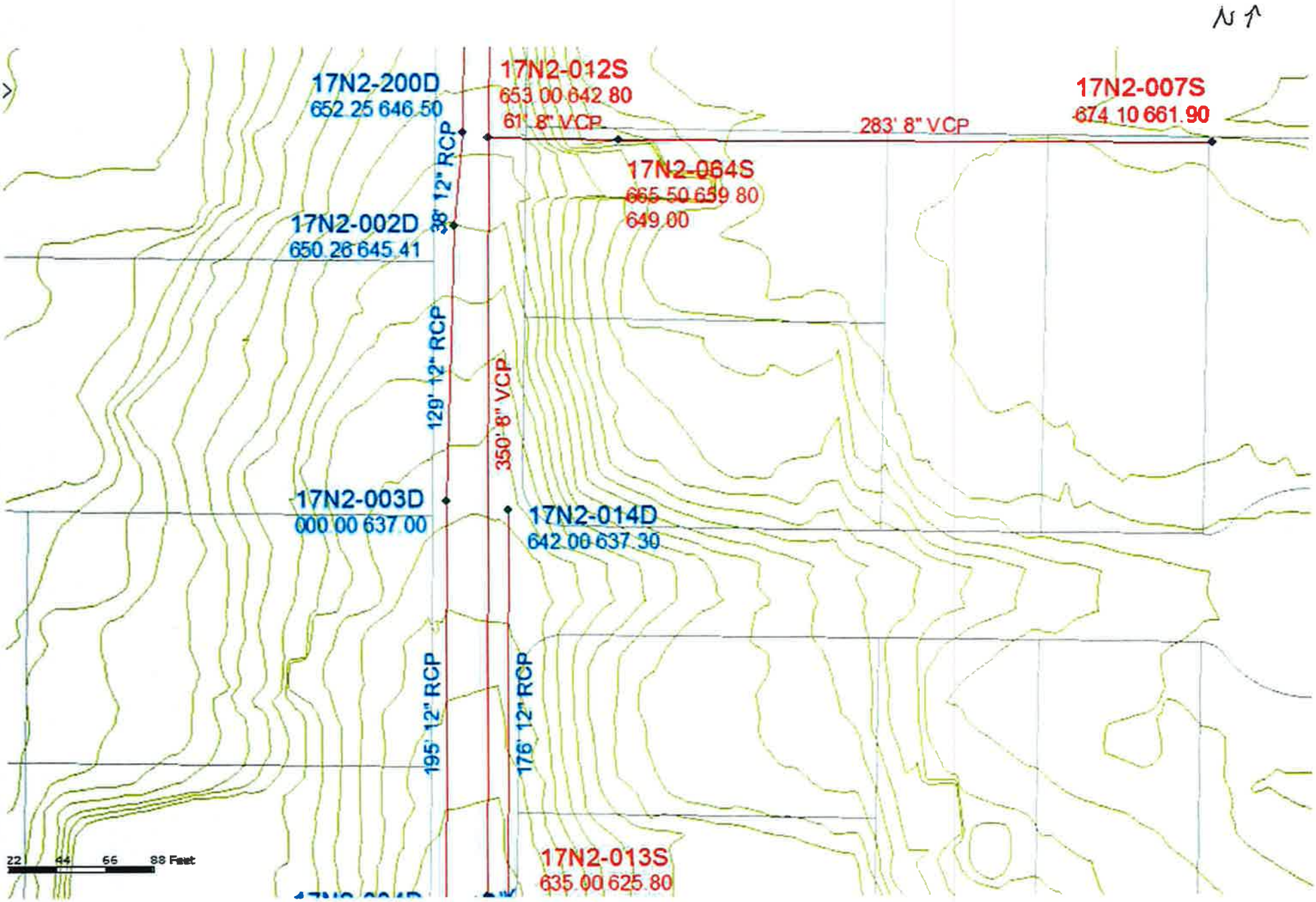
N↑


LARKIN AVE
LARKIN AVE
N SPOEDE RD
RAMBLEWOOD LN
856
851
850
841
838
833
832
825
826
823
818
821
840
834
5
7
9
11
13
830
6
8
10
12
816
812
856
850
855

N ↑


LARKIN AVE
LARKIN AVE
N SPOEDE RD
RAMBLEWOOD LN
850
841
838
833
832
825
826
823
818
821
812
809
840
834
5
7
9
11
13
830
6
8
10
12
816
812
808
856
855
850
844

N ↑


N
17N2-200D
652.25 646.50
17N2-012S
653.00 642.80
61' 8" VCP
283' 8" VCP
17N2-007S
674.10 661.90
17N2-064S
665.50 659.80
649.00
38' 12" RCP
17N2-002D
650.26 645.41
129' 12" RCP
350' 8" VCP
17N2-003D
000.00 637.00
17N2-014D
642.00 637.30
195' 12" RCP
176' 12" RCP
17N2-013S
635.00 625.80
22 44 66 88 Feet

LOOKING NORTH ON SPOEDE

LOOKING NORTH ON SPOEDE

LOOKING NORTH ON SPOEDE

LOOKING EAST AT RAMBLEWOOD

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: WEST OF I-270 B/T OLIVE and LADUE

Street Address: 12944 – 13006 Ambois Dr.

MSD Map No. 17P1 **Complaint Reference:** ☒ **1999 Master Plan** D-3

☐ **2010 Survey Response** _____

Original Description: ☐ **Erosion** ☐ **Flooding** ☐ **Inadequate Sewer Capacity** ☒ **Other**

Residents report sewer backups through basement floor drains during heavy rains. Most likely cause is high ground water table and leaky sanitary sewer joints.

Site Description and Observations (include creek or tributary name, if known):

Not an issue with storm water.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☐ **Site photos**

Field Crew: TSS

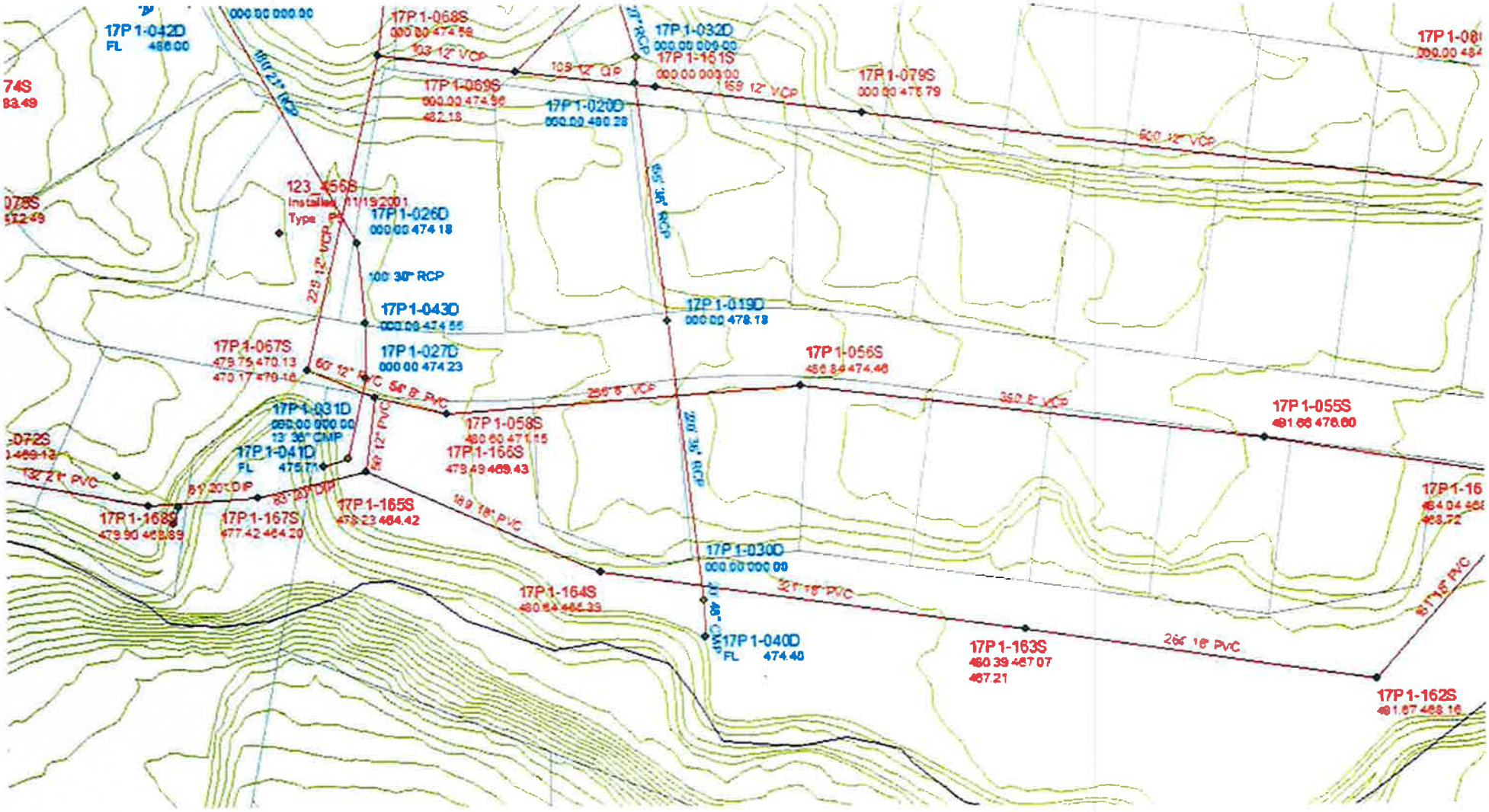
Date: 10-27-11

N ↑

NARBONNE DR
CHAUMONT CT
LIBOURNE CT
BELLERIVE ESTATES DR
MONTAUBAN DR
AMBOIS DR
LAMPADAIRE DR
RFIELD LN

N ↑

N ↑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FL 486.00
17P1-068S
103 12" VCP
17P1-032D
17P1-151S
109 12" CIP
159 12" VCP
17P1-079S
17P1-069S
17P1-020D
600 12" VCP
123_456B
Installed 11/19/2001
Type PS
17P1-026D
100 30" RCP
17P1-043D
17P1-019D
17P1-067S
17P1-027D
17P1-056S
17P1-031D
13 36" CMP
17P1-058S
17P1-055S
17P1-041D
FL 475.71
17P1-166S
17P1-168S
17P1-167S
17P1-165S
17P1-030D
17P1-164S
17P1-040D
FL 474.40
17P1-163S
17P1-162S

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: WEST OF I-270 B/T OLIVE and LADUE

Street Address: 13138, 13143, 13203, 13200 D'Artagnan Ct.

MSD Map No. 17P1 **Complaint Reference:** ☒ **1999 Master Plan** 1-3

☐ **2010 Survey Response** _____

Original Description: ☐ **Erosion** ☐ **Flooding** ☐ **Inadequate Sewer Capacity** ☒ **Other**

Sinkholes present over many sections of storm sewer. Serious deterioration of pipe sections and joints is likely cause.

Site Description and Observations (include creek or tributary name, if known):

Possible sinkhole observed along east side of lot 13200. No sinkholes present at 13138, 13143, and 13203.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

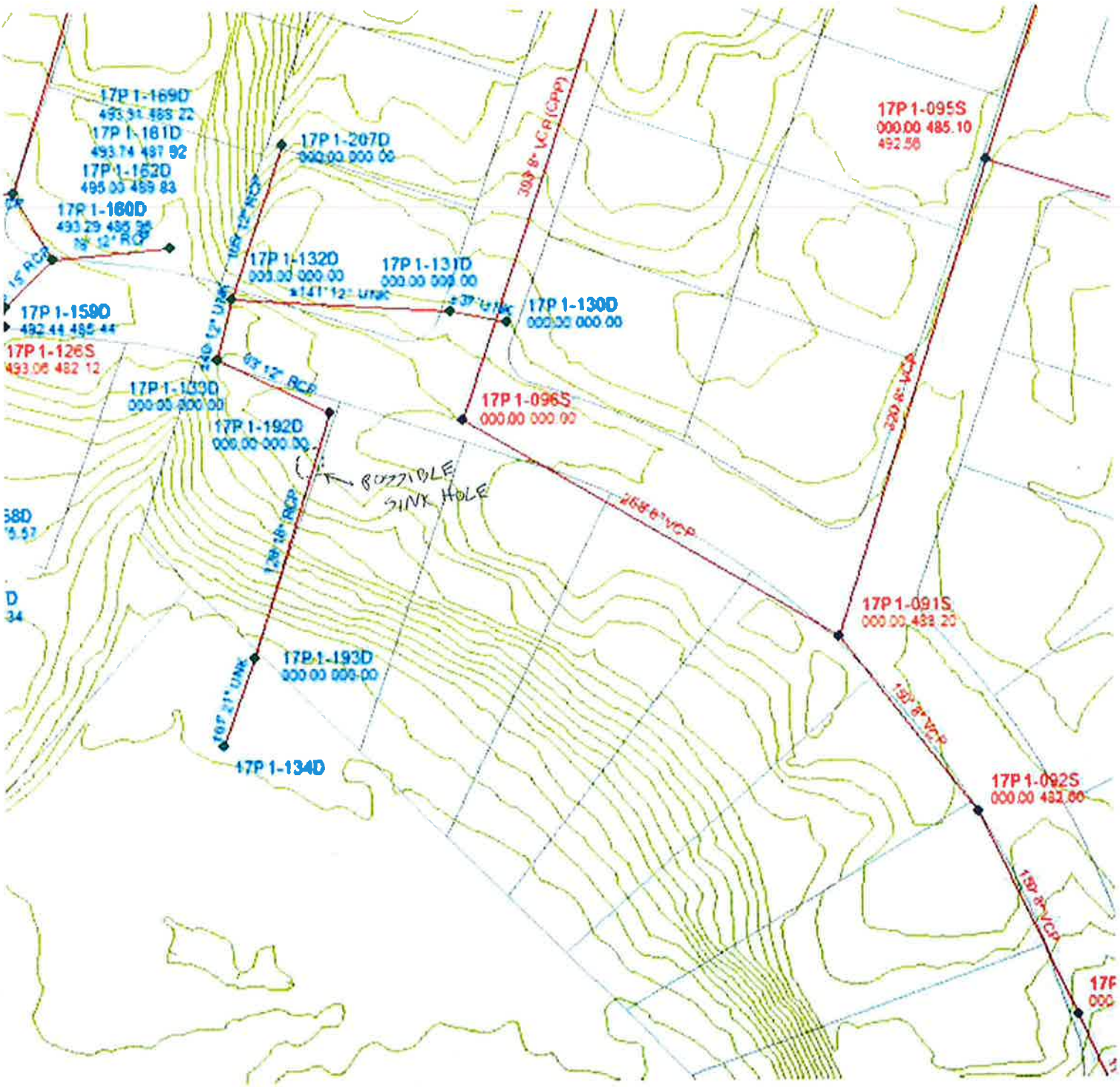
Field Crew: TJS

Date: 10-27-11

N
TURRENTINE TRL
BELLERIVE MANOR DR
ARAMIS DR
GASCOGNE DR
GASCOGNE CT
DARTAGNAN CT
13203
13143
13200
13138

N ↑

N ↑


17P 1-169D
17P 1-161D
17P 1-162D
17P 1-160D
17P 1-207D
17P 1-095S
000.00 485.10
17P 1-132D
17P 1-131D
17P 1-130D
17P 1-159D
17P 1-126S
17P 1-133D
17P 1-192D
17P 1-096S
POSSIBLE SINK HOLE
17P 1-091S
17P 1-193D
17P 1-134D
17P 1-092S

FRONT YARD 13138

EAST SIDE LOT 13143

LOT 13138

LOT 13143

FRONT YARD LOT 13200

LOT 13203

LOT 13200

EAST SIDE LOT 13200

EAST SIDE LOT 13203

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: WEST OF I-270 B/T OLIVE and LADUE

Street Address: 12521, 12529 Robinview Ct.

MSD Map No. 1704 **Complaint Reference:** ☒ **1999 Master Plan** 1-2

☐ **2010 Survey Response** _____

Original Description: ☐ **Erosion** ☐ **Flooding** ☒ **Inadequate Sewer Capacity** ☒ **Other**

Inlet and storm sewer draining short culdesac appears to be undersized. More critically, the existing pipe may have leaking joints which may be causing settlement of side yard and cracking of garage finished floor.

Site Description and Observations (include creek or tributary name, if known):

No sink holes observed along storm pipe.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

Field Crew: TJS

Date: 10-25-11

N ↑

MASON FOREST DR
MEADOW GREEN PL
HIBLER WOODS DR
ROBINVIEW CT
HIBLER OAKS CT
FALLING LEAVES CT
FALAISE DR
LADUE LAKE CT
12561
12555
12549
12541
12535
489
505
490
482
474
466
12567
485
477
495
455
12556
12542
12544
443
437
12574
12550
12563
454
462
421
442
12575
416
436
434
12591
12521
12545
415
12509
433
430
12529
410
12570
412
12520
12520
405
12584
12578
409
404
12512
404
12551
12539
12525
12503
371
371
374
370
340
357
357
358
12550
12536
365
12522
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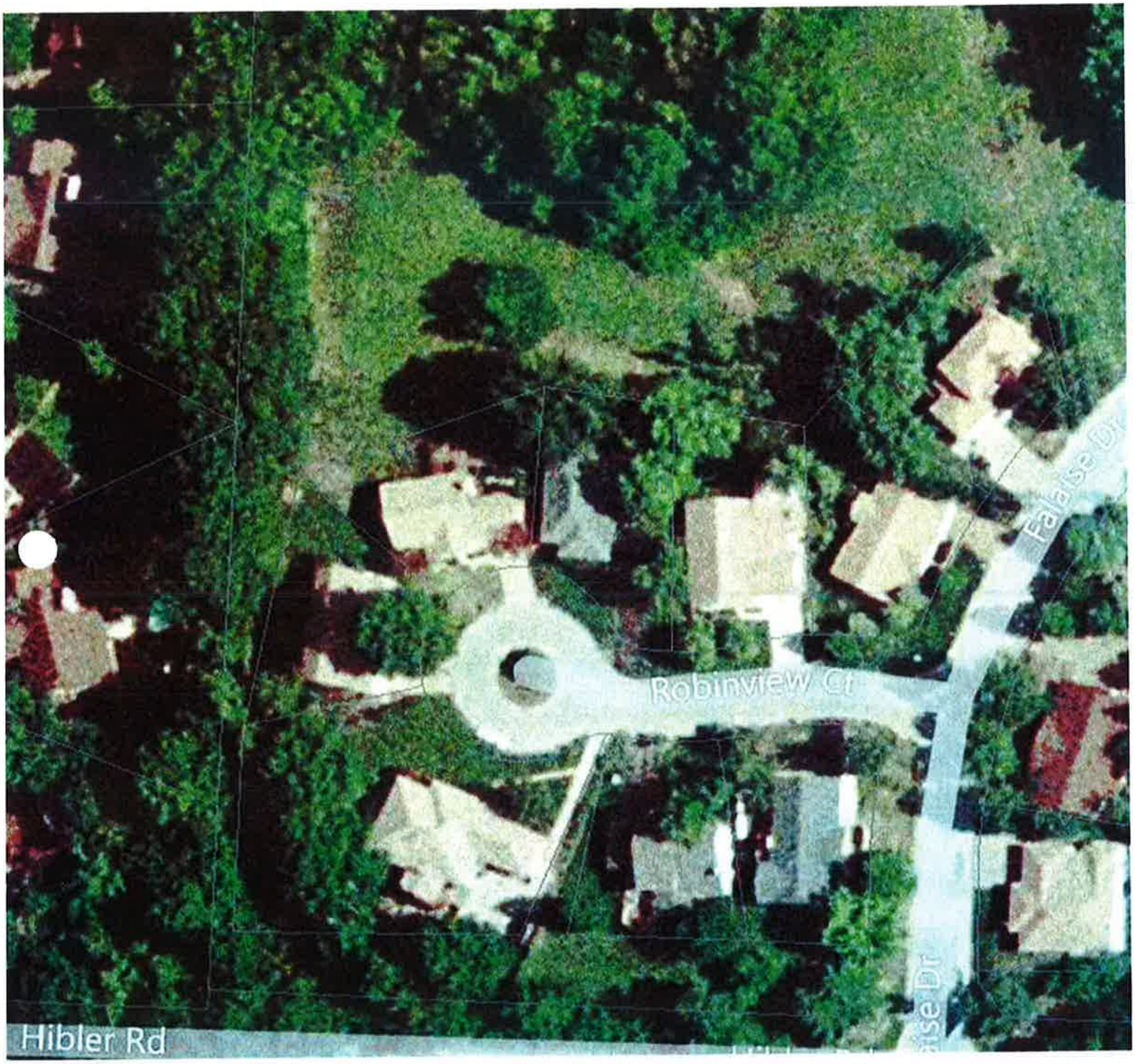
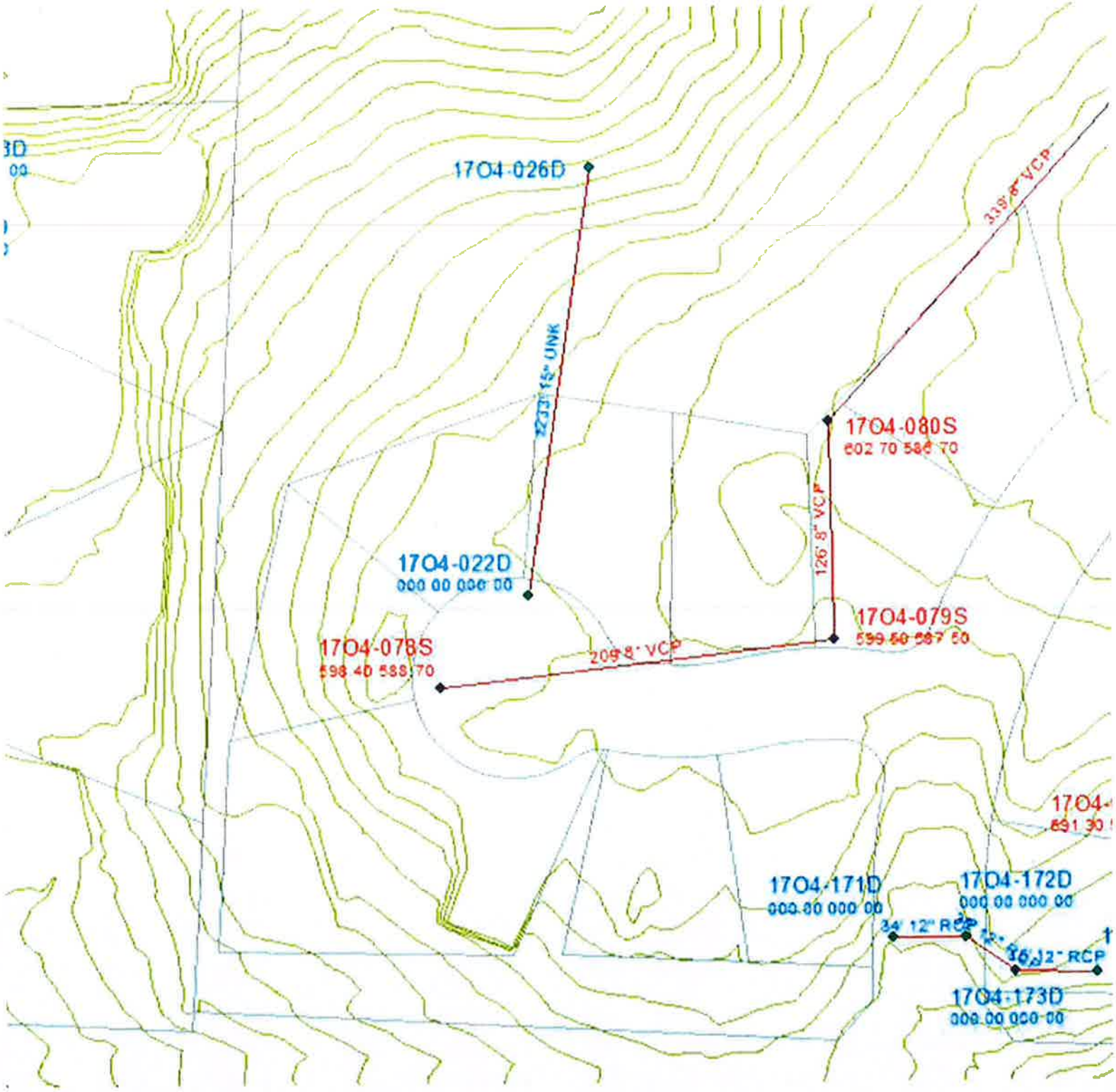
274
12546
321
324

N ↑

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17O4-022D
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17O4-078S
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17O4-080S
602 70 586 70
17O4-079S
599 50 587 50
17O4-171D
000 00 000 00
17O4-172D
000 00 000 00
17O4-173D
000 00 000 00
34' 12" RCP
209' 8" VCP
126' 8" VCP
339' 8" VCP

INLET

INLET

EAST SIDE LOT 12521

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: WEST OF I-270 B/T OLIVE and LADUE

Street Address: 812 Haverston Dr.

MSD Map No. 17P2 **Complaint Reference:** [X] **1999 Master Plan** 1-1

[ ] **2010 Survey Response** _____

Original Description: [ ] **Erosion** [ ] **Flooding** [X] **Inadequate Sewer Capacity** [X] **Other**

Ground sinking around area inlet in backyard of home. Water has to pool several inches to get into drain.

Site Description and Observations (include creek or tributary name, if known):

Evidence of ground sinking around inlet (fence has sunk 2 feet). Void spaces present around sides of inlet.

Attached (w/ the problem area highlighted): [X] **MSD facilities map**

[X] **Aerial photo**

[X] **Site photos**

Field Crew: TJS

Date: 10-27-11

N
ATE LN
FERNWAY LN
SOMERTON RIDGE DR
HAVERTON DR
CASTLETON CT
LESPARRE DR
TIMBER RUN DR
NIMES DR
944
936
982
12925
12917
928
984
899
12923
12915
920
895
12909
912
889
12903
12885
866
911
12918
12930
906
883
12887
903
855
12873
12865
12857
12849
12843
900
875
880
849
852
12901
852
867
872
12882
12874
12866
12858
12850
12844
841
840
846
859
864
833
12885
12869
12861
12853
835
851
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12877
842
825
820
829
843
844
12892
12860
832
840
817
812
12884
12876
12868
12852
823
826
835
836
800
811
12885
12871
12863
12855
12839
817
820
827
828
805
813
814
815
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752
12880
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12864
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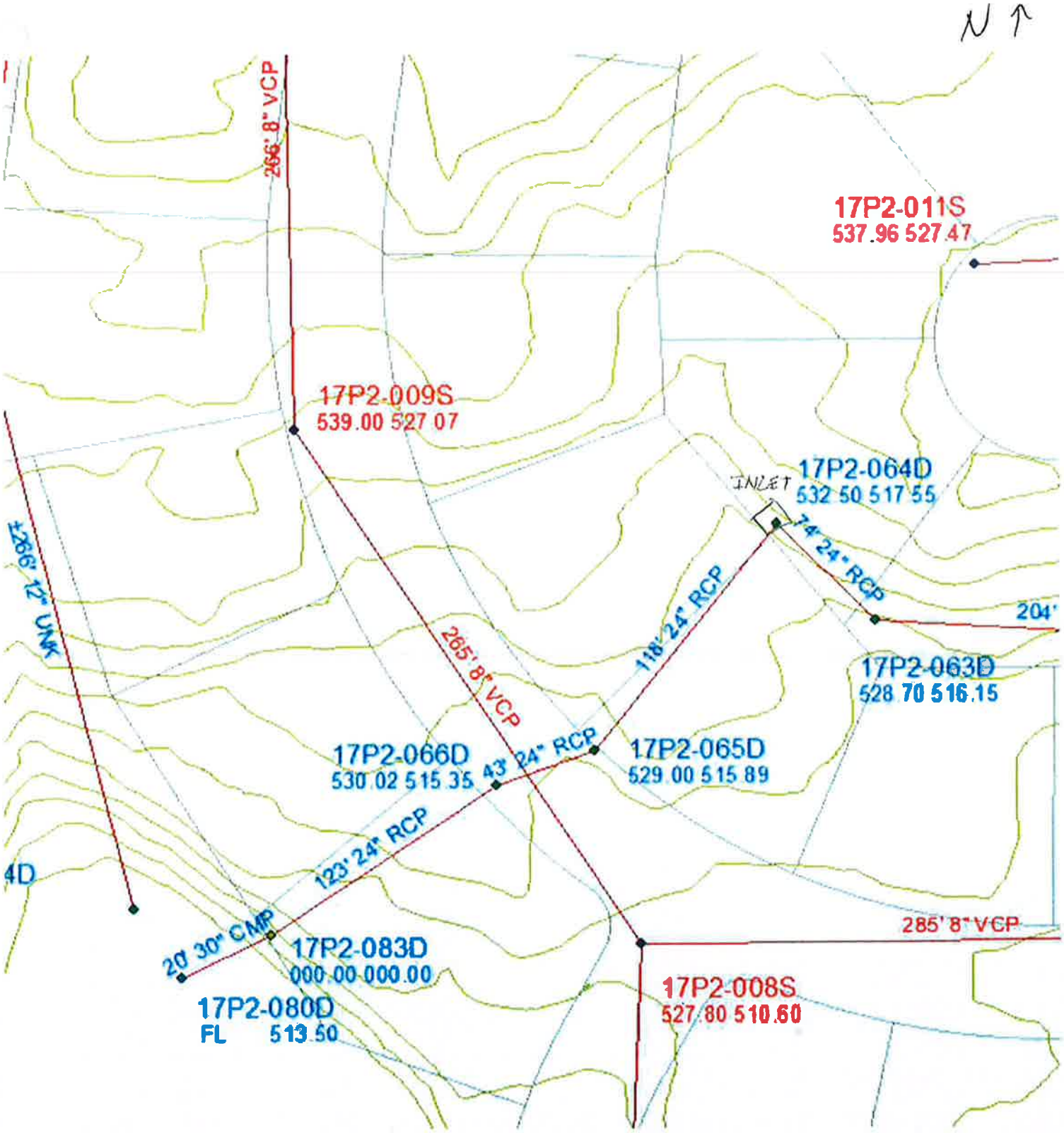
12848
808
809
808
12947
803
12921
12915
12907
12901
12897
12889
12881
12873
12865
12857
730
12948
12940
12932
12926
12920
12914
12908
731
12898
12890
12882
12874
12866
12858
724
735
741
749
725
724

N ↑


N
266' 8" VCP
17P2-011S
537.96 527.47
17P2-009S
539.00 527.07
17P2-064D
532.50 517.55
INLET
74' 24" RCP
204'
±266' 12" UNK
118' 24" RCP
265' 8" VCP
17P2-063D
528.70 516.15
17P2-066D
530.02 515.35
43' 24" RCP
17P2-065D
529.00 515.89
123' 24" RCP
4D
20' 30" CMP
17P2-083D
000.00 000.00
285' 8" VCP
17P2-008S
527.80 510.60
17P2-080D
FL 513.50

INLET (UNKNOWN HOLE IN GROUND)

INLET

SUNKEN FENCE POST

VOID SPACE AROUND INLET

Original ID: 3-27 (1999 Master Plan)

- Refer to 0-5 (1999 Master Plan) for field observations, maps, and photos.

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: West of Lindbergh between Olive and Ladue

Street Address: 432 FoxBrook

MSD Map No. 17M4 **Complaint Reference:** ☒ **1999 Master Plan** 3-24

☐ **2010 Survey Response** _____

Original Description: ☒ **Erosion** ☒ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

terraced subdivision - ponding in yards
runoff from commercial properties on Lindbergh drains between homes
on Foxbrook & Sunswept causing ponding water & erosion

Site Description and Observations (include creek or tributary name, if known): most likely
the subdivision was built w/ swale between homes on Foxwood & Sunswept. Swale
has disappeared over time - trees/fences/landscaping. there were no visible
signs of erosion or flooding during the inspection - homeowner @ 432 Foxbrook
was not aware of any problems

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

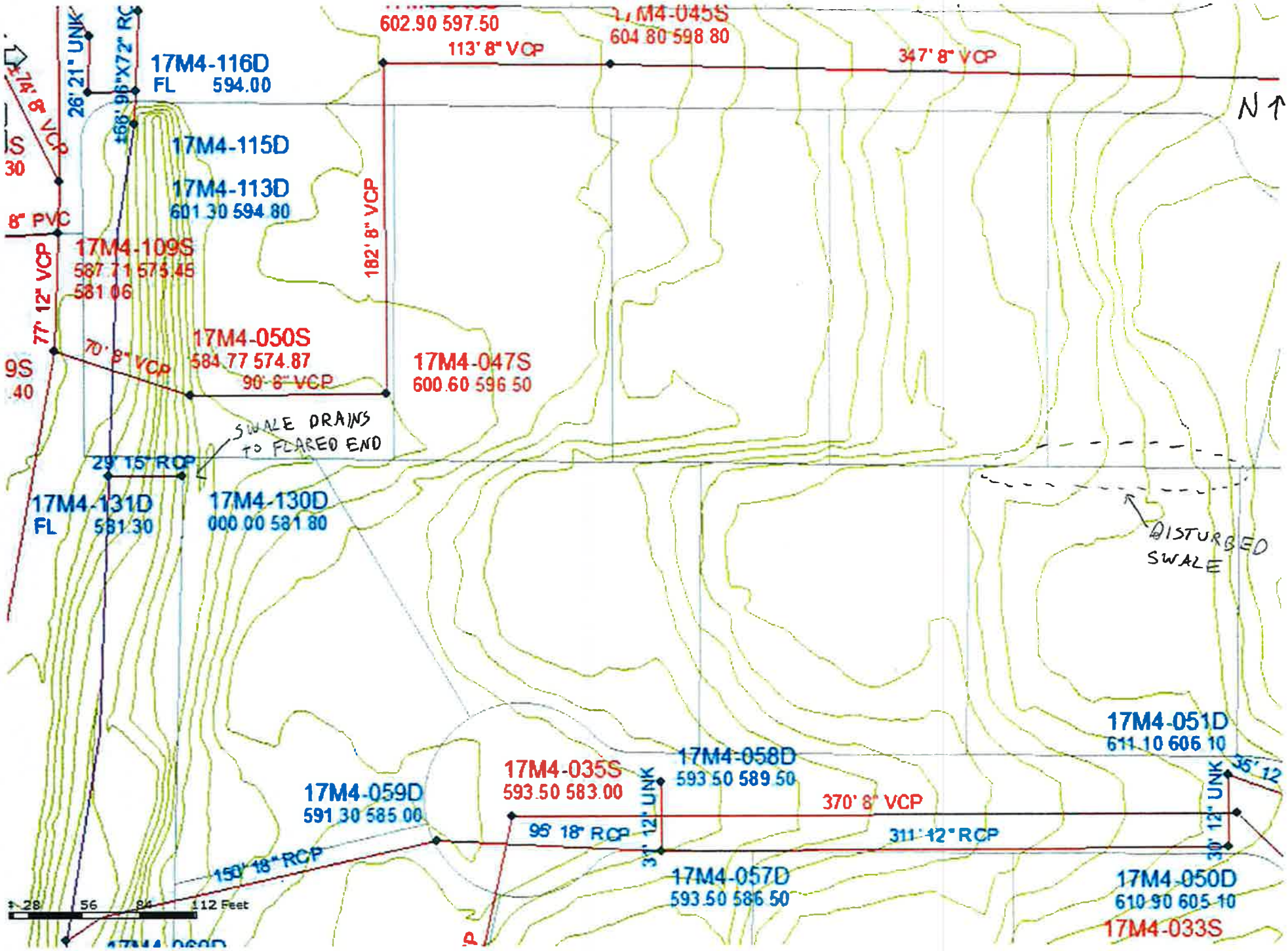
Field Crew: SR / TJS

Date: 9-29-11

N ↑

444
438
432
426
450
477
420
FOXBROOK DR
453
451
445
437
415
414
433
425
417
405
408
401
SHADYBROOK DR
434
424
416
406
401
SHADYBROOK DR
50 m
200 ft
QUAILWAYS DR

Sunswept Dr
Sunswept Dr
N
Foxbrook Dr


N
602.90 597.50
17M4-045S
604.80 598.80
113' 8" VCP
347' 8" VCP
17M4-116D
FL 594.00
26' 21" UNK
±66' 96"X72" RC
74' 8" VCP
17M4-115D
17M4-113D
601.30 594.80
8" PVC
17M4-109S
587.71 575.45
581.06
77' 12" VCP
182' 8" VCP
17M4-050S
584.77 574.87
70' 8" VCP
90' 8" VCP
17M4-047S
600.60 596.50
SWALE DRAINS TO FLARED END
29' 15" RCP
17M4-131D
FL 581.30
17M4-130D
000.00 581.80
DISTURBED SWALE
17M4-051D
611.10 606.10
17M4-058D
593.50 589.50
17M4-035S
593.50 583.00
17M4-059D
591.30 585.00
370' 8" VCP
95' 18" RCP
311' 12" RCP
150' 18" RCP
17M4-057D
593.50 586.50
17M4-050D
610.90 605.10
17M4-033S
28 56 84 112 Feet

BACKYARD

DOWNSTREAM OF SWALE

BACKYARD

BACKYARD

UPSTREAM OF FLARED END

GABION WALL AT CREEK OUTFALL

UPSTREAM OF SWALE

FLARED END SECTION

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: WEST I-270 B/T OLIVE and LADUE

Street Address: 12226 Sommerton Ct.

MSD Map No. 1704 **Complaint Reference:** ☒ **1999 Master Plan** 4-9

☐ **2010 Survey Response** _____

Original Description: ☒ **Erosion** ☒ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

Stormwater runoff affecting creek which runs south of Somerton Court.

Site Description and Observations (include creek or tributary name, if known):

No issue present at lot 12226. However, lot 12218 has erosion damage in backyard. Area has been recently seeded. Gully erosion observed near MSD inlet.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

Field Crew: TJS

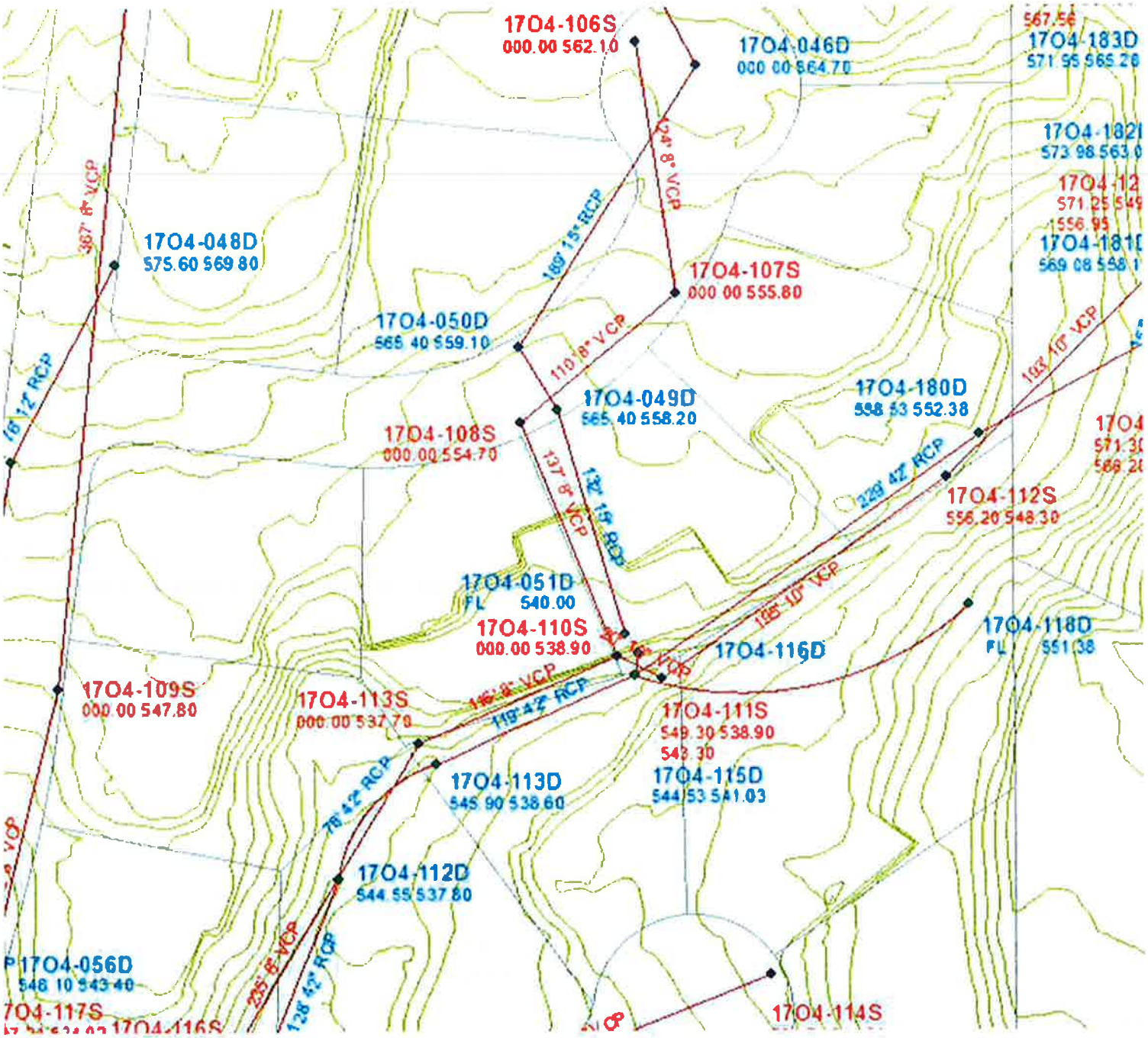
Date: 10-21-11

N ↑

WIGGENS
805
777
769
763
755
747
739
731
719
711
703
689
675
667
659
650
668
581
605
775
776
768
756
750
738
718
712
704
12200
12208
12214
12203
12202
12207
12206
12219
12212
12218
12226
12205
12211
12225
12204
12210
12216
12224
12230
12242
COUNTRY MANOR LN
SOMMERTON CT
BLACKHEATH CT
COEUR DE VILLE CT
COEUR DE VILLE DR

N ↑

N ↑


17O4-106S
000.00 562.10
17O4-046D
000.00 564.70
567.56
17O4-183D
571.95 565.20
17O4-182D
573.98 563.0
17O4-12
571.25 549
556.95
17O4-181D
569.08 558.1
124' 8" VCP
367' 8" VCP
17O4-048D
575.60 569.80
169' 15" RCP
17O4-107S
000.00 555.80
17O4-050D
565.40 559.10
110' 8" VCP
193' 10" VCP
16' 12" RCP
17O4-049D
565.40 558.20
17O4-180D
558.53 552.38
17O4-108S
000.00 554.70
137' 8" VCP
132' 15" RCP
229' 42" RCP
17O4-112S
556.20 548.30
17O4-051D
FL 540.00
17O4-110S
000.00 538.90
195' 10" VCP
17O4-116D
17O4-118D
FL 551.38
17O4-109S
000.00 547.80
17O4-113S
000.00 537.70
146' 8" VCP
119' 42" RCP
17O4-111S
549.30 538.90
543.30
17O4-113D
545.90 538.60
17O4-115D
544.53 541.03
78' 42" RCP
17O4-112D
544.55 537.80
235' 8" VCP
128' 42" RCP
17O4-056D
546.10 543.40
17O4-117S
17O4-116S
17O4-114S

BACKYARD 12218 FACING WEST

EROSION NEAR INLET

FACING EAST UPSTREAM

BACKYARD 12218 FACING WEST

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: West of Spoede b/t Olive and Ladue

Street Address: 485 Ridgecorde Pl.

MSD Map No. 17N3 **Complaint Reference:** ☒ **1999 Master Plan** 5-3

☐ **2010 Survey Response** _____

Original Description: ☒ **Erosion** ☒ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

Severe erosion and flooding along creek behind homes

Site Description and Observations (include creek or tributary name, if known):

No flooding or ponding observed. Slight erosion, but not critical. Home owner explained that there are no flooding or erosion issues.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

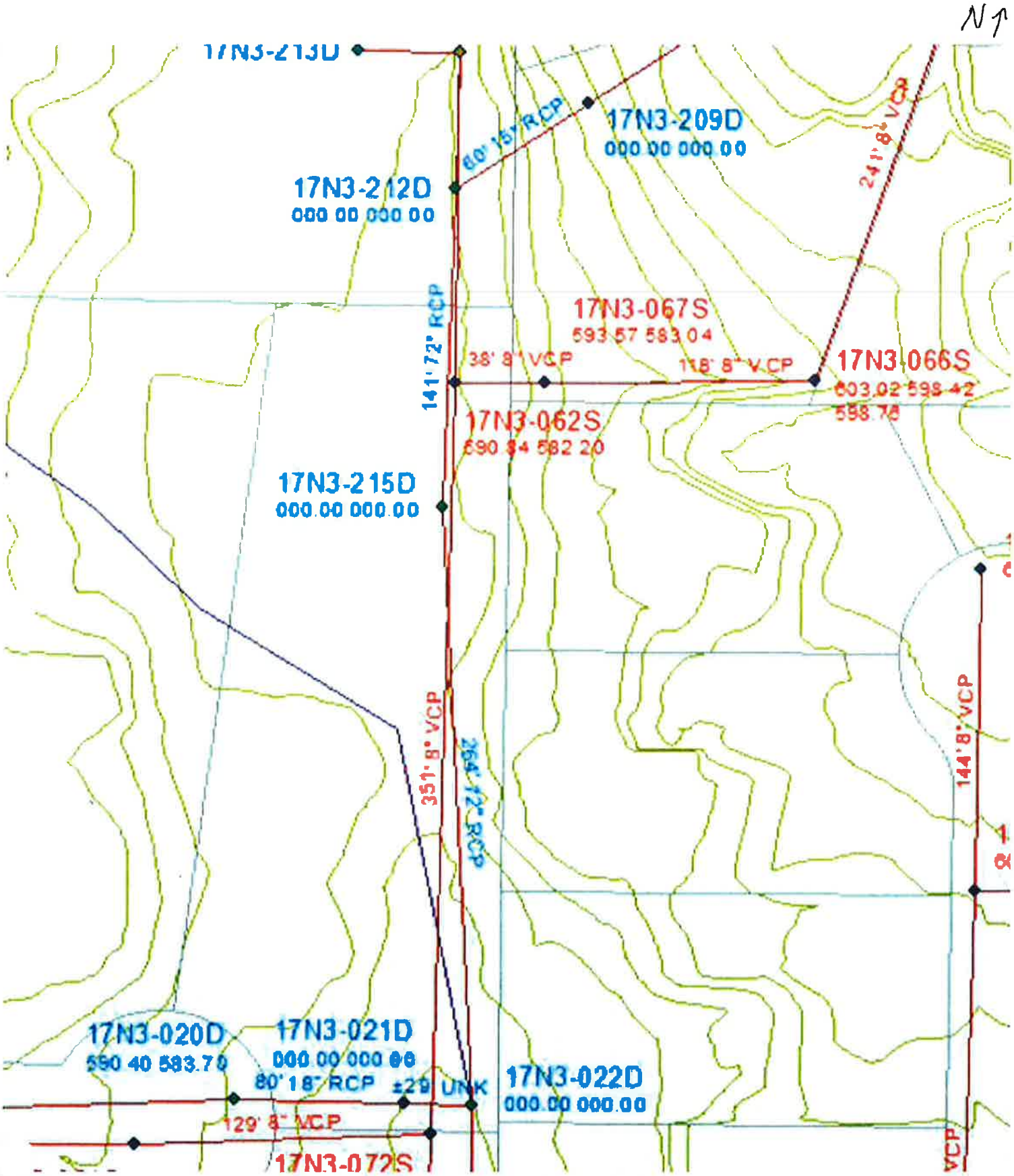
Field Crew: TSS

Date: 10-4-11

N ↑

604
23
32
523
518
520
522
21
30
515
17
19
28
508
535
537
507
500
533
18
20
22
26
24
2
529
1
3
525
14
CREEKSIDE LN
GRAESER RD
4
5
34
519
485
486
515
12
11
10
9
477
478
509
471
470
441
463
11035
435
455
RIDGECORDE LN
RIDGECORDE PL
GRAESER RD
5
6
7
8
11036
447
427
438
439
11201
11204
431
430
419

→ 2


N
17N3-213D
17N3-209D
000 00 000 00
80' 15" RCP
17N3-212D
000 00 000 00
241' 8" VCP
17N3-067S
593 57 583 04
141' 72" RCP
38' 8" VCP
118' 8" VCP
17N3-066S
603.02 598 42
598.78
17N3-062S
590 84 582 20
17N3-215D
000.00 000.00
351' 8" VCP
264' 72" RCP
144' 8" VCP
17N3-020D
590 40 583.70
17N3-021D
000 00 000 00
80' 18" RCP
±29 UNK
17N3-022D
000.00 000.00
129' 8" VCP
17N3-072S
VCP

BACKYARD LOOKING SOUTH

ALONG NORTH PROPERTY LINE

ALONG NORTH PROPERTY LINE

BACKYARD LOOKING SOUTH

CREEK LOOKING SOUTH

LOOKING EAST UP ALONG NORTH PROPERTY LINE

CREEK LOOKING WEST

CREEK LOOKING NORTH

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: WEST OF I-270 B/T LADUE and HWY 40

Street Address: 228 Litchfford Ct.

MSD Map No. 1804 **Complaint Reference:** ☒ **1999 Master Plan** 13-6

☐ **2010 Survey Response** _____

Original Description: ☒ **Erosion** ☒ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

Drainage from homes and hillside above causing yard flooding and erosion. Water entering home.

Site Description and Observations (include creek or tributary name, if known):

Runoff traveling from northwest corner of yard from upstream tributary area. Some of flow appears to travel along driveway, while some has potential of spilling over retaining wall and causing ponding on driveway. Homeowner has installed inlet and drainage pipe along wall.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

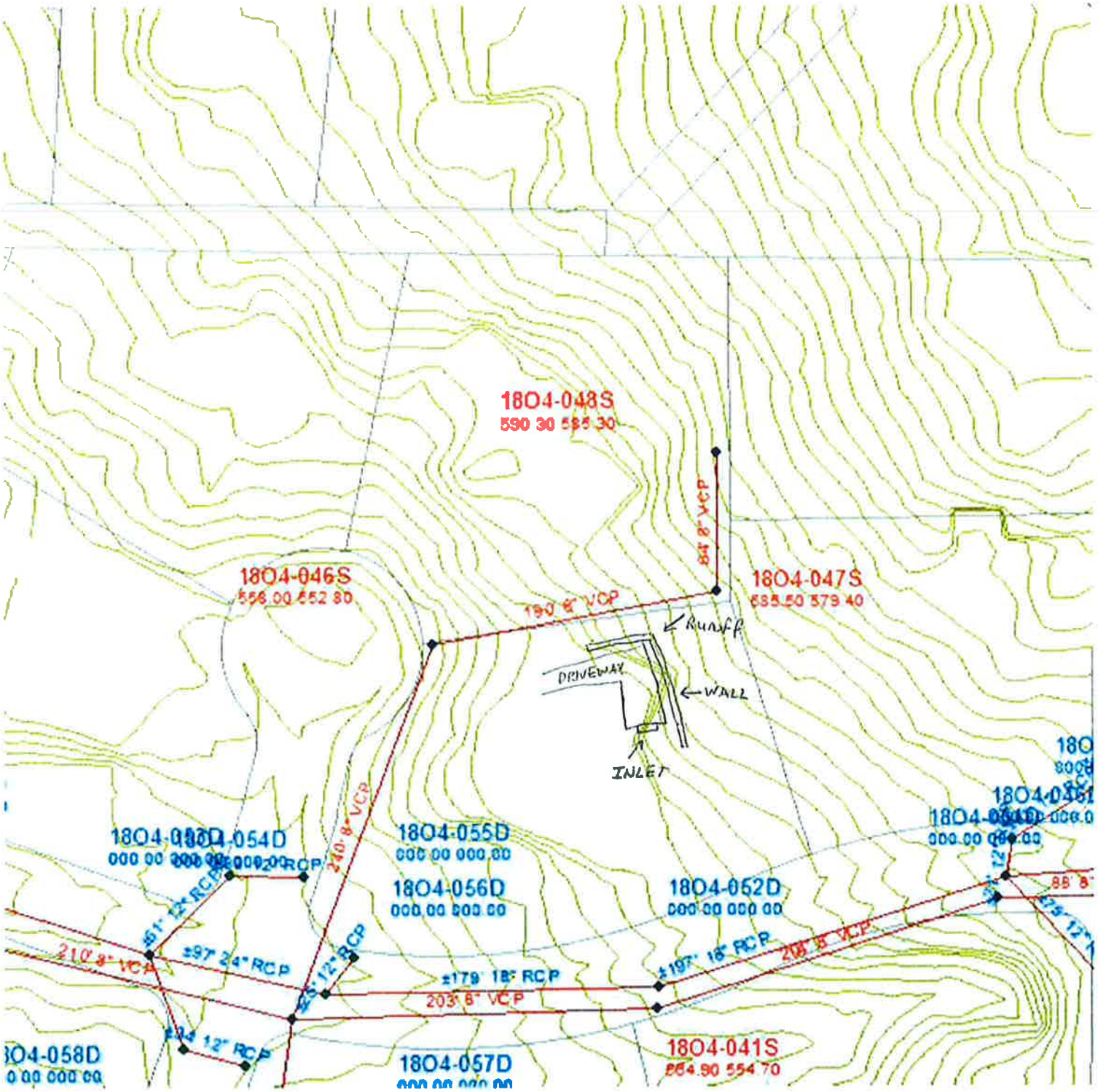
Field Crew: TJS

Date: 10-13-11

N ↑

149
142
12324
12315
156
12310
157
12301
162
12371
12363
12302
165
12305
TOPSFIELD CT
12350
201
216
12386
206
12372
12364
217
214
211
212
221
216
BELLINGTON LN
225
221
219
220
222
226
233
227
231
232
228
247
LITCHEFORD WAY
252
244
245
249
259
254
303
270
LITCHEFORD CT
256
253
257
271
282
268
HEWLETT CT
315
269
273
274
283
290
280
2508
291
296
281
285
286
331
297
288

N ↑


N
18O4-048S
590 30 585 30
84' 8" VCP
18O4-046S
558 00 552 80
18O4-047S
585 50 579 40
190' 8" VCP
Runoff
DRIVEWAY
WALL
INLET
240' 8" VCP
18O4-054D
18O4-055D
000 00 000 00
18O4-056D
000 00 000 00
18O4-052D
000 00 000 00
±97' 24" RCP
±179' 18" RCP
203' 8" VCP
±197' 18" RCP
210' 8" VCP
18O4-058D
18O4-057D
18O4-041S
554 70

NORTH SIDE PROPERTY

RETAINING WALL

DRIVEWAY BEHIND HOUSE

NORTH EAST CORNER OF PROPERTY

INLET

RETAINING WALL

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: WEST OF I-270 B/T OLIVE and LADUE

Street Address: 12866 Nimes Dr.

MSD Map No. _____ **Complaint Reference:** ☐ **1999 Master Plan** N/A

☐ **2010 Survey Response** N/A

Original Description: ☐ **Erosion** ☐ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

This property was highlighted in green as an unresolved issue from 1999 plan. However, no site evaluation corresponds to this address.

Site Description and Observations (include creek or tributary name, if known):

No issues observed.

Attached (w/ the problem area highlighted): ☐ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

Field Crew: TSS

Date: 10-27-11

CASTLETON CT
HAVERTO
MARINERS
NIMES DR
TIMBER-RUN-DR
DEAUVILLE CT
LE HAVRE DR
CORUM WAY
HEZEL
BELLERIVE

BACKYARD 12866 (SOUTHWEST CORNER)

BACKYARD 12866 (SOUTHEAST CORNER)

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: West of Spoede b/t Ladue and HWY 40

Street Address: 33 / 34 Oak Park Dr.

MSD Map No. 18N3 **Complaint Reference:** [X] **1999 Master Plan** 1-7

[ ] **2010 Survey Response** _____

Original Description: [X] **Erosion** [X] **Flooding** [ ] **Inadequate Sewer Capacity** [ ] **Other**

Drainage flows to street and ponds in flat areas, causing street flooding.

Minor yard flooding and erosion.

Site Description and Observations (include creek or tributary name, if known):

Runoff from street and yards drain to inlets on west and east side of Oak Park Dr. Street has been resurfaced and there appears to be no areas for flooding to occur. Upstream of inlet b/t lot 33 and 34 is minor gully erosion. No curb or gutter in street.

Attached (w/ the problem area highlighted): [X] **MSD facilities map**

[X] **Aerial photo**

[X] **Site photos**

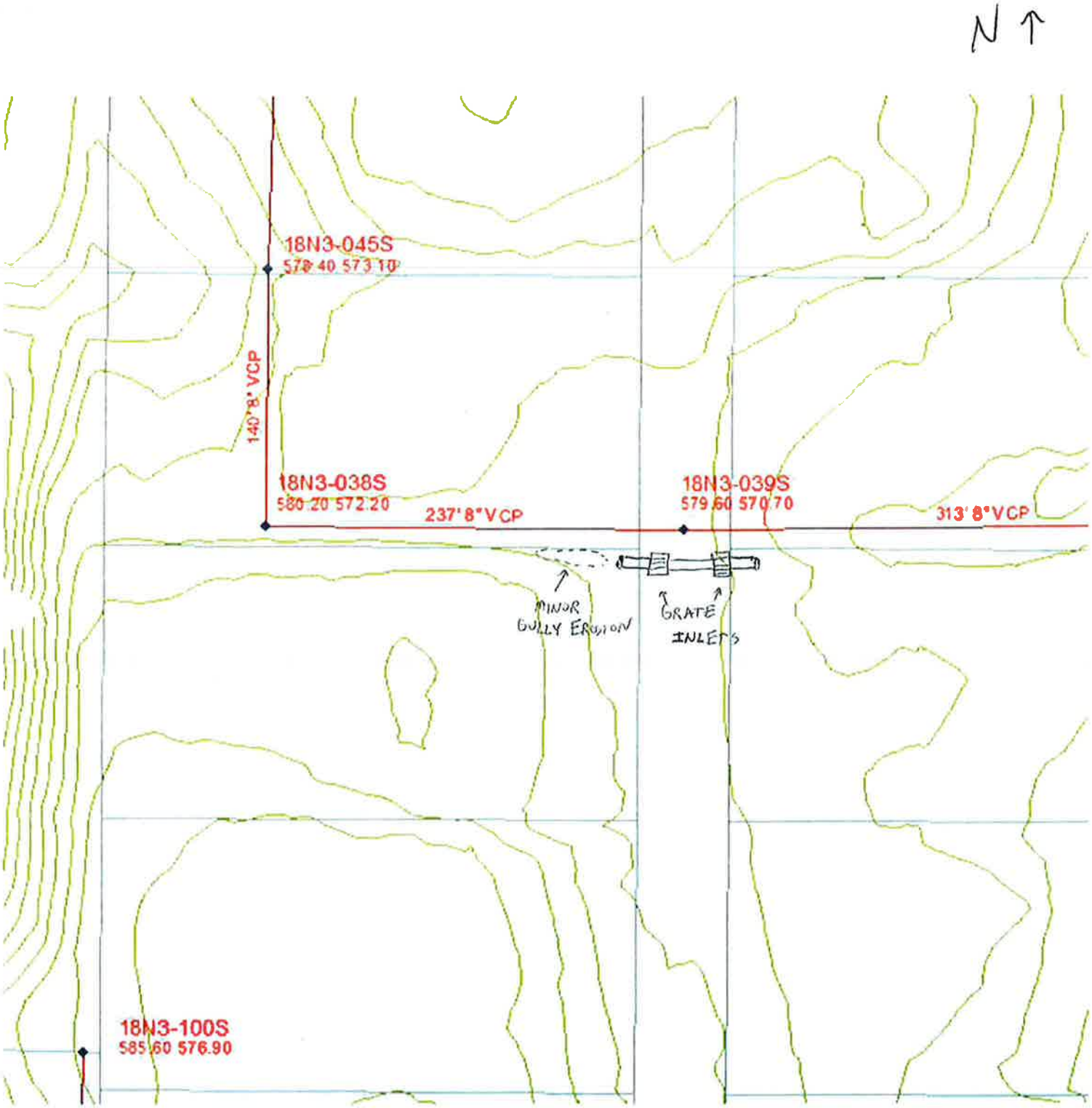
Field Crew: TJS

Date: 10-12-11

N ↑

10900
39
42
111
OAK PARK DR
119
38
43
44
123
37
OAK PARK DR
S SPOEDE RD
36
17
291
35
18
297
34
19
303
33
20
309
32
21
317
31
22
323
30
23
329
30
23
329
10937
10925
10917
10911
10910
10910
BROOKTRAIL CT
OAK PARK DR
S SPOEDE RD

N↑


N
18N3-045S
578.40 573.10
140' 8" VCP
18N3-038S
580.20 572.20
237' 8" VCP
18N3-039S
579.60 570.70
313' 8" VCP
MINOR GULLY EROSION
GRATE INLETS
18N3-100S
585.60 576.90

B/T LOT 33/34 (FACING EAST)

GRATE INLET (WEST SIDE STREET)

B/T LOT 33/34 (FACING EAST)

PIPE INLET

EAST SIDE STREET

LOOKING NORTH ON OAK PARK

GRATE INLET (EAST SIDE STREET)

LOOKING SOUTH ON OAK PARK

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: WEST OF NEW BALLAS B/T LADUE and HWY 40

Street Address: 11967 Sackston Ridge Ln.

MSD Map No. 1803 **Complaint Reference:** ☒ **1999 Master Plan** 3-30

☐ **2010 Survey Response** _____

Original Description: ☐ **Erosion** ☒ **Flooding** ☒ **Inadequate Sewer Capacity** ☐ **Other**

Street has no curb or gutter. Runoff is causing minor erosion and flooding at culdesac.

Site Description and Observations (include creek or tributary name, if known):

No visible flooding or erosion at culdesac. Street appears to have adequate curb and gutter.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

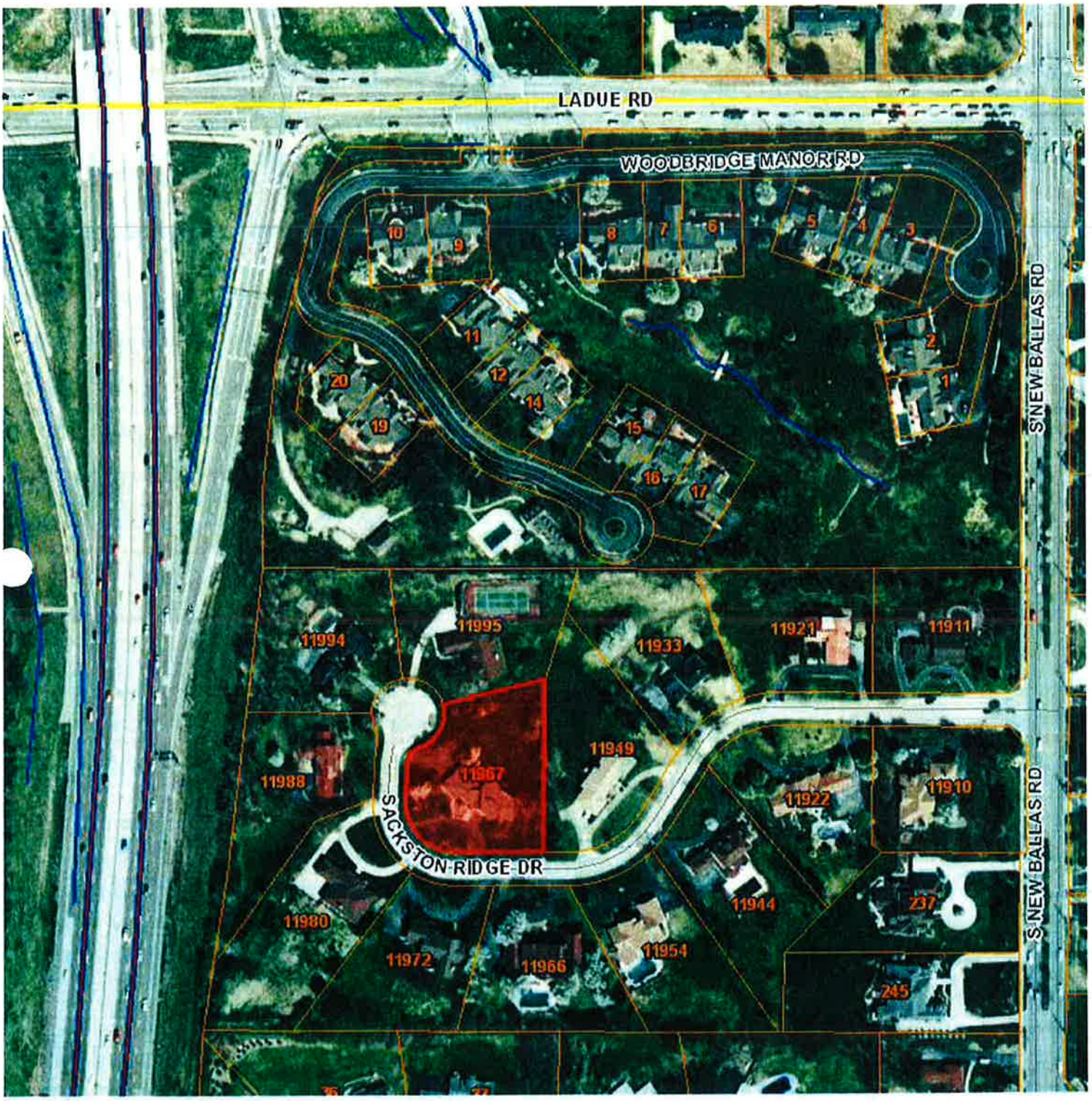
☒ **Aerial photo**

☒ **Site photos**

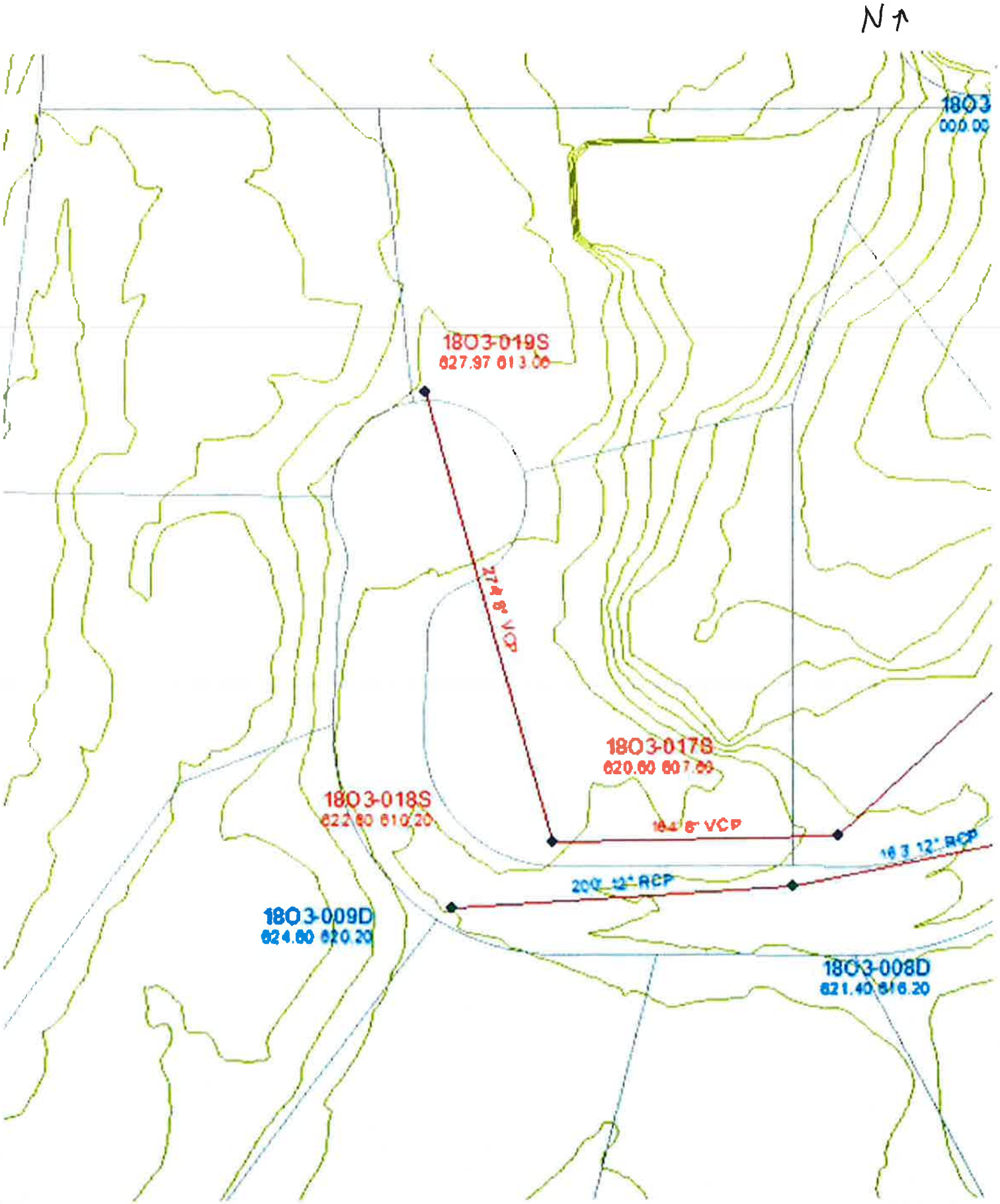
Field Crew: TJS

Date: 10-13-11

N ↑


LADUE RD
WOODBRIDGE MANOR RD
S NEW BALLAS RD
S NEW BALLAS RD
SACKSTON RIDGE DR
1
2
3
4
5
6
7
8
9
10
11
12
14
15
16
17
19
20
11994
11995
11933
11921
11911
11988
11967
11949
11922
11910
11980
11972
11966
11954
11944
237
245

N
Sackston Ridge Ln


N
1803
000.00
1803-019S
627.97 613.00
1803-017S
620.60 607.60
1803-018S
622.80 610.20
164' 8" VCP
163' 12" RCP
200' 12" RCP
1803-009D
624.60 620.20
1803-008D
621.40 616.20

CULDESAC

FACING NORTH AT CULDESAC

CULDESAC

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: WEST I-270 B/T LADUE and HWY 40

Street Address: 9 Broadview Farm

MSD Map No. 1981 **Complaint Reference:** [X] **1999 Master Plan** 4-2

[ ] **2010 Survey Response** _____

Original Description: [ ] **Erosion** [X] **Flooding** [ ] **Inadequate Sewer Capacity** [ ] **Other**

Resident reports yard flooding related to heavy storm water runoff from neighboring subdivision and Conway Road.

Site Description and Observations (include creek or tributary name, if known):

Rip rap has been placed at headwall along banks. Channel erosion observed downstream of head wall. Backyard does not appear threatened by creek flooding or street runoff. Creek banks are relatively shallow.

Attached (w/ the problem area highlighted): [X] **MSD facilities map**

[X] **Aerial photo**

[X] **Site photos**

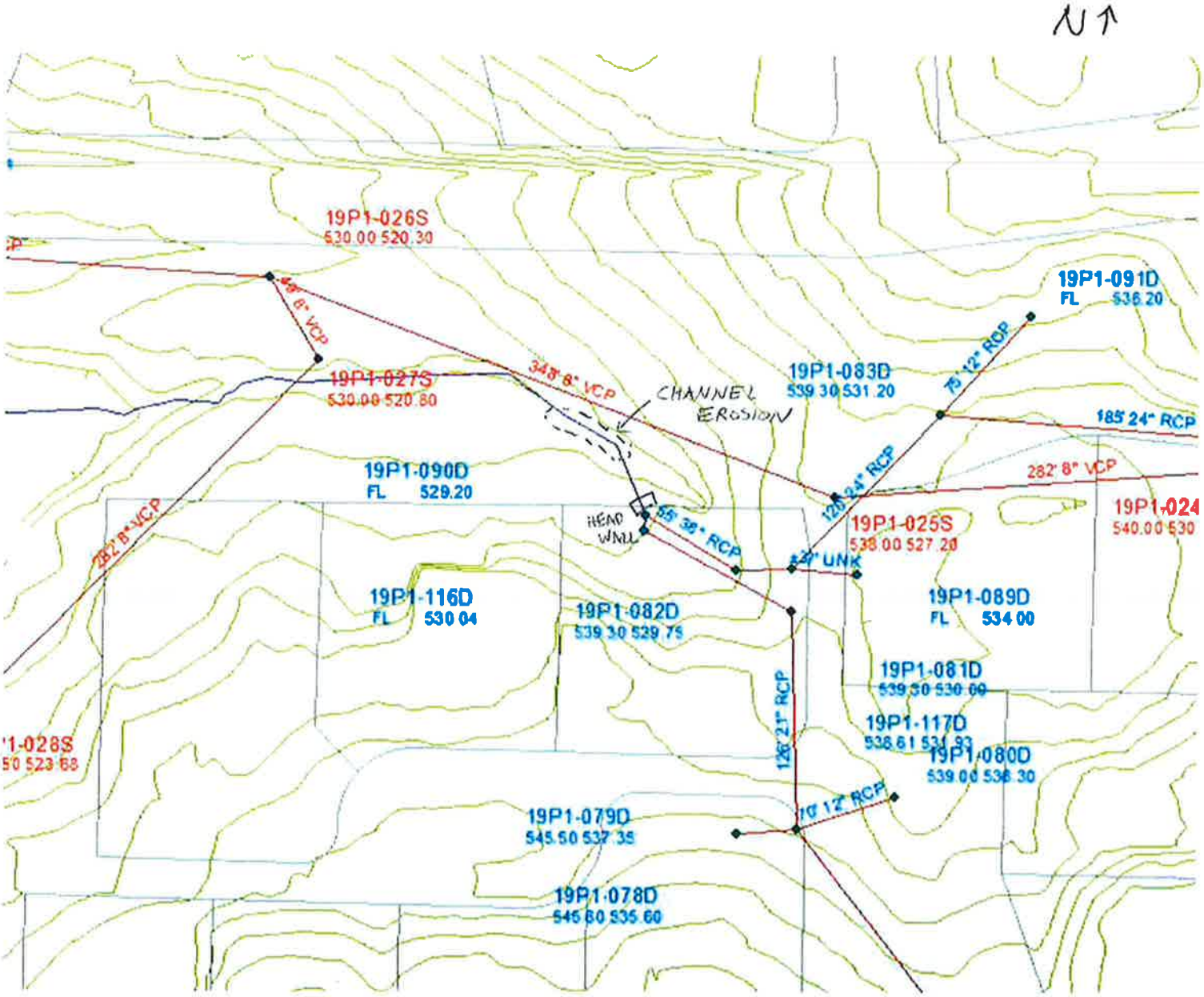
Field Crew: TJS

Date: 10-20-11

N ↑

13028
13011
13005
13028
13011
13005
13022
CONWAY ESTATES DR
S MASON RD
350
350
12931
13016
13010
13004
312
CONWAY RD
101
S MASON RD
1
2
8
10
9
11
3
7
12
BROADVIEW FARM RD
4
6
14
15
16
17
5
26
25
24
27
18
23
POINTE CT
19
22
28
21
32
20
30
WOOD ACRES LN

N ↑


N
19P1-026S
530.00 520.30
48' 8" VCP
19P1-027S
530.00 520.80
348' 8" VCP
CHANNEL EROSION
19P1-083D
539.30 531.20
75' 12" RCP
19P1-091D
FL 536.20
185' 24" RCP
282' 8" VCP
19P1-090D
FL 529.20
282' 8" VCP
HEAD WALL
55' 38" RCP
120' 24" RCP
19P1-025S
538.00 527.20
19P1-024
540.00 530
UNK
19P1-116D
FL 530.04
19P1-082D
539.30 529.75
19P1-089D
FL 534.00
19P1-081D
539.30 530.00
126' 21" RCP
19P1-117D
538.61 531.93
19P1-080D
539.00 536.30
10' 12" RCP
19P1-079D
545.50 537.35
19P1-078D
545.80 535.60

CREEK

CREEK

CHANNEL EROSION DOWNSTREAM

CREEK

EAST SIDE PROPERTY

BACKYARD (CREEK BEHIND BRUSH)

CREEK HEADWALL

BACKYARD

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: WEST OF I-270 B/T OLIVE and LADUE

Street Address: Intersection of Montauban and Nimes

MSD Map No. 178 1 **Complaint Reference:** ☒ **1999 Master Plan** 11-7

☐ **2010 Survey Response** _____

Original Description: ☐ **Erosion** ☒ **Flooding** ☒ **Inadequate Sewer Capacity** ☐ **Other**

Street and yard flooding affecting homes near intersection of Montauban and Nimes. Probable cause is undersized storm sewer, inadequate inlets, and possibly a damaged or collapsed pipe section.

Site Description and Observations (include creek or tributary name, if known):

No visible yard damage. Street appears to have adequate slopes, curbs, and gutters. Spoke with homeowner at 742 Montauban and she was not aware of any street flooding.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

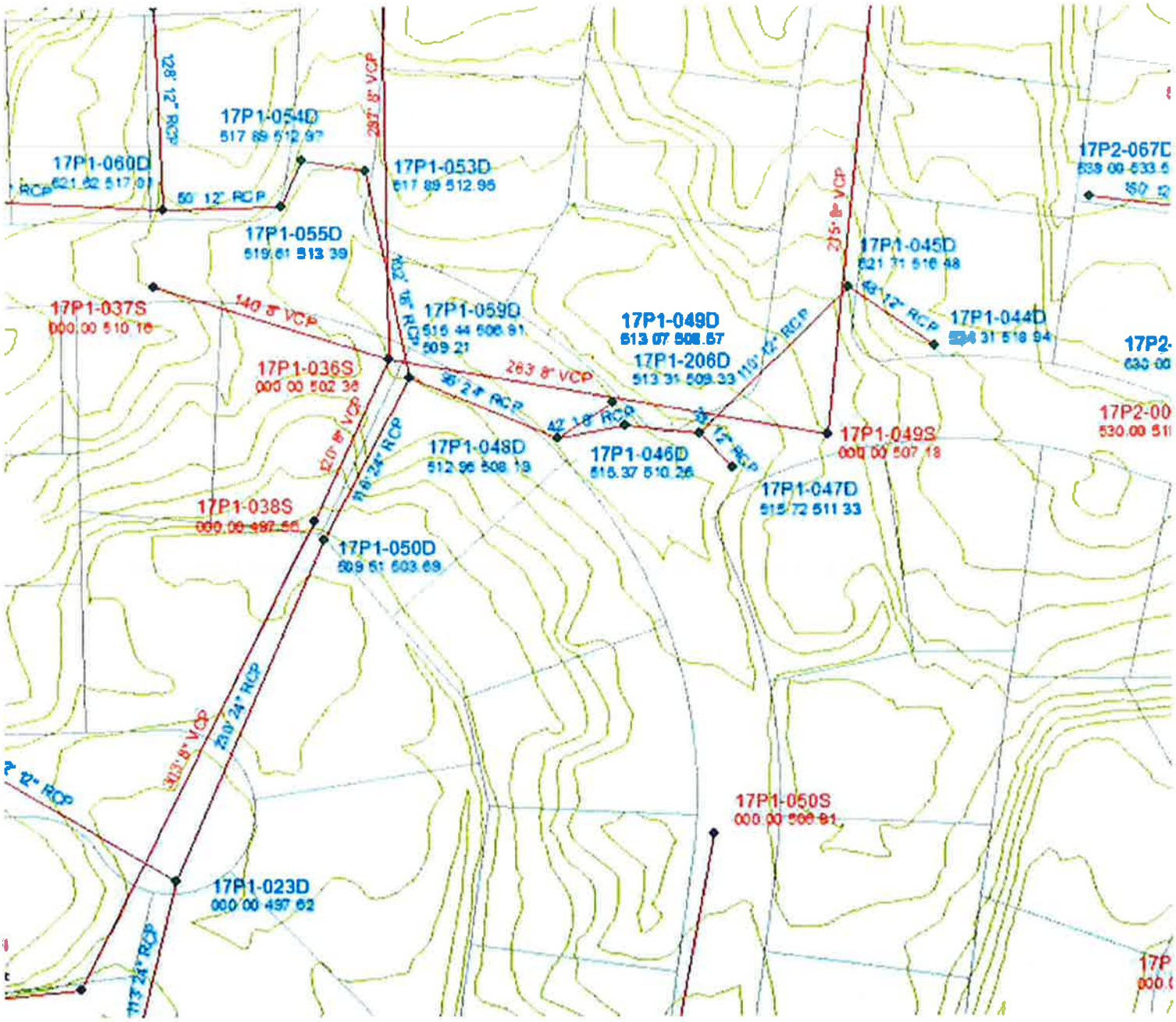
☒ **Site photos**

Field Crew: TJS

Date: 10-27-11

N
BARBEZIEUX DR
FERNVIEW DR
ARIEGE DR
LESPARRE DR
SOMERTON RIDGE DR
MONTAUBAN DR
NIMES DR
CHAUMONT CT
LIBOURNE CT
BELLERIVE ESTATES DR
BEAUVAIS CT
742
741
735
730

N ↑


N
17P1-054D
517.89 512.97
17P1-060D
621.62 517.01
17P1-053D
517.89 512.95
17P1-055D
519.61 513.39
17P1-037S
000.00 510.16
17P1-059D
515.44 506.91
509.21
17P1-036S
000.00 502.36
17P1-049D
513.07 508.57
17P1-206D
513.31 509.33
17P1-045D
621.71 516.48
17P1-044D
17P1-049S
000.00 507.18
17P1-048D
512.96 508.19
17P1-046D
515.37 510.26
17P1-047D
515.72 511.33
17P1-038S
000.00 497.56
17P1-050D
509.51 503.69
17P1-050S
000.00 506.91
17P1-023D
000.00 497.62
17P2-067D
17P2-00
530.00 51
128' 12" RCP
50' 12" RCP
140' 8" VCP
263' 8" VCP
96' 24" RCP
42' 18" RCP
110' 12" RCP
275' 8" VCP
48' 12" RCP
120' 8" VCP
116' 24" RCP
230' 24" RCP
303' 8" VCP
113' 24" RCP

NORTHEAST SECTION OF INTERSECTION

NORTHWEST SECTION OF INTERSECTION

SOUTHEAST SECTION OF INTERSECTION

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: Emerald Green and Emerson Intersection

Street Address: 11982 / 11995 Emerald Green

MSD Map No. 1802 **Complaint Reference:** ☒ **1999 Master Plan** 11-6

☐ **2010 Survey Response** _____

Original Description: ☐ **Erosion** ☒ **Flooding** ☒ **Inadequate Sewer Capacity** ☐ **Other**

Serious street flooding at intersection of Emerald Green and Emerson. Storm water and debris from Emerson and Du Bois High School overwhelms inlets, causing flooding which reportedly lasts for two days.

Site Description and Observations (include creek or tributary name, if known):

No evidence of flooding visible. Concrete channel conveys water down Emerson. Corrugated metal culvert pipe crosses under Emerald Green.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

Field Crew: TJS

Date: 10-13-11

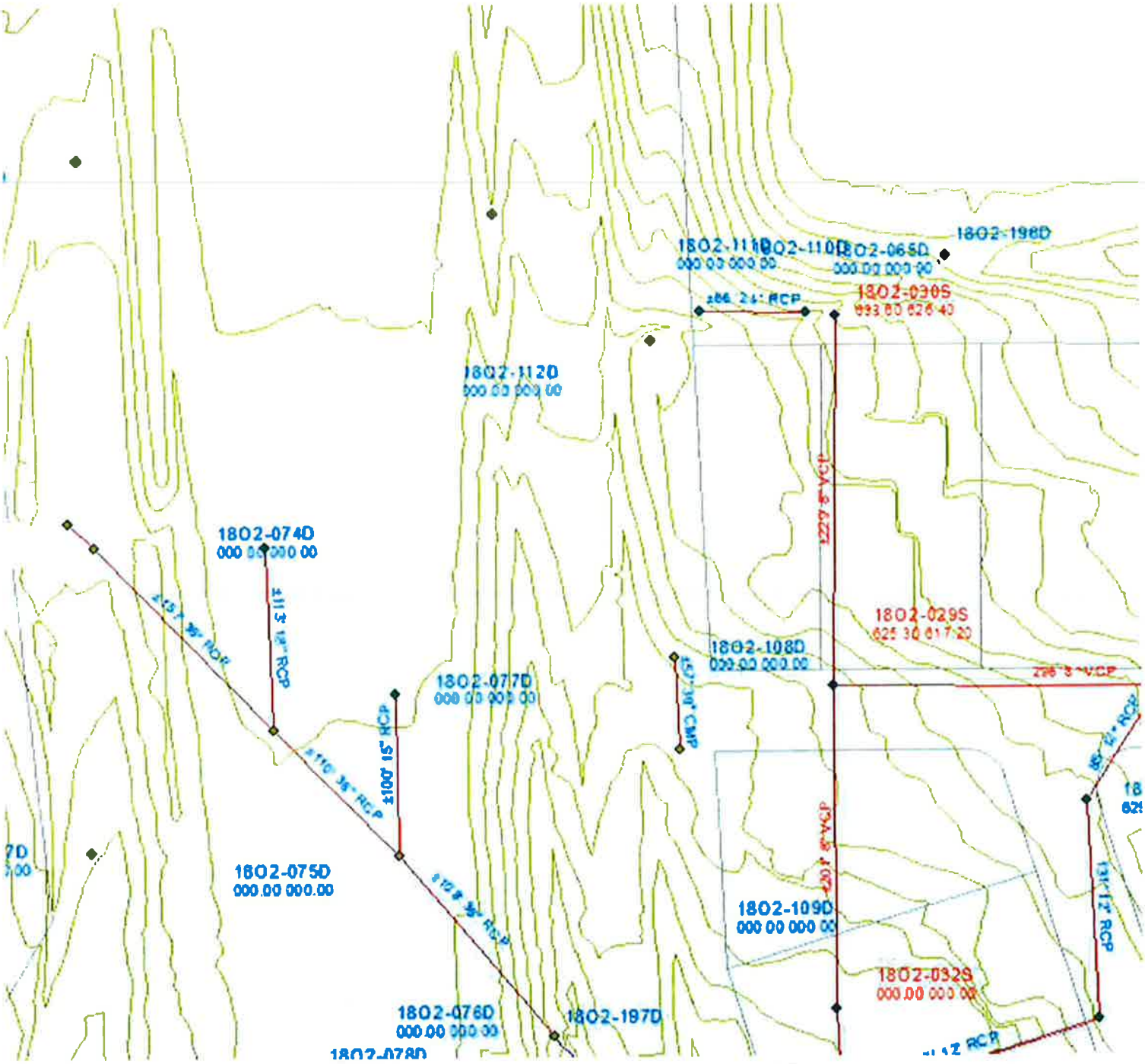
N ↑

320
HIBLER DR
12114
12106
COEUR DE VILLE DR
12117
12111
DR
12118
12110
270
EMERSON RD
233
11995
11983
11975
11967
11959
11951
11943
11935
EMERALD GREEN DR
11982
194
11956
11948
102
191
EMERALD GREEN CT
183
178
150
120
177
171
167
159
151
143
137

N↑

270
270
13
Emerson Rd
Emerson Rd
Emerald Green Dr
Emerald Gre

N ↑


1802-198D
1802-111D
1802-110D
1802-065D
000.00 000.00
1802-030S
1802-112D
000.00 000.00
1802-074D
000.00 000.00
1802-029S
625.30 617.20
1802-108D
000.00 000.00
1802-077D
000.00 000.00
1802-075D
000.00 000.00
1802-109D
000.00 000.00
1802-032S
000.00 000.00
1802-076D
000.00 000.00
1802-197D

DOWNSTREAM SIDE CULVERT

FACING NORTH

FACING NORTH

FACING NORTH

FACING SOUTH AT UPSTREAM SIDE CULVERT

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: WEST OF I-270 B/T OLIVE and LADUE

Street Address: 21, 22, 23, 27 North Walling Drive

MSD Map No. 17 P3 **Complaint Reference:** ☒ **1999 Master Plan** 11-3

☐ **2010 Survey Response** _____

Original Description: ☐ **Erosion** ☒ **Flooding** ☒ **Inadequate Sewer Capacity** ☒ **Other**

Minor street flooding. Yard damage caused by sink holes.
Problem appears to be caused by inadequate inlets and flat streets.

Site Description and Observations (include creek or tributary name, if known):

Street appears to have adequate slope to drain.
No sink holes observed along storm line.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

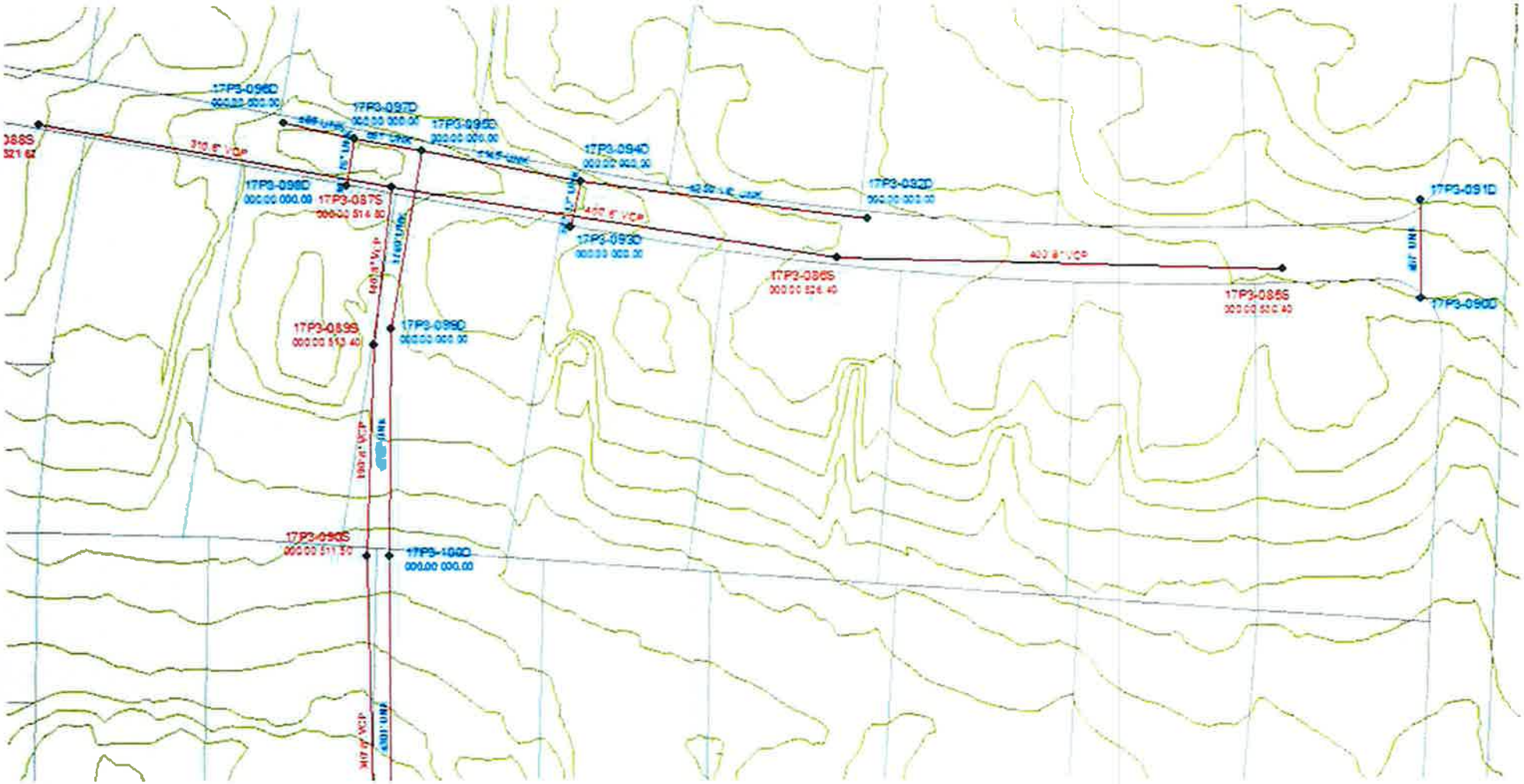
☒ **Site photos**

Field Crew: TJS

Date: 10-25-11

MANOR RD
771
768
12808
12800
12788
12782
12778
12766
12760
12752
12740
731
11
12
13
14
15
16
17
18
19
N WALLING DR
N WALLING DR
28
27
26
25
24
23
22
21
20
29
30
32
33
34
35
36
37
38
39
31
AUBURNDALE DR
N MASON RD
ACACIA DR
HIRAMO'S
49
48
47
46
45
44
43
42
41
40
N

N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17P3-097D
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17P3-094D
17P3-092D
17P3-091D
17P3-098D
17P3-087S
17P3-093D
17P3-086S
17P3-085S
17P3-090D
17P3-089S
17P3-099D
17P3-090S
17P3-100D
310.6' VCP
400.8' VCP

STREET AT LOT 21

STREET AT LOT 22

STREET AT LOT 21

STREET AT LOT 22

STREET AT LOT 27 (facing east)

STREET AT LOT 23

STREET AT LOT 27 (facing east)

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: WEST I-270 b/t LADUE and HWY 40

Street Address: 12459, 12466, 12518, 12553, 12554 Royal Manor Dr / 111 Royal Gate / 131 Petite Royal

MSD Map No. 18P3 **Complaint Reference:** ☒ **1999 Master Plan** 11-1

☐ **2010 Survey Response** _____

Original Description: ☒ **Erosion** ☒ **Flooding** ☒ **Inadequate Sewer Capacity** ☐ **Other**

Street flooding affecting a number of homes along Royal Manor Drive. Problem appears to be caused by inadequate inlets and flat streets. High creek levels affect several homes as well. Heavy volume in creek passing through area causing flooding and serious erosion at 12553 and 12554 Royal Manor.

Site Description and Observations (include creek or tributary name, if known):

Royal Manor Drive appears to have adequate inlets and slopes. Home owner of 12518 Royal Manor was not aware of any current flooding issues. Creek flooding at 12553 and 12554 is addressed in Master Plan 1999, task 4-4.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

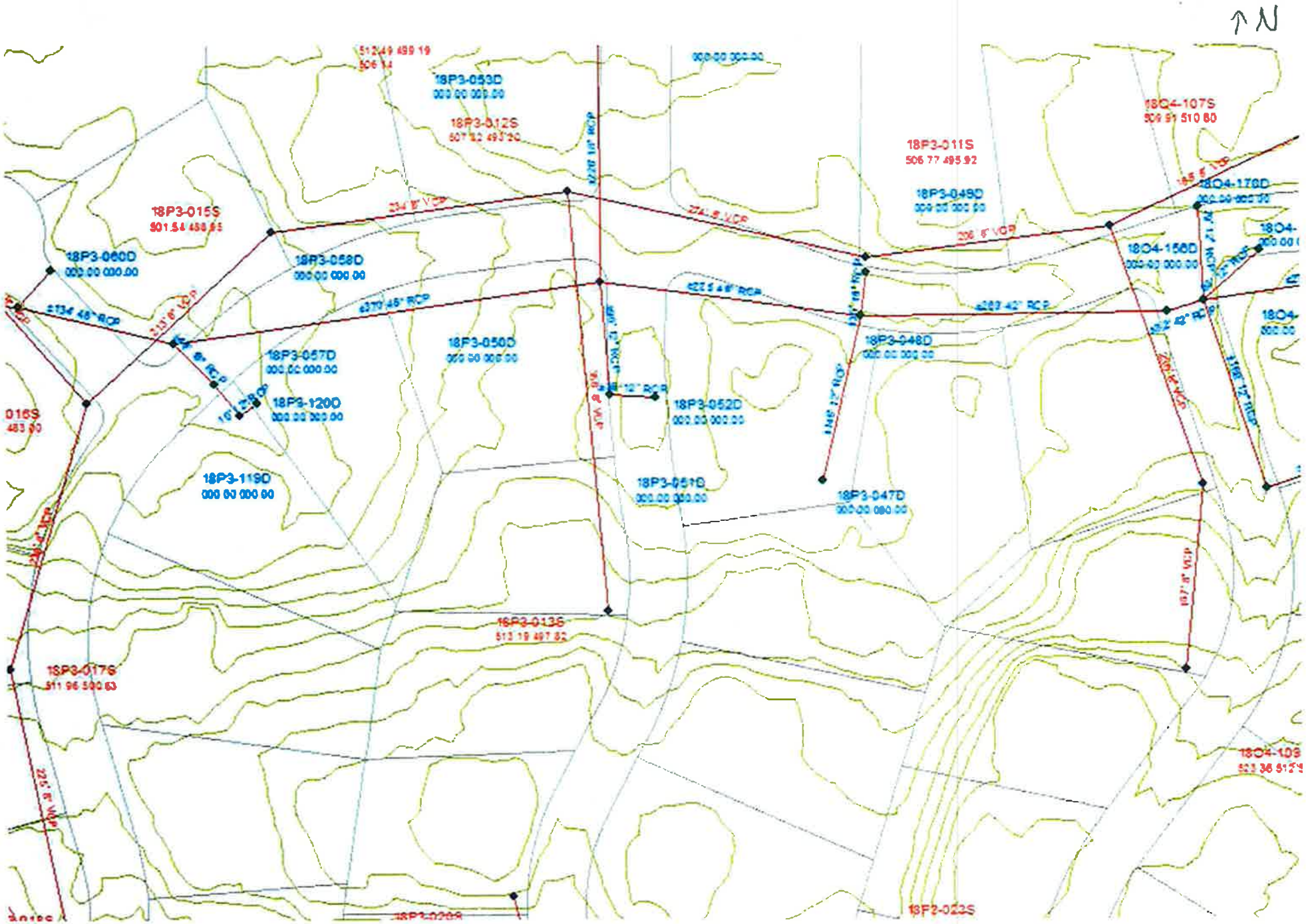
☒ **Site photos**

Field Crew: TSS

Date: 10-13-11

LADUE RD
LADUE RD
LADUE RD
ROYAL GATE DR
ROYAL MANOR DR
ROYALWAY CT
PETITE ROYALE CT
N

Petite Royale Ct
Royal Manor Dr
Royal Gate Dr
Royal Manor Dr
Royal Manor Dr
Royalway Ct


N
18P3-053D
18P3-012S
18P3-011S
18P3-015S
18P3-060D
18P3-058D
18P3-057D
18P3-120D
18P3-119D
18P3-050D
18P3-052D
18P3-051D
18P3-049D
18P3-048D
18P3-047D
18P3-013S
18P3-017S
18O4-107S
18O4-156D
18P2-022S

FACING EAST AT 12518

FACING SOUTH AT ROYAL GATE

FACING EAST AT 12518

FACING EAST AT INTERSECTION ROYAL MANOR and ROYAL GATE

FACING EAST AT 12466

FACING NORTH AT 131

FACING EAST AT 12466

FACING NORTH AT 131

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: WEST OF I-270 B/T LADUE and HWY 40

Street Address: 12410 Conway Road

MSD Map No. 1901 **Complaint Reference:** ☐ **1999 Master Plan** _____

☒ **2010 Survey Response** 10

Original Description: ☐ **Erosion** ☒ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

the western edge of my property floods, covering the sidewalk and my neighbor's eastern edge of their property floods as well. Yes, water has entered home through windows.

Site Description and Observations (include creek or tributary name, if known):

Minimal tributary area appears to be contributing to site runoff. Home appears elevated and flooding does not seem possible. Minor evidence of ponding appears on western edge of property.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

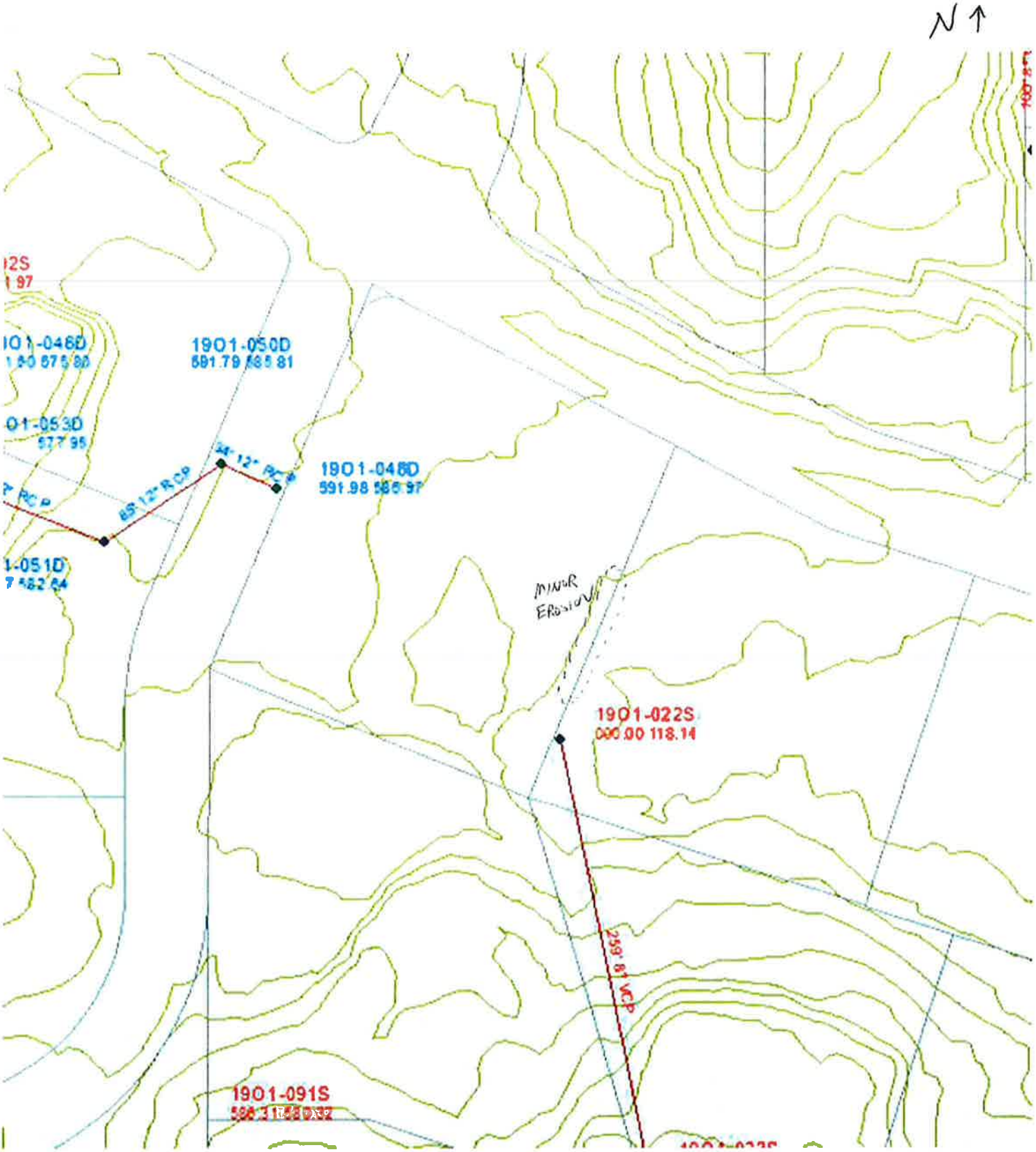
Field Crew: TJS

Date: 10-20-11

N ↑

CABIN GROVE LN
CONWAY RD
CONWAY RD
ROLLING VIEW RD
BALCON EST
311
317
320
12
9
7
12441
12437
12433
324
10
325
8
6
12466
328
12417
403
12420
12403
12361
12353
410
12418
411
12410
12402
12364
12356
419
17
16
427
15
14
9
422
18
19
20
13
10
21

N


N
1901-050D
591.79 585.81
1901-048D
591.98 586.97
85' 12" RCP
34' 12" RCP
MINOR EROSION
1901-022S
000.00 118.14
259' 87" VCP
1901-091S

WEST SIDE 12410 (FACING NORTHEAST)

WEST SIDE 12410 (FACING NORTHEAST)

WEST SIDE 12410 (FACING NORTHEAST)

MINOR EROSION

FRONT YARD (FACING NORTHEAST)

FRONT YARD (FACING NORTHEAST)

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: WEST OF I-270 B/T LADUE and HWY 40

Street Address: 12534 Conway Holmes Circle

MSD Map No. 1901 **Complaint Reference:** [X] **1999 Master Plan** 3-32

[ ] **2010 Survey Response** _____

Original Description: [X] **Erosion** [X] **Flooding** [ ] **Inadequate Sewer Capacity** [ ] **Other**

Resident reports minor flooding in back yard near creek, and serious erosion.

Site Description and Observations (include creek or tributary name, if known):

Erosion in southwest corner of yard appears to be controlled by the rip rap placed along hill side and around inlet. Minor yard damage (possibly from ponding) remains adjacent to rip rap.

Attached (w/ the problem area highlighted): [X] **MSD facilities map**

[X] **Aerial photo**

[X] **Site photos**

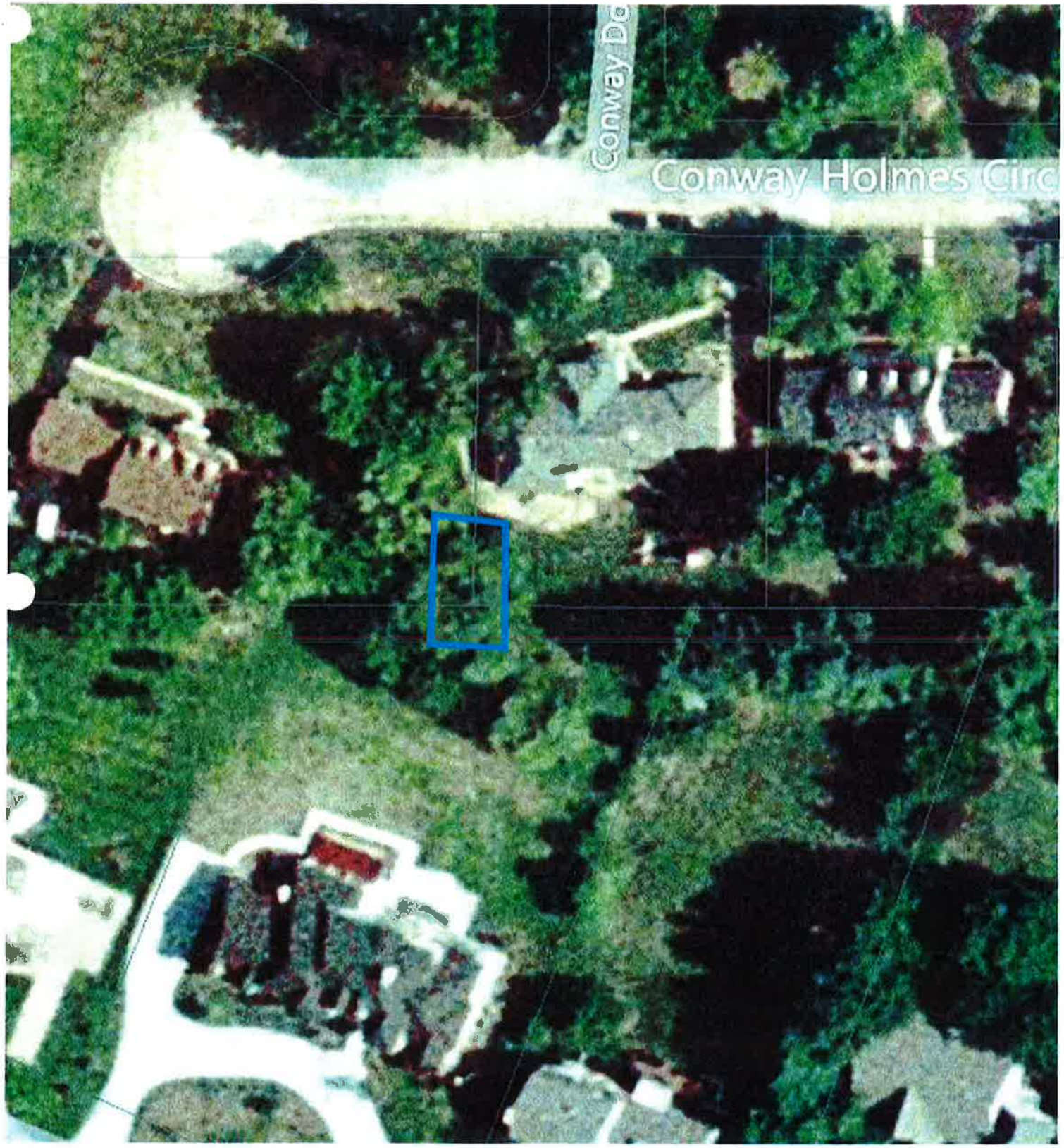
Field Crew: TJS

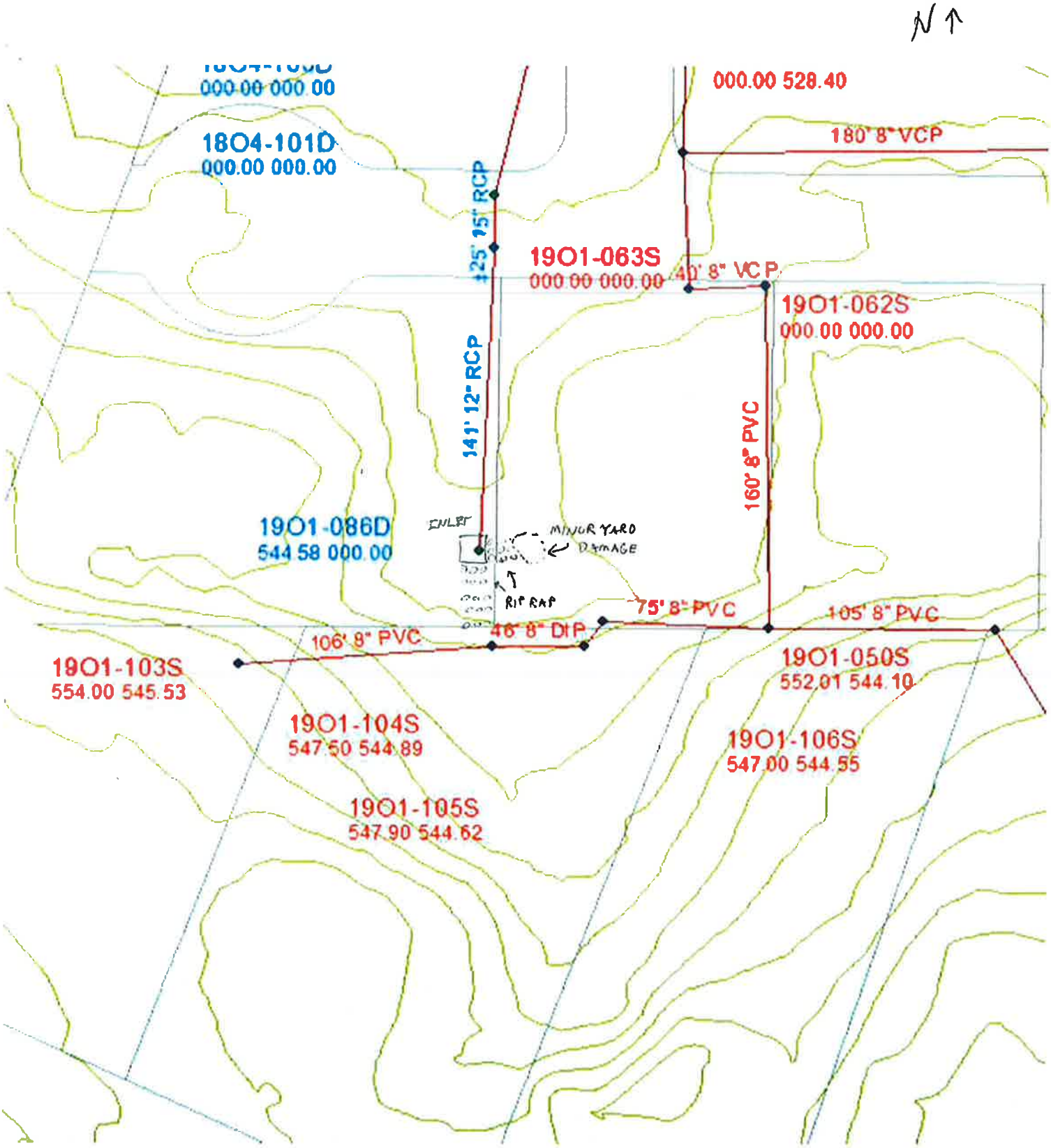
Date: 10-20-11

N ↑

CONWAY DOWNS DR
CONWAY DOWNS DR
CONWAY GARDENS CT
CONWAY GARDENS CT
CONWAY HOLMES CIR
CONWAY RD
BELLINGTON LN
12644
12630
12616
12567
12567
10537
247
252
12631
12619
316
12541
259
270
12637
12533
271
12632
341
330
327
320
12508
283
353
342
339
328
12511
291
365
353
342
339
328
291
365
354
351
342
12511
297
351
381
366
12508
12701
12661
12550
12550
12531
12522
12510
12629
12627
12621
12543
12609
12575
12621
12551
12559
12567
12551
404
401
401

N ↑




N
000.00 000.00
18O4-101D
000.00 000.00
000.00 528.40
180' 8" VCP
125' 15" RCP
19O1-063S
000.00 000.00
40' 8" VCP
19O1-062S
000.00 000.00
141' 12" RCP
160' 8" PVC
19O1-086D
544.58 000.00
INLET
MINOR YARD DAMAGE
RIP RAP
75' 8" PVC
105' 8" PVC
106' 8" PVC
46' 8" DIP
19O1-103S
554.00 545.53
19O1-050S
552.01 544.10
19O1-104S
547.50 544.89
19O1-106S
547.00 544.55
19O1-105S
547.90 544.62

INLET

FACING SOUTH AT NEIGHBOR'S YARD

SOUTHWEST CORNER PROPERTY

BACKYARD FACING EAST

FACING WEST (MINOR YARD DAMAGE)

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: WEST OF I-270 B/T LADUE and HWY 40

Street Address: 7 Balcon Estates

MSD Map No. 1901 **Complaint Reference:** ☒ **1999 Master Plan** 5-6

☒ **2010 Survey Response** 2

Original Description: ☒ **Erosion** ☒ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

Nuisance flooding and erosion along small creek channel through resident's front yard.

Site Description and Observations (include creek or tributary name, if known):

Grouted rip rap has been placed upstream of bridge and rip rap has been placed downstream of bridge. Creek banks appear stable. Retaining wall has been installed in case water level in creek overtops banks. No evidence of flooding or erosion. Site looks to have been recently constructed.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

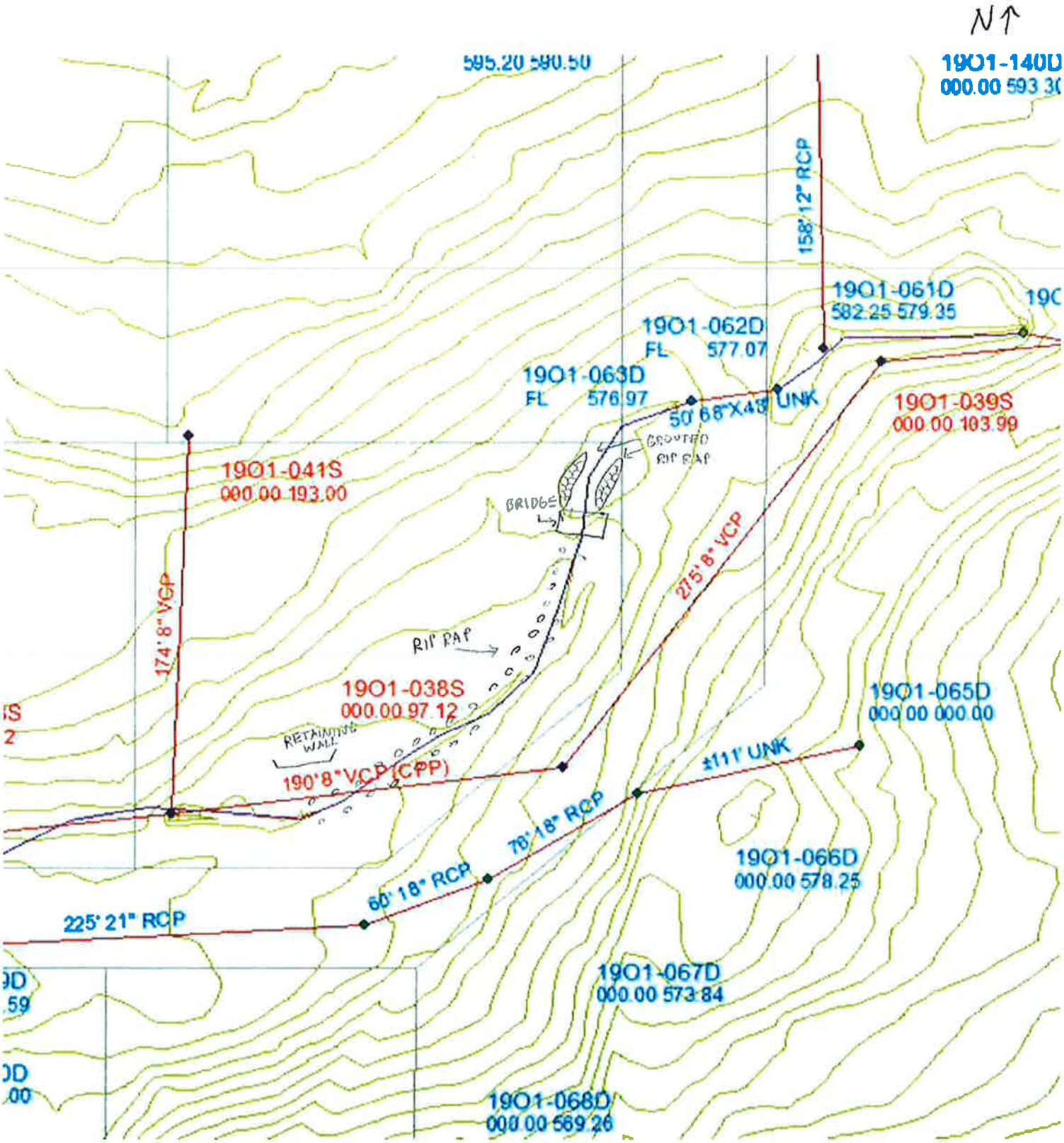
Field Crew: TJS

Date: 10-20-11

N ↑

12361
12353
12345
12331
12319
12311
12305
CONWAY RD
12356
12342
BALCON EST
9
10
8
12262
COVENANT
LN
11
32
30
BALCON EST
29
31
33
34
12273
NORTH FORTY DR
12289

N ↑


N
595.20 590.50
19O1-140D
000.00 593.30
158' 12" RCP
19O1-061D
582.25 579.35
19O1-062D
FL 577.07
19O1-063D
FL 576.97
50' 68"X48" UNK
19O1-039S
000.00 103.99
GROUTED RIP RAP
BRIDGE
19O1-041S
000.00 193.00
174' 8" VCP
275' 8" VCP
RIP RAP
19O1-038S
000.00 97.12
RETAINING WALL
190' 8" VCP (CPP)
19O1-065D
000.00 000.00
±111' UNK
78' 18" RCP
60' 18" RCP
19O1-066D
000.00 578.25
225' 21" RCP
19O1-067D
000.00 573.84
19O1-068D
000.00 569.26

DOWNSTREAM

DOWNSTREAM

UPSTREAM BRIDGE

DOWNSTREAM

DOWN STREAM

DOWN STREAM

Original ID: 2 (2010 Questionnaire)

- Refer to 5-6 (1999 Master Plan) for field observations, maps, and photos.

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: WEST OF I-270 B/T OLIVE and LADUE

Street Address: 12402, 12414, 12420, 12443 Stratford Ridge Ct 12380 Whitworth Terrace 665 Questover

MSD Map No. 1704 **Complaint Reference:** ☒ **1999 Master Plan** 5-5

☐ **2010 Survey Response** _____

Original Description: ☒ **Erosion** ☒ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

Severe erosion and flooding along creek behind homes.

Site Description and Observations (include creek or tributary name, if known):

665 Questover home on top of hill. Very distant from creek. Erosion along creek banks observed at 12402 Stratford and 665 Questover. Grouted rip rap has been placed along 12414, 12420 Stratford. 12443 Stratford no impact by creek or other drainage issue. 12380 Whitworth Terrace - creek erosion. Eroding backyard. Rip rap has been placed to mitigate issue.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

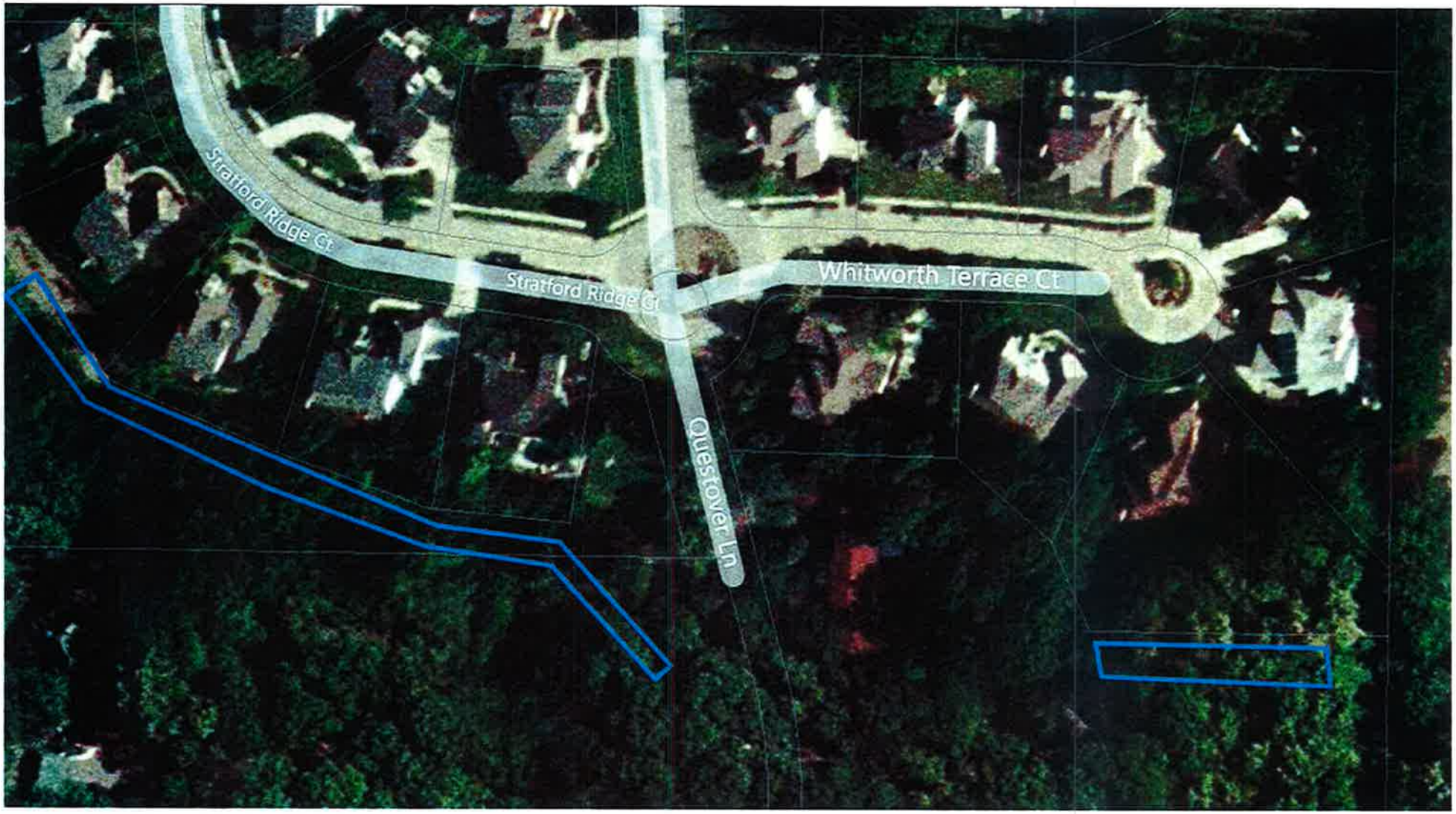
Field Crew: TJS

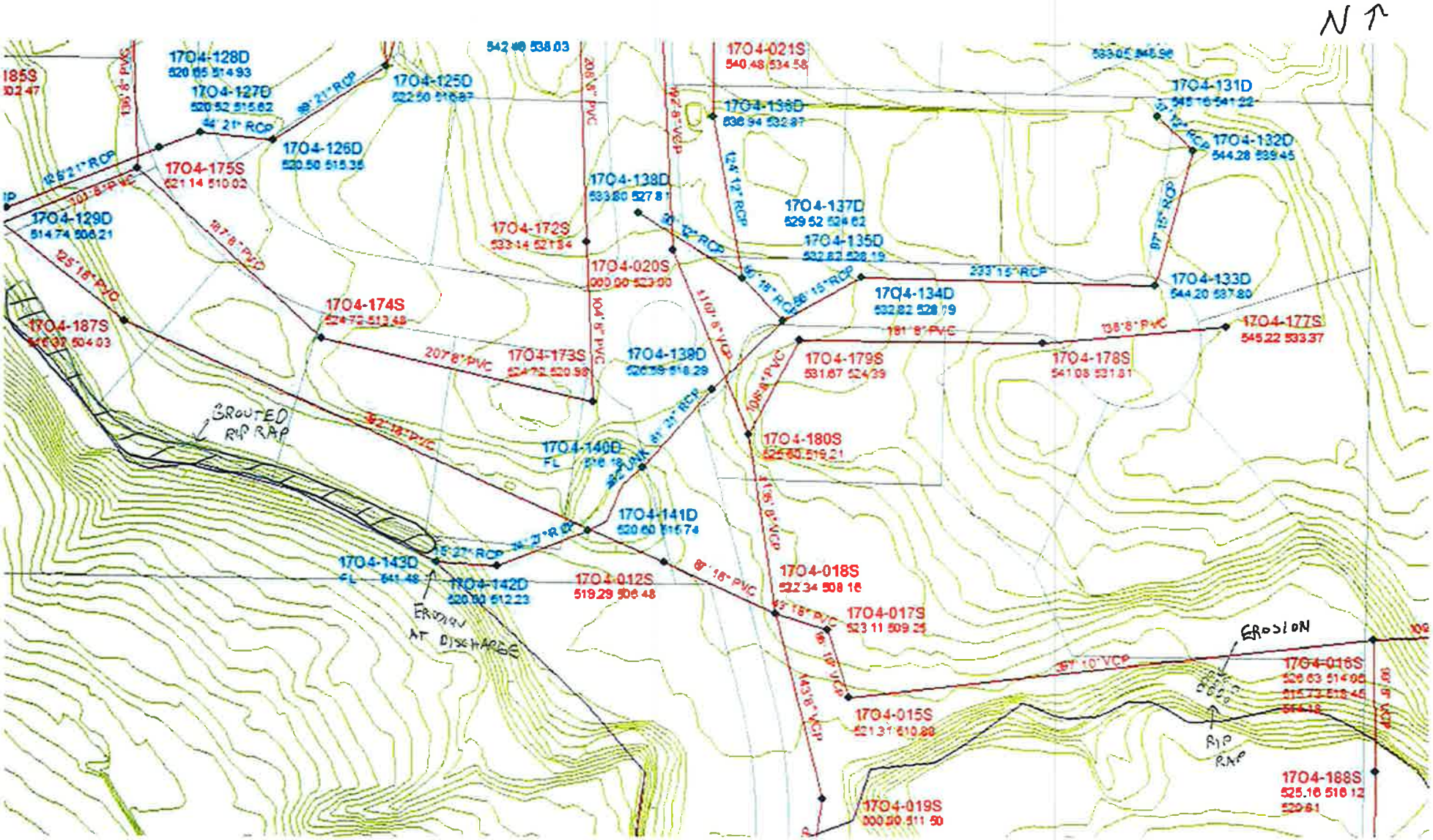
Date: 10-27-11

N ↑

BENTLEY VIEW CT
QUESTOVER LN
MULBERRY
TREE CT
STRATFORD RIDGE CT
WHITWORTH TERRACE CT
TRAMMELL CT
12417
12411
12423
12431
12400
12416
12439
12440
12448
12481
12467
12443
12438
12437
12470
12432
12462
12425
12426
12523
12413
12515
12420
12414
12408
12402
12507
673
665
12501
12497
12489
12483
12453
12445
539
12461
12475
12437
531
12488
489
575
12393
12385
12377
724
718
717
712
709
701
693
687
681
680
676
668
679
12347
12346
12353
12352
12359
12358
12365
12364
12395
12389
12371
12370
12394
12388
12382
12376
12374
12374
12393
12387
12381
12375
12386
12374
12380

N ↑


Stratford Ridge Ct
Stratford Ridge Ct
Whitworth Terrace Ct
Questover Ln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1704-128D
1704-127D
1704-125D
1704-126D
1704-175S
1704-129D
1704-187S
1704-174S
1704-173S
1704-172S
1704-020S
1704-138D
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1704-021S
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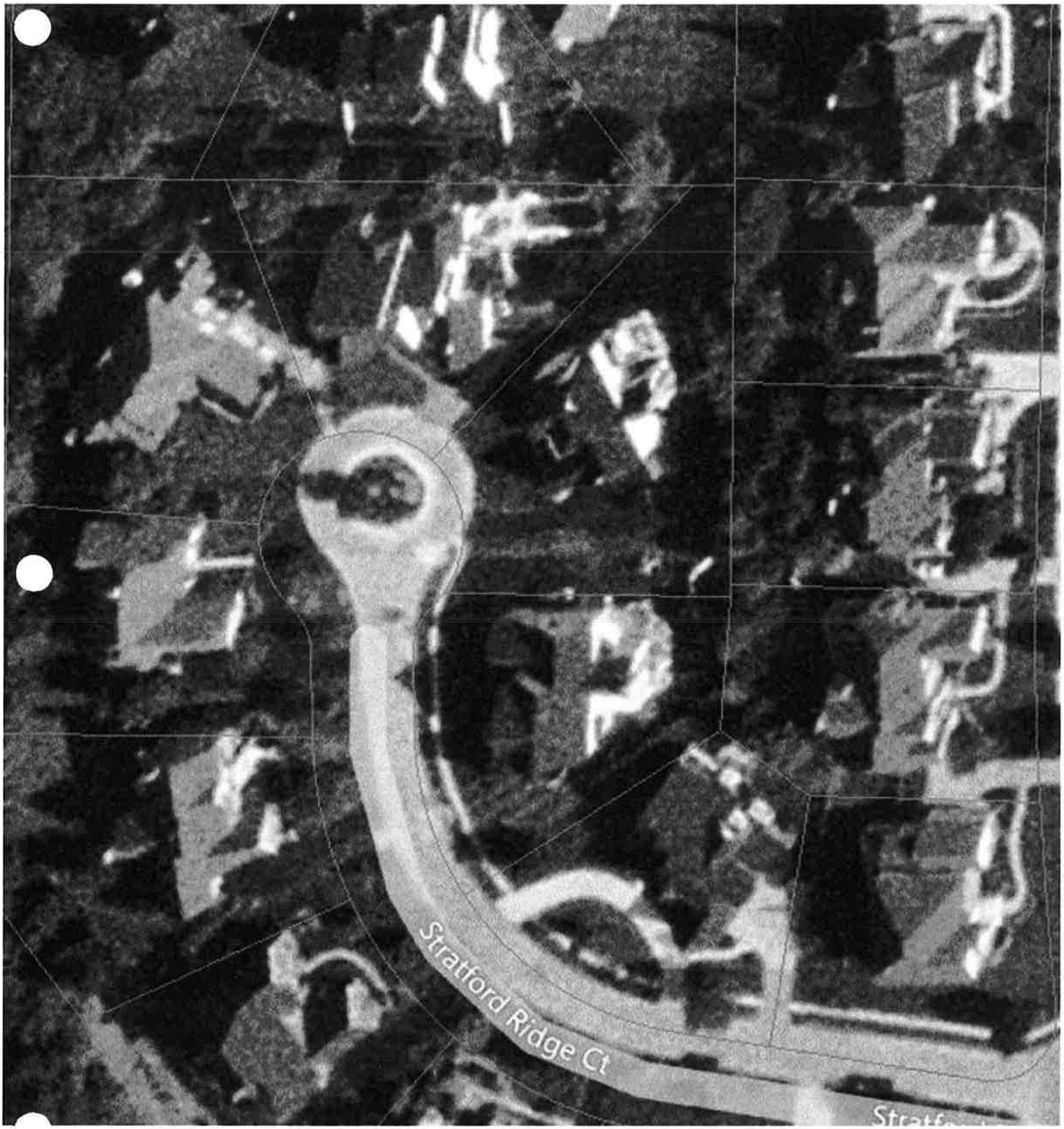
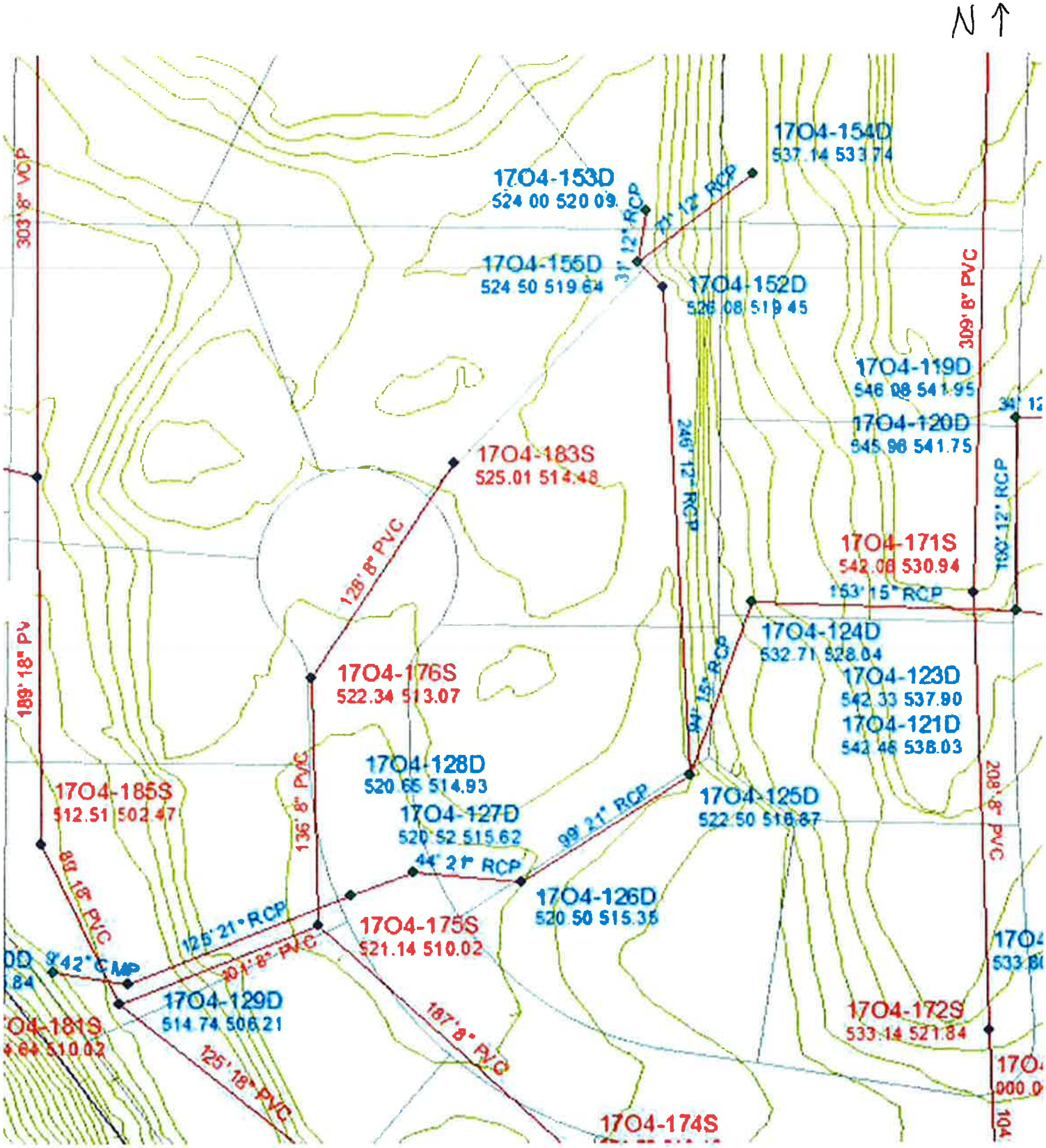
1704-135D
1704-134D
1704-133D
1704-132D
1704-131D
1704-177S
1704-178S
1704-179S
1704-180S
1704-018S
1704-017S
1704-016S
1704-015S
1704-019S
1704-188S
GROUTED RIP RAP
EROSION AT DISCHARGE
EROSION
RIP RAP

N ↑

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526.08 519.45
17O4-119D
546.08 541.95
17O4-120D
545.96 541.75
17O4-183S
525.01 514.48
17O4-171S
542.08 530.94
17O4-124D
532.71 528.04
17O4-123D
542.33 537.90
17O4-121D
542.48 538.03
17O4-176S
522.34 513.07
17O4-128D
520.65 514.93
17O4-185S
512.51 502.47
17O4-127D
520.52 515.62
17O4-125D
522.50 516.87
17O4-126D
520.50 515.35
17O4-175S
521.14 510.02
17O4-129D
514.74 506.21
17O4-172S
533.14 521.84
17O4-174S
303' 8" VCP
189' 18" PV
128' 8" PVC
136' 8" PVC
31' 12" RCP
71' 12" RCP
246' 12" RCP
94' 15" RCP
99' 21" RCP
44' 21" RCP
125' 21" RCP
101' 8" PVC
187' 8" PVC
125' 18" PVC
309' 8" PVC
100' 12" RCP
153' 15" RCP
208' 8" PVC
89' 18" PVC
42" CMP

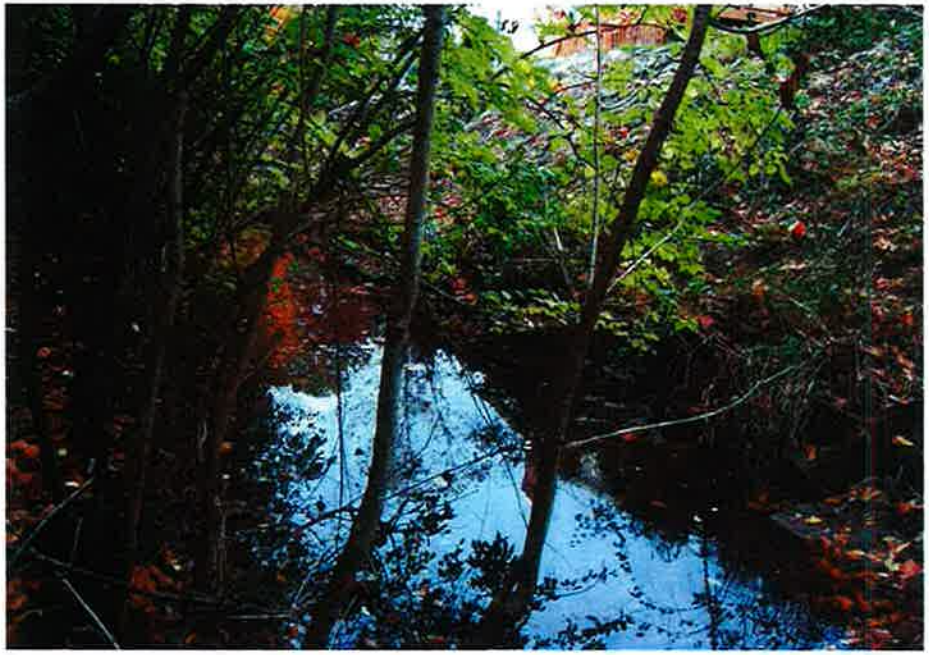
CREEK AT 665

CREEK BEHIND 12402

LOT 665

DISCHARGE PIPE AT 12402

CREEK BEHIND 12408



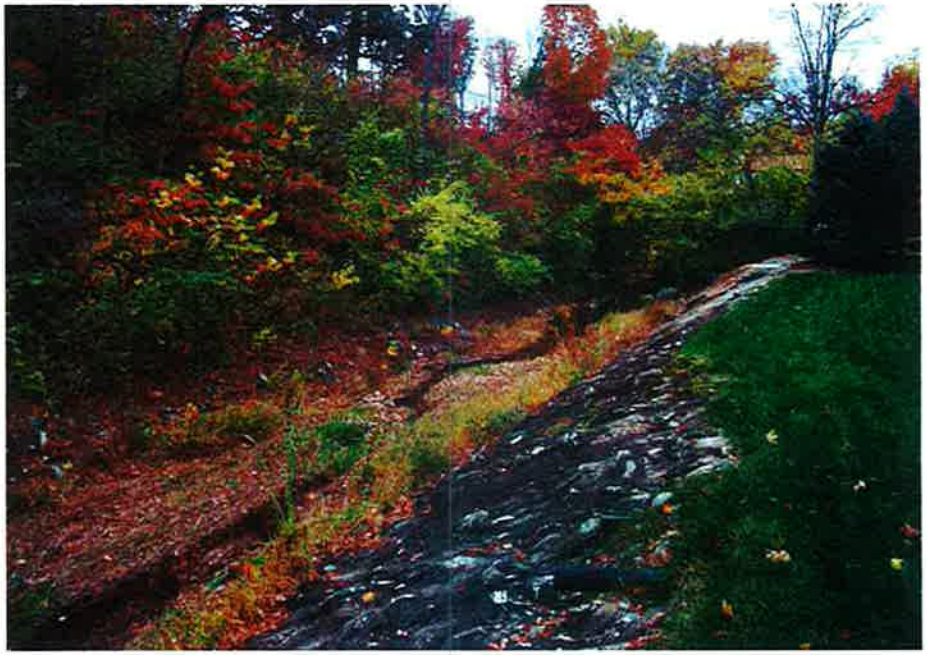
CREEK BEHIND 12414

CREEK BEHIND 12402

CREEK BEHIND 12414

CREEK BANK AT 12414

CREEK AT 12420



BACKYARD 12414

BACKYARD 12420

NORTHEAST CORNER OF 12443

TOP BANK AT 12380

NORTHWEST CORNER OF 12443

CREEK BEHIND 12380

BACKYARD 12380

CREEK AT 12380

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: WEST OF I-270 B/T OLIVE and LADUE

Street Address: 12248, 12283, 12290 Winsock Dr.

MSD Map No. 1801 **Complaint Reference:** ☒ **1999 Master Plan** 5-1

☐ **2010 Survey Response** _____

Original Description: ☒ **Erosion** ☐ **Flooding** ☒ **Inadequate Sewer Capacity** ☐ **Other**

Storm water drains down steep culdesac street to far end, where it drains through two yards. Inadequate curb and gutter and inlets. Properties at 12283 and 12290 have been seriously damaged.

Site Description and Observations (include creek or tributary name, if known):

Street has been reasphalted resulting in reduced size of gutter. No damage to 12248 observed. New curb has been installed at 12283 and 12290 which appears adequate to control street runoff. Yard erosion observed at lot 12283. Only trib area contributing to runoff is side of property and possibly neighbor's driveway.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

Field Crew: TJS

Date: 10-21-11

N ↑

PRINCE TOWNE DR
HIBLER DR
WINROCK DR
KINGSHILL DR
HIBLER RD
WEYBRIDGE DR
12248
12290
12283
12282
12228
12236
12220
12212
12204
12207
12219
12227
12235
12243
12251
12259
12267
12275
12274
12260
12271
12265
12253
12264
12276
12270
12321
12318
12320
12327
12323
12319
12302
12335
12229
12223
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12205
12240
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12252
12235
12227
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12241
12233
12225
12217
12259
12244
12238
12232
12224
12216
12208
12202
12183
12175
12169
12180
12166
12173
12164
12176
12171
12172
359
353
350
341
342
330
318
312
315
306
296
289
290
281
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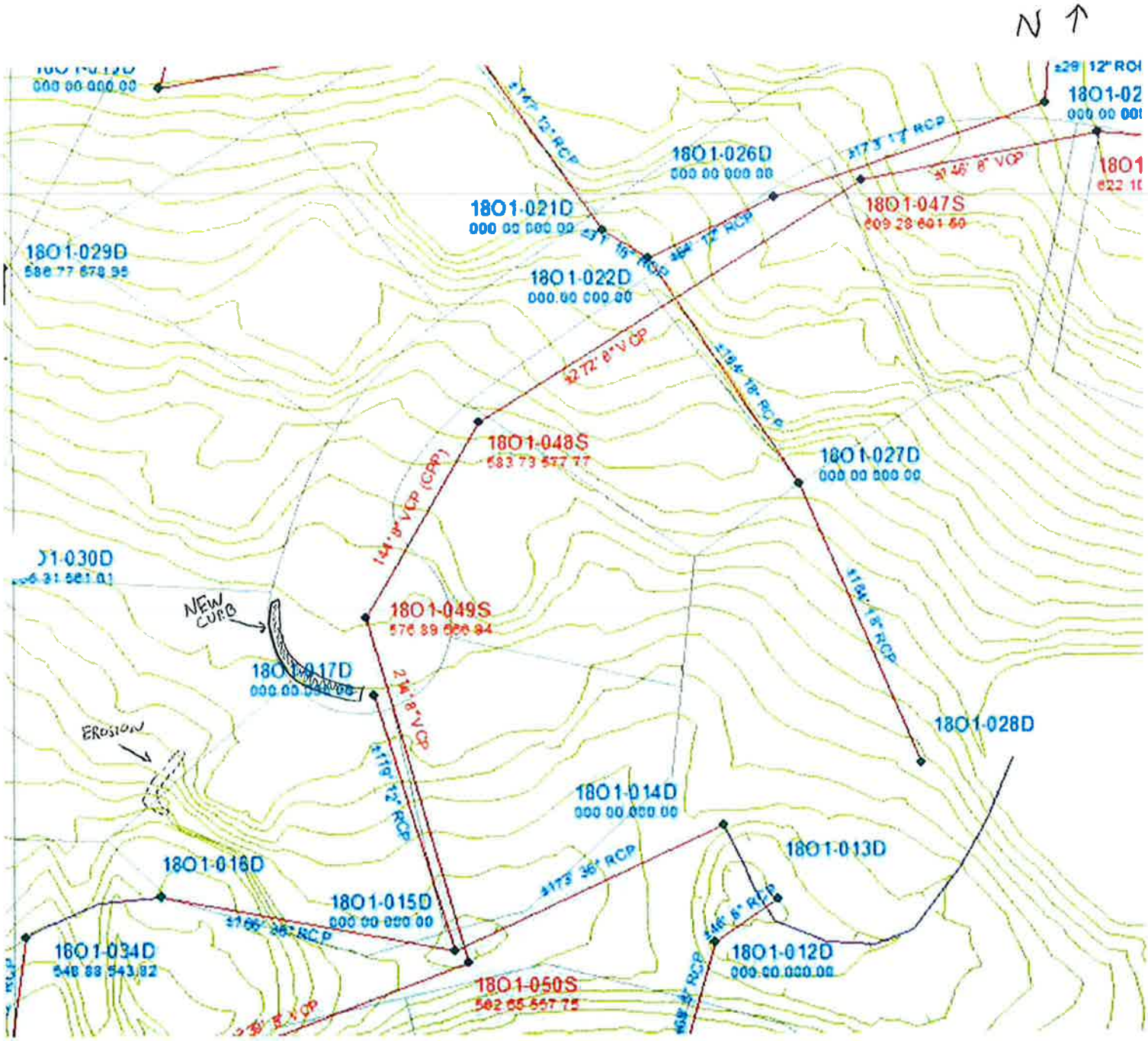
253
237
229
223
261
277
248

N ↑


N
18O1-026D
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18O1-021D
000 00 000 00
18O1-047S
18O1-029D
18O1-022D
000.00 000.00
18O1-048S
583 73 577 77
18O1-027D
000 00 000 00
NEW CURB
18O1-049S
18O1-017D
EROSION
18O1-028D
18O1-014D
000 00 000 00
18O1-013D
18O1-016D
18O1-015D
000 00 000 00
18O1-034D
548 88 543.82
18O1-012D
000.00 000.00
18O1-050S
562 65 557 75

FRONTYARD 12248

UPSTREAM OF CULDESAC

FRONT YARD 12248

FRONT YARD 12248

FRONT YARD 12290

FRONT YARD 12290

FRONT YARD 12283

STREET INLET

EAST SIDE 12283

EROSION IN BACKYARD 12283

FRONT YARD 12283

EAST SIDE 12283

EROSION IN BACKYARD 12283

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: WEST OF I-270 B/T OLIVE and LADUE

Street Address: 12535, 12542, 12550 Mason Forest Drive

MSD Map No. _____ **Complaint Reference:** ☐ **1999 Master Plan** N/A

☐ **2010 Survey Response** N/A

Original Description: ☐ **Erosion** ☐ **Flooding** ☐ **Inadequate Sewer Capacity** ☒ **Other**

This location was identified during a stormwater committee meeting. The residents in the area requested an assessment of the street drainage to determine if improvements can be made.

Site Description and Observations (include creek or tributary name, if known):

There appears to be adequate inlets and a cross-pavement grated trench drain to collect runoff. Steep sloping street and steep backyards (and front yards) sloping to street, may cause a large amount of water on pavement during a storm.

Attached (w/ the problem area highlighted): ☐ **MSD facilities map**

☐ **Aerial photo**

☒ **Site photos**

Field Crew: GRL

Date: 5-11-12

Grated trench drain @ 12550

Private drain @ 12550

Street at 12550

Looking north down street

Front yard of 12535

Curb inlet at 12535

Driveway at 12542

Curb inlet at 12535

Front yard b/t 12541 and 12535

Street 12550

Front Yard b/t 12541 & 12535

Front yard b/t 12541 & 12535

Looking south up street

Front yard 12542

Driveway at 12542

Front yard of 12542

Curb inlet @ 12544

Curb inlet @ 12544

Street at 12542

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: WEST OF I-270 B/T OLIVE and LADUE

Street Address: 1009, 1020 Fernview Drive

MSD Map No. 1684 **Complaint Reference:** ☒ **1999 Master Plan** 5-8

☐ **2010 Survey Response** _____

Original Description: ☒ **Erosion** ☐ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

Creek channel behind homes on small culdesac is eroding.

Site Description and Observations (include creek or tributary name, if known):

1020 and 1028 Fernview have erosion in backyard due to runoff from houses behind them on Ferngate Ln. Home owner at lot 1028 has placed rocks along drainage path in attempt to divert flow. Erosion at discharge pipe in north section of backyard at 1009. Yard waste and debris has been placed at location.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

Field Crew: TSS

Date: 10-27-11

N ↑

MILL CROSSING DR
FERNTRAILS LN
FERNVIEW DR
FERNGATE LN
FERNPARK DR
FERNTOP LN
1198
13014
1131
1134
12952
1122
12936
1123
12930
1114
1111
1108
13097
12957
12949
12941
12969
12929
13096
1087
12933
13090
13095
13089
1081
12925
13084
12956
13078
13079
13083
12970
12962
12934
1075
13072
13077
1067
1068
1071
12924
1072
13064
13071
13029
13017
1060
1063
1064
13009
1059
1049
13058
1052
13024
1055
1056
1041
13052
13040
13016
13046
13010
1045
1044
13032
1047
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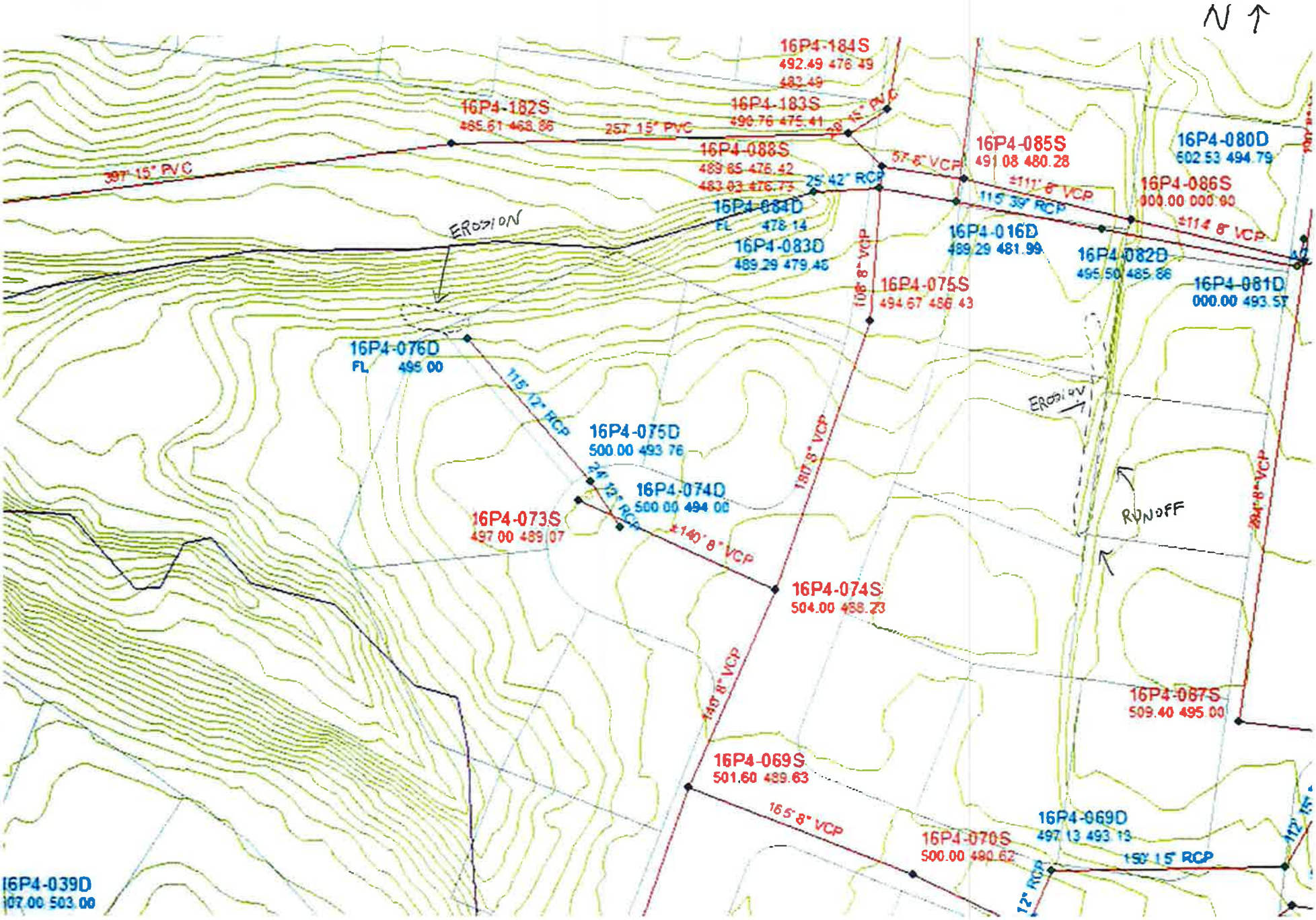
1033
1036
1039
1042
1025
1028
1031
1034
1017
1027
1015
1019
1020
1009
1023
1026
1011
1012
1010
1011
1014
1003
1000
1005
945
1000
13045
12971
1001
13037
960
12938
12930
12922
13044
939
13031
940
954
12970
12958
13038
13025
946
13030
925
12927
13019
924
943

N↑


N
16P4-184S
492.49 476.49
483.49
16P4-183S
490.76 475.41
16P4-182S
465.61 468.86
257' 15" PVC
397' 15" PVC
16P4-088S
489.85 476.42
483.03 476.73
25' 42" RCP
57' 8" VCP
16P4-085S
491.08 480.28
±111' 8" VCP
115' 39" RCP
16P4-080D
502.53 494.79
16P4-086S
000.00 000.00
±114' 8" VCP
16P4-084D
FL 478.14
16P4-083D
489.29 479.48
16P4-016D
489.29 481.99
16P4-082D
495.50 485.86
16P4-081D
000.00 493.57
16P4-075S
494.67 486.43
108' 8" VCP
EROSION
16P4-076D
FL 495.00
115' 12" RCP
16P4-075D
500.00 493.76
24' 12" RCP
16P4-074D
500.00 494.00
16P4-073S
497.00 489.07
±140' 8" VCP
180' 8" VCP
EROSION
RUNOFF
16P4-074S
504.00 488.23
16P4-087S
509.40 495.00
16P4-069S
501.60 489.63
165' 8" VCP
16P4-070S
500.00 490.62
16P4-069D
497.13 493.13
150' 15" RCP
12" RCP
16P4-039D
507.00 503.00

BACKYARD 1020 FACING NORTH

EROSION AT DISCHARGE PIPE (LOT 1009)

BACKYARD 1020 FACING NORTH

BACKYARD 1024 FACING NORTH

NORTH SECTION OF 1009

NORTH SECTION OF 1009

NORTH SECTION 1009

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: WEST OF I-270 B/T OLIVE and LADUE

Street Address: 928, 952 Fernway Ln.

MSD Map No. 16 P3 **Complaint Reference:** ☒ **1999 Master Plan** 3-2

☐ **2010 Survey Response** _____

Original Description: ☒ **Erosion** ☒ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

Drainage from properties to the east drains into back lot 900 block of Fernway.

Site Description and Observations (include creek or tributary name, if known):

Houses on 900 Block of Fernway are located on bottom of hillside. Backyards have steep slopes. Lot 928 has top section of yard regraded to collect runoff. There is an area inlet along property line, however side of inlet is blocked from allowing drainage. No yard damage evident.

Lot 952 has yard damage at bottom of hill, possibly from ponding water.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

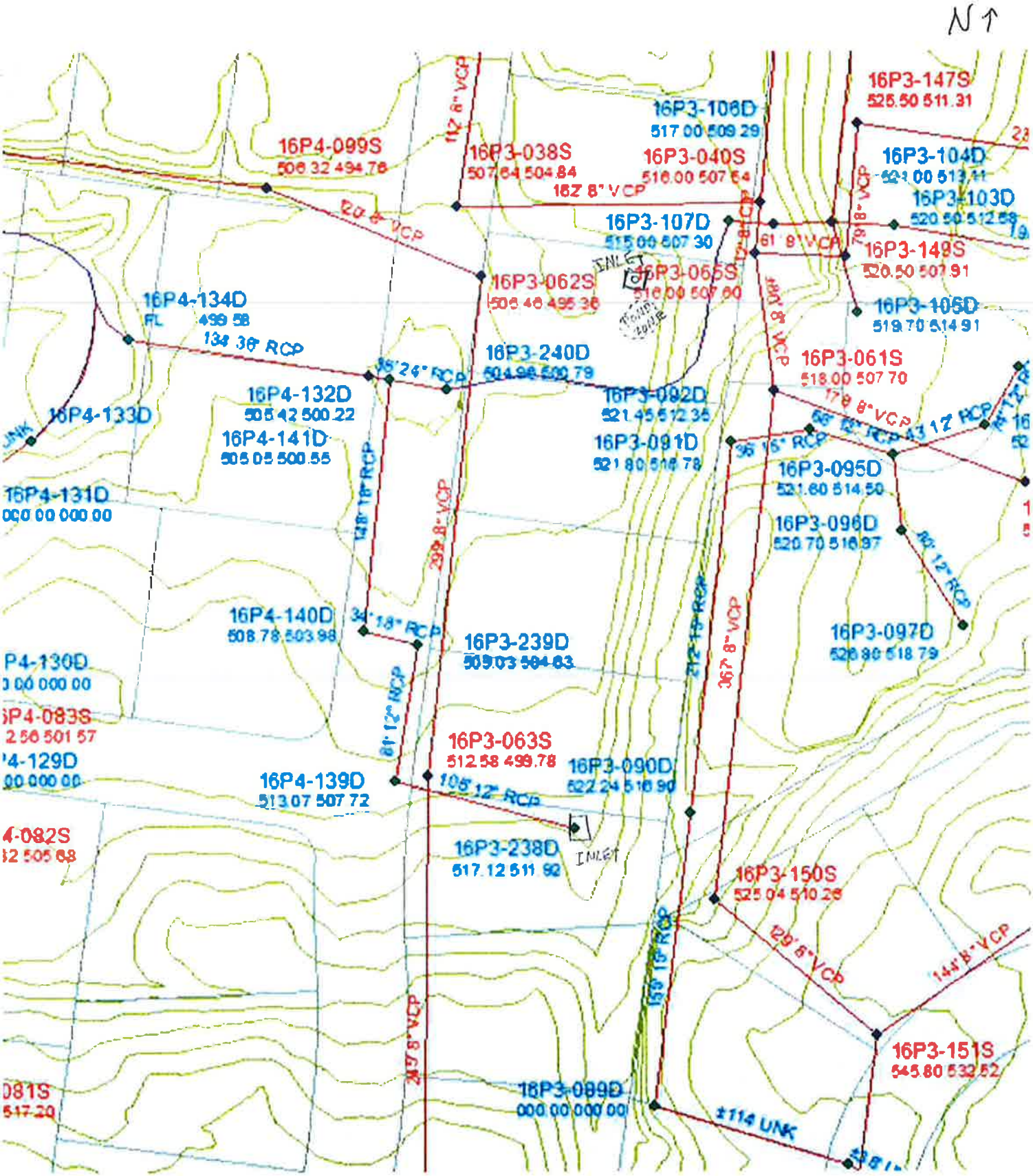
☒ **Site photos**

Field Crew: TJS

Date: 10-27-11

FERNPARK
FERNWAY LN
FERNTOP LN
FERNGATE LN
GALLAGHER RD
BARBEZIEUX DR
SOMERTON RIDGE DR
HAVERTON DR
RUE LA CHEL
RUE LA VILLE
TOWN
N
1036
1039
1042
1025
1028
1031
1034
1017
1024
1021
1022
1020
1023
1026
1011
1018
1015
1014
1010
1011
1014
1003
1012
1007
1000
1001
980
12883
12971
1001
960
12938
12930
12922
12910
972
964
2970
12958
954
951
952
946
12927
943
943
944
935
938
12939
12933
936
982
927
12925
12917
928
921
12952
12944
12938
12932
12924
919
920
899
12923
12915
895
912
12961
12937
12925
911
889
12949
12909
906
12930
12918
12917
903
883
855
2947
900
875
880
12939
12931
12923
12915
12907
12901
852
867
849
872
841
2
12944
12936
831
832
12906
846
859
864
833
835
851
856
825
842
825
824
829
843
844
820
819
832
840

N ↑


N
16P3-147S
525.50 511.31
16P3-106D
517.00 509.29
16P4-099S
506.32 494.76
16P3-038S
507.64 504.84
16P3-040S
516.00 507.64
16P3-104D
521.00 513.11
16P3-103D
520.50 512.58
16P3-107D
515.00 507.30
16P3-148S
520.50 507.91
16P3-062S
506.46 495.36
16P3-065S
516.00 507.00
16P3-105D
519.70 514.91
16P4-134D
FL 499.58
16P3-240D
504.98 500.79
16P3-061S
518.00 507.70
16P4-132D
505.42 500.22
16P3-092D
521.45 512.35
16P4-133D
16P4-141D
505.05 500.55
16P3-091D
521.80 516.78
16P3-095D
521.60 514.50
16P4-131D
000.00 000.00
16P3-096D
520.70 516.97
16P4-140D
508.78 503.98
16P3-239D
509.03 504.63
16P3-097D
520.80 518.79
16P3-063S
512.58 499.78
16P3-090D
522.24 516.90
16P4-139D
513.07 507.72
16P3-238D
517.12 511.92
INLET
16P3-150S
525.04 510.26
16P3-151S
545.80 532.52
16P3-089D
000.00 000.00
±114 UNK

BACKYARD LOT 928

BACKYARD LOT 928 (FACING NORTH)

BACKYARD LOT 928

AREA INLET

BACKYARD LOT 952

POSSIBLE YARD DAMAGE FROM RUNOFF

AREA INLET

BACKYARD LOT 952

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: WEST OF I-270 B/T OLIVE and LADUE

Street Address: 12970 Ferntop Ln.

MSD Map No. 16P4 **Complaint Reference:** ☐ **1999 Master Plan** _____

☒ **2010 Survey Response** 13

Original Description: ☒ **Erosion** ☒ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

Drainage creek behind my home is open, constantly floods, and has a very significant problem with erosion. Standing water causes severe mosquito problems.

Site Description and Observations (include creek or tributary name, if known):

Creek erosion observed in backyard. Fair amount of vegetation along creek. Pockets of standing water. Most noticeable signs of erosion along banks on south side.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

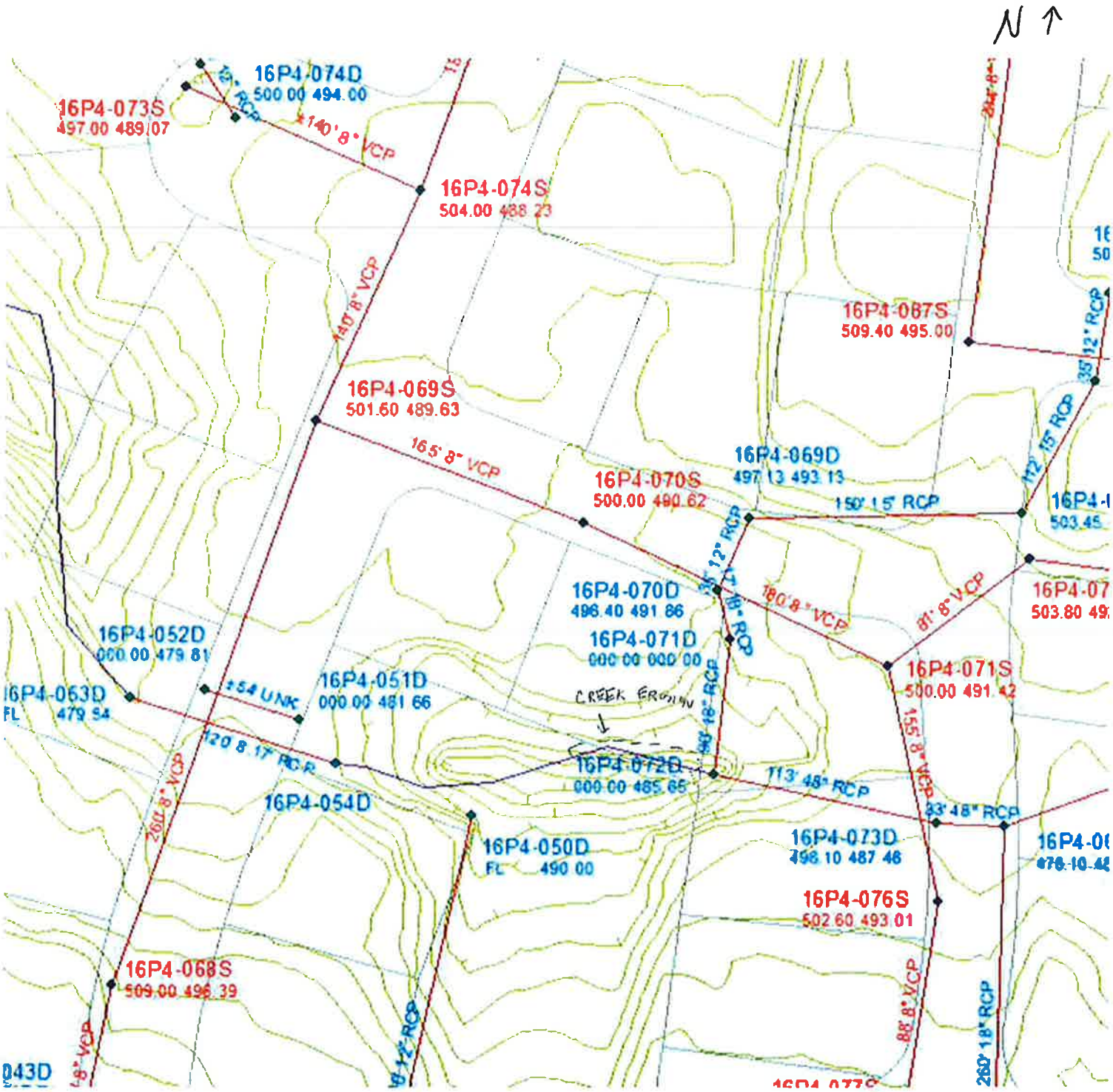
Field Crew: TJS

Date: 10-27-11

N
FERNTRAILS LN
FERNVIEW DR
FERNPARK DR
FERNTOP LN
FERNCREST CT
FERNGATE LN
FERNWAY LN
GALLAGHER RD
BARBEZIEUX DR
12970

N ↑

Ferngate Ln
Ferntop Ln
Ferntop Ln
Fernview Dr
Fernview Dr
Ferngate Ln


N
16P4-074D
500.00 494.00
16P4-073S
497.00 489.07
140' 8" VCP
16P4-074S
504.00 488.23
140' 8" VCP
16P4-087S
509.40 495.00
16P4-069S
501.60 489.63
165' 8" VCP
16P4-069D
497.13 493.13
16P4-070S
500.00 490.62
150' 15" RCP
16P4-070D
496.40 491.86
180' 8" VCP
81' 8" VCP
16P4-071D
000.00 000.00
16P4-052D
000.00 479.81
16P4-053D
FL 479.54
154 UNK
16P4-051D
000.00 481.66
CREEK ERODING
16P4-071S
500.00 491.42
120' 8" 17" RCP
16P4-072D
000.00 485.65
113' 48" RCP
155' 8" VCP
33' 48" RCP
16P4-054D
16P4-050D
FL 490.00
16P4-073D
498.10 487.46
16P4-076S
502.60 493.01
16P4-068S
509.00 496.39
260' 8" VCP
88' 8" VCP
260' 18" RCP

CREEK FACING WEST

OUTLET PIPE (FACING WEST)

DISCHARGE PIPE (FACING EAST)

CREEK FACING WEST

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: WEST OF I-270 B/T OLIVE and LADUE

Street Address: 12921 Fermway Lane

MSD Map No. 1683/1684 **Complaint Reference:** ☐ **1999 Master Plan** _____

☒ **2010 Survey Response** 14

Original Description: ☒ **Erosion** ☒ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

My backyard backs up to the parking lot of House of Denmark and whenever it rains heavily, water from their parking lot runoff comes shooting out between the timbers of my retaining wall.

Site Description and Observations (include creek or tributary name, if known):

Evidence of runoff from upstream rotting away retaining wall. Backyard could have ponding issues if runoff flows over or through wall. There is an area inlet as well as curb along parking lot behind home which appears to control runoff. It is possible curb may not be sufficient.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

Field Crew: TJS

Date: 10-27-11

N
OLIVE ARCADE PLZ
OLIVE BLVD
FERNVIEW DR
FEE FEE RD
FERNGATE LN
FERNWAY LN
340
1222
1279
1246
12943
12830
1201
13035
12915
13033
1151
1138
1143
12952
1134
12909
12936
1122
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12956
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12924
12916
12908
1054
1059
1060
1063
1064
1049
1052
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1056
1041
1061
1046
1045
1044
1047
1050
1033
1032
1029
1038
1163

N ↑

N
INLET
PARKING LOT RUNOFF
CURB
RETAINING WALL
16P3-060D
521.00 515.99
16P4-096S
523.06 512.69
16P3-244D
517.78 510.08
16P4-186S
524.54 512.14
16P3-061D
517.64 509.71
16P3-245D
518.72 000.00
16P3-169S
526.63 520.39
521.83
16P3-170S
525.59 520.16
16P3-062D
517.87 509.02
16P3-171S
521.39 516.34
16P3-168S
520.33 515.39
16P3-166S
518.24 506.83
512.03
16P3-167S
521.17 514.03
16P3-058D
521.00 513.51
16P3-034S
16P4-001D
515.82 507.20
16P3-165S
520.01 506.31
8" VCP
103' 8" PVC
217' 8" PVC
110' 30" RCP
55' 36" RCP
36" RCP
126' 39" RCP
69' 8" PVC
61' 8" PVC
158' 8" PVC
81' 8" PVC
30" RCP
16" RCP
140' 8" PVC

INLET

HOUSE OF DENMARK PARKING LOT

RETAINING WALL

HOUSE OF DENMARK PARKING LOT

BACKYARD

BACKYARD

BACKYARD (FACING NORTHWEST)

BACKYARD

LOT 12921 BEHIND FENCE

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: WEST OF I-270 B/T OLIVE and LADUE

Street Address: 1, 3, 5 Chasselle 9, 13, 15, 25 Chumblee Lane

MSD Map No. 18-P2 **Complaint Reference:** ☒ **1999 Master Plan** 13-9

☒ **2010 Survey Response** 5, 6, 8

Original Description: ☒ **Erosion** ☒ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

Heavy volume in creek passing through area causing flooding and serious erosion.

House flooding at 13 and 15 Chumblee Lane

Site Description and Observations (include creek or tributary name, if known):

Significant creek erosion. Fallen trees, utility poles threatened, backyards eroding. Creek has been rehabbed with gabion walls, and rip rap at erosion locations. However, many areas of creek remain affected. Backyards along creek have been disturbed by construction activity from what appears to be sanitary sewer work. Unable to evaluate whether flooding is still an issue. Home owner at 1 Chasselle has not experienced any issues within last few years. All homes along creek, with exception of 1 Chasselle are distant from creek.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

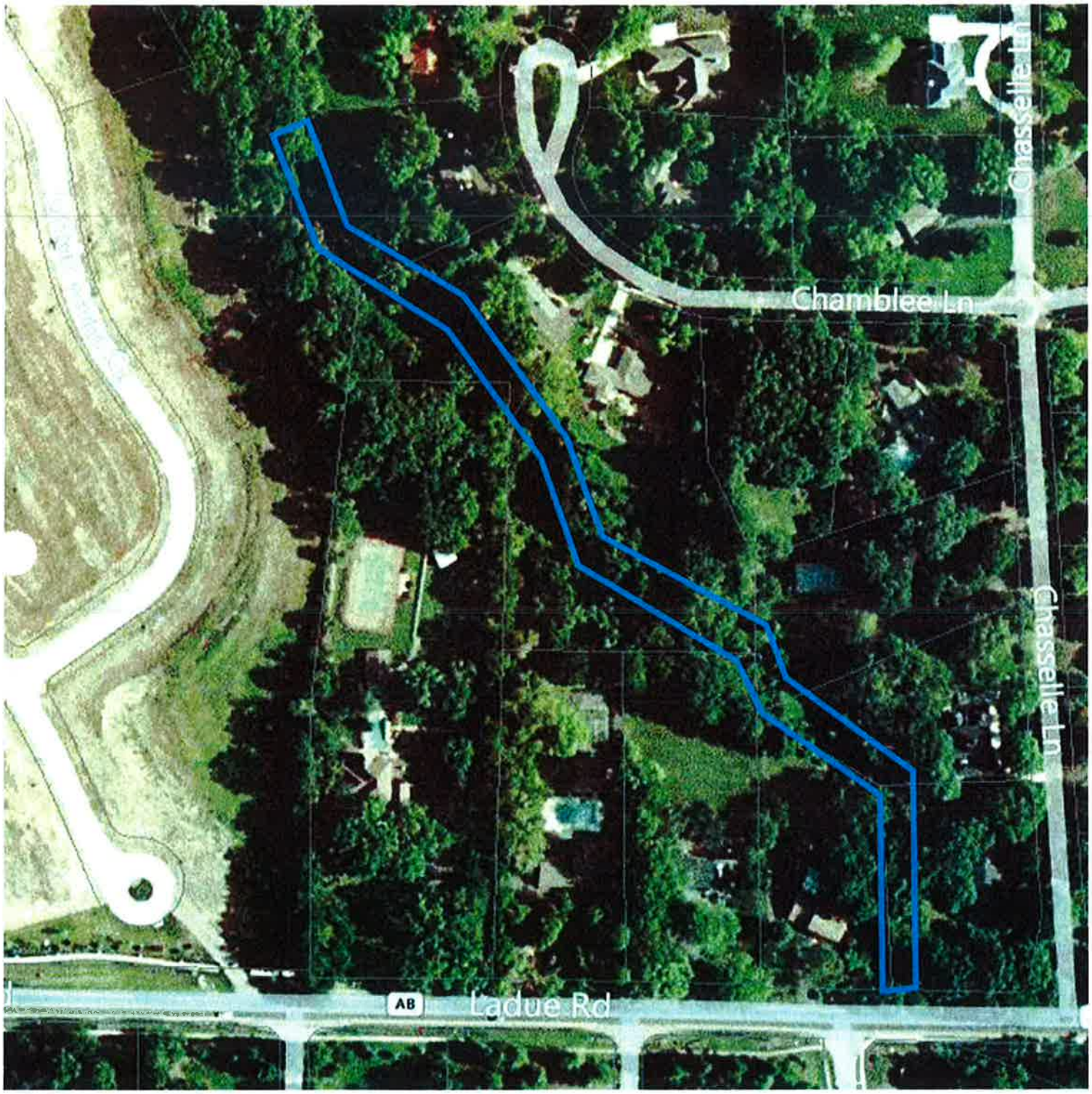
Field Crew: TJS

Date: 10-25-11

N ↑

239
244
19
12861
227
232
124
17
23
215
717
15
25
12
27
CHAMBLEE LN
203
13
10
9
7
11
8
5
6
12775
3
4
12759
12747
12721
1
2
CHASSELIEE LN
WEXLER MANOR CT
LADUE RD
LADUE RD
12824

N ↑



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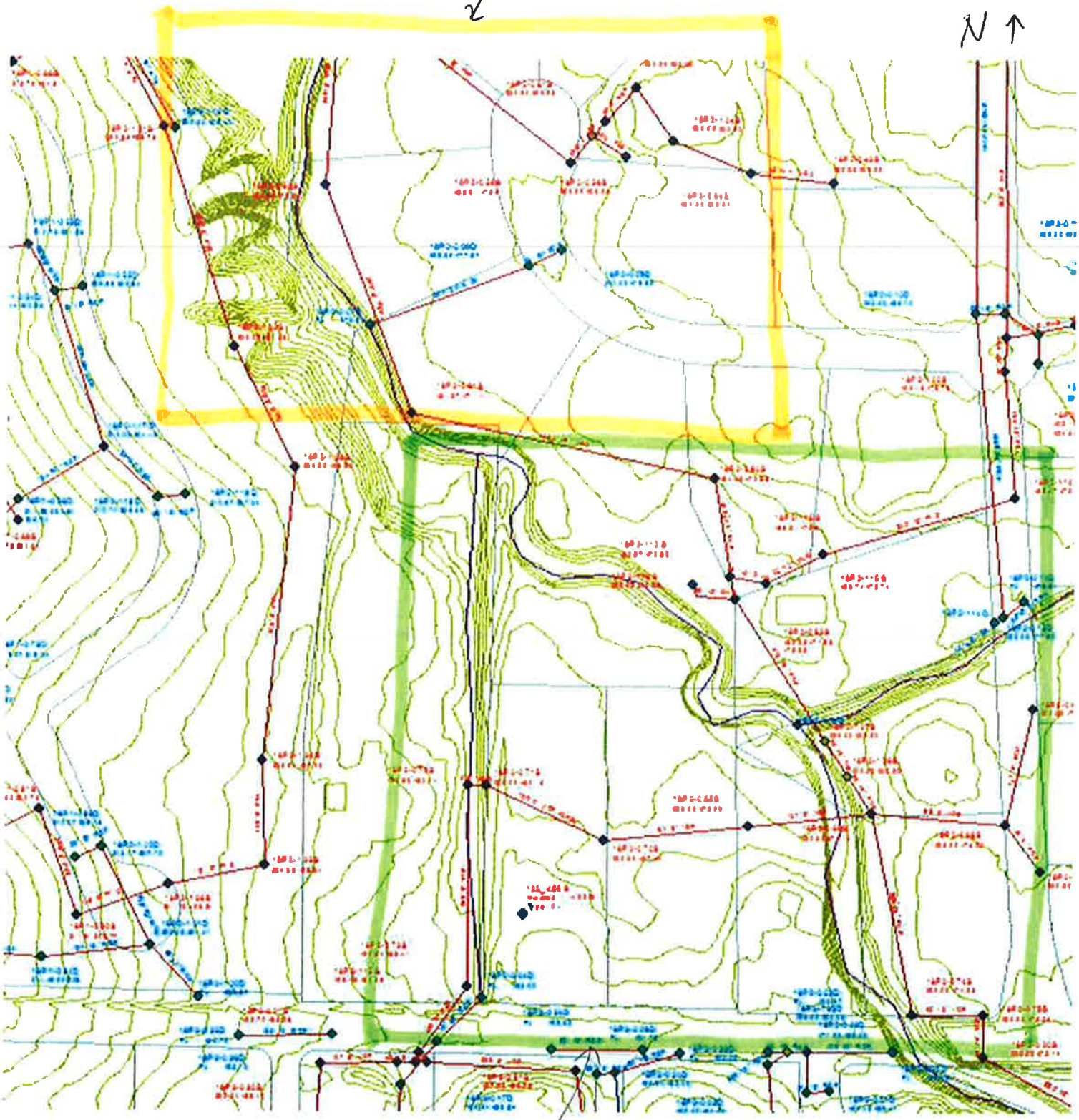

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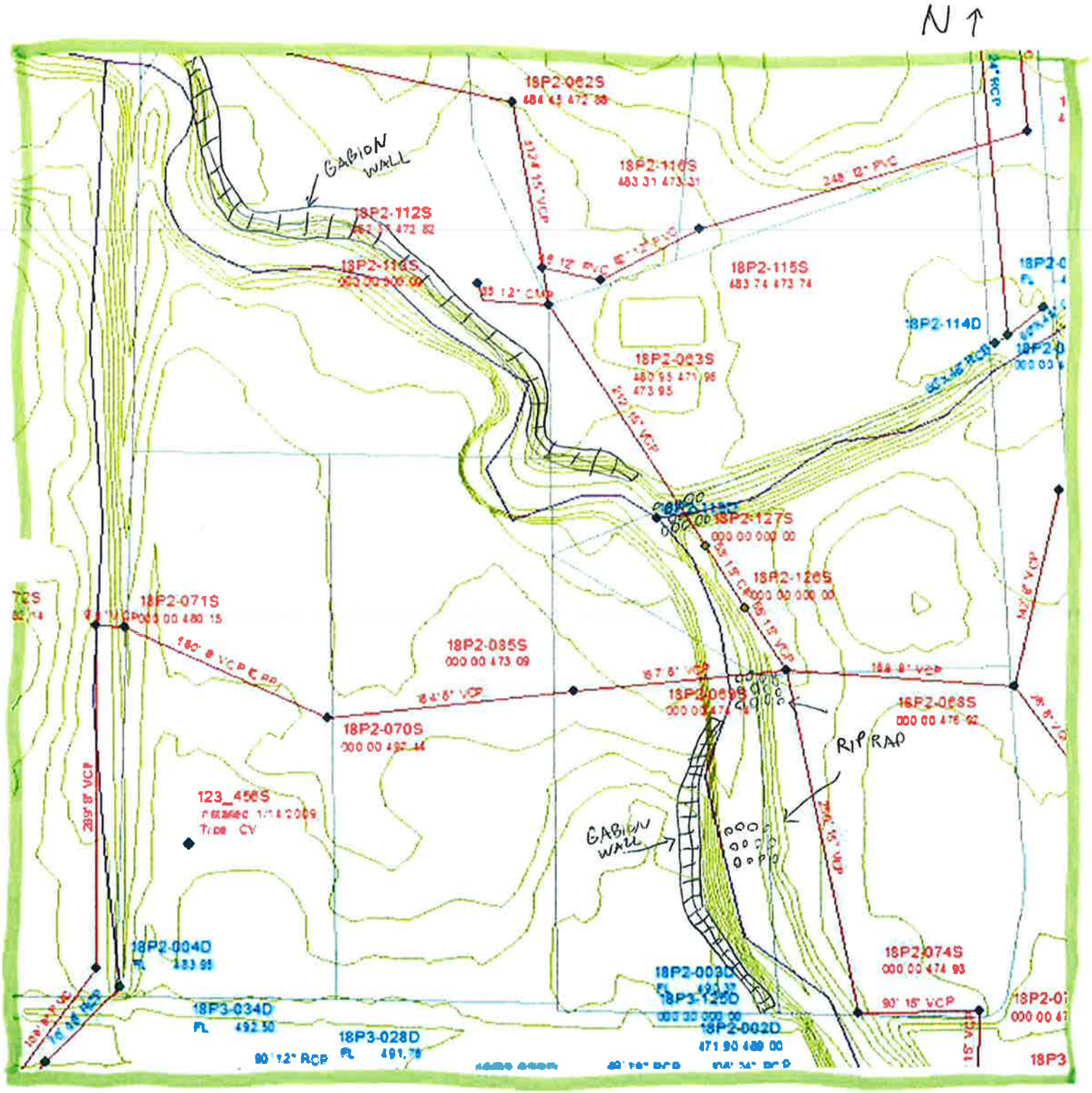
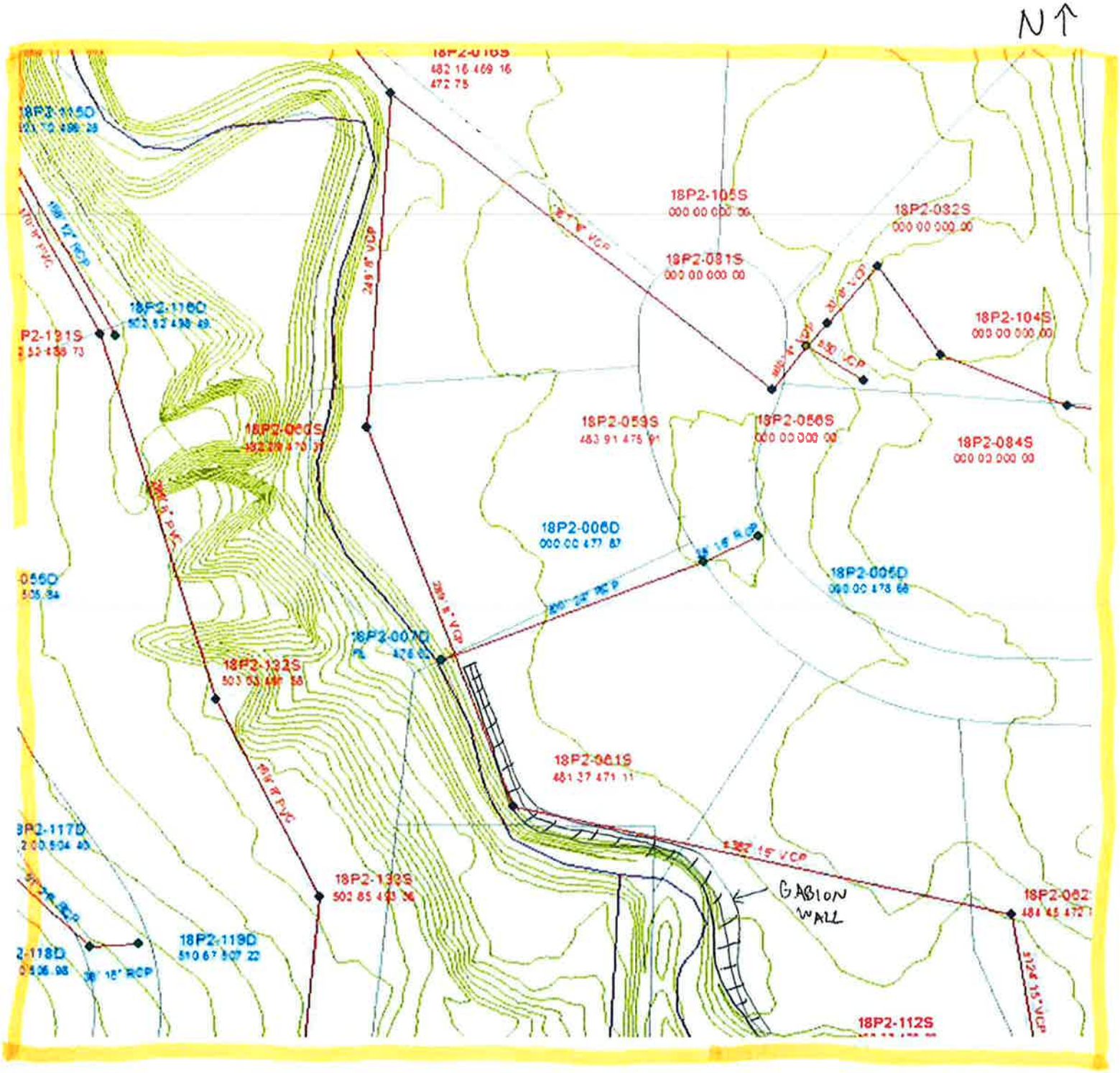

N
GABION WALL
18P2-062S
18P2-110S
483 31 473 31
18P2-112S
18P2-111S
18P2-115S
483 74 473 74
18P2-114D
18P2-063S
480 95 471 96
473 95
18P2-127S
000 00 000 00
18P2-126S
000 00 000 00
18P2-071S
18P2-085S
000 00 473 09
18P2-070S
18P2-068S
000 00 476 92
RIP RAP
GABION WALL
123_456S
Type CV
18P2-004D
18P2-074S
000 00 474 93
18P2-003D
18P3-125D
000 00 000 00
18P3-034D
FL 492.50
18P3-028D
FL 491.78
18P2-002D
471 90 489 00
90' 12" RCP
90' 15" VCP


N
18P2-105S
18P2-032S
18P2-081S
18P2-104S
18P2-116D
18P2-059S
18P2-056S
18P2-084S
18P2-006D
18P2-005D
18P2-007D
18P2-132S
18P2-061S
18P2-117D
18P2-133S
18P2-119D
18P2-118D
18P2-112S
GABION WALL

BACKYARD LOT 1

FACING UPSTREAM AT LOT 1

BACKYARD LOT 1

CREEK AT LOT 1

BACKYARD LOT 3

LOOKING DOWNSTREAM AT LOT 3

FACING DOWNSTREAM AT LOT 1

CREEK BEHIND LOT 3

BACKYARD LOT 3

LOOKING UPSTREAM AT LOT 5

LOOKING UPSTREAM AT LOT 3

LOOKING DOWNSTREAM AT LOT 5

BACKYARD LOT 5

CREEK BEHIND LOT 9

BACKYARD LOT 5

CREEK BEHIND LOT 9

BACKYARD LOT 13

CREEK AT LOT 13

CREEK AT LOT 13

BACKYARD LOT 15

BACKYARD LOT 15

CREEK AT LOT 15

CREEK AT LOT 15

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: WEST OF I-270 B/T LADUE and HWY 40

Street Address: 12229 Ladue Woods Dr.

MSD Map No. 1804 **Complaint Reference:** ☒ **1999 Master Plan** 5-7

☐ **2010 Survey Response** _____

Original Description: ☐ **Erosion** ☒ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

Runoff from homes on Ladue Oaks Drive sheet flows onto backyards of homes on Ladue Woods Drive.

Site Description and Observations (include creek or tributary name, if known):

Runoff from homes on Ladue Oaks Drive evident in backyard. Silt fence and drain has been installed, however erosion of yard still occurs. Flooding endangers pool, but not home.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

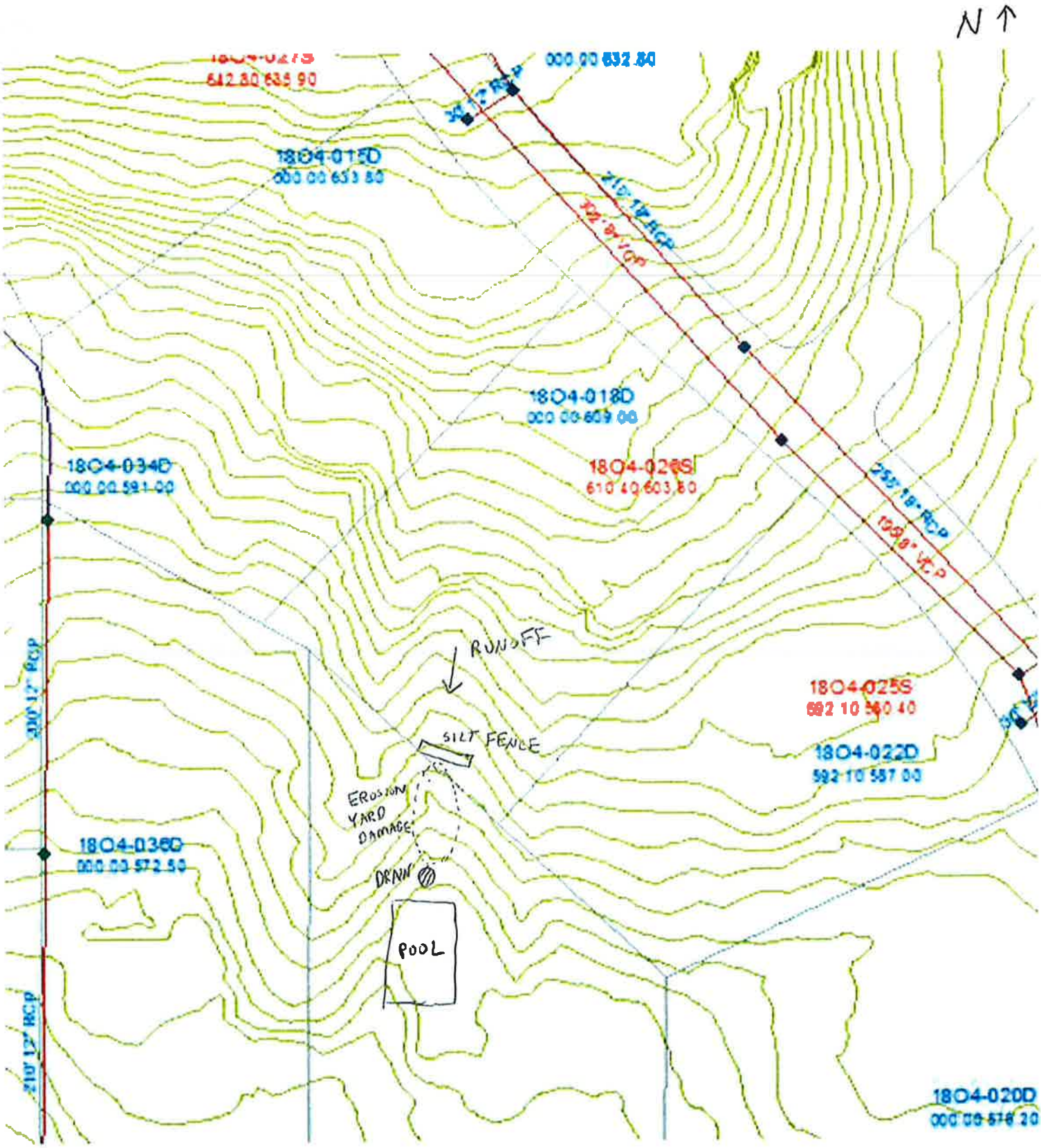
Field Crew: TJS

Date: 10-13-11

N ↑

216
159
156
185
180
212
171
168
191
190
220
177
LADUE OAKS CT
LADUE OAKS DR
212
232
183
195
226
236
270
244
217
LADUE OAKS CIR
303
304
225
300
256
LADUE WOODS CT
243
316
315
312
274
12243
311
12229
12215
334
286
331
330
286
331
330
12243
12229
12215
334
LADUE WOODS DR
292
12300
12256
12242
12230
12216
12202
12170

N
Ladue Oaks Dr
Ladue Oaks Circle
Ladue Woods Dr
Ladue Woods Dr


N
18O4-015D
000 00 653 80
18O4-018D
000 00 609 00
18O4-026S
610 40 603 80
18O4-034D
000 00 591 00
18O4-025S
592 10 560 40
18O4-022D
592 10 587 00
18O4-036D
000 00 572 50
18O4-020D
000 00 576 20
RUNOFF
SILT FENCE
EROSION
YARD
DAMAGE
DRAIN
POOL

DRAIN

SILT FENCE

BACKYARD

EROSION - YARD DAMAGE

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: West of I-270 b/t Ladue and HWY 40

Street Address: 12553, 12554 Royal Manor

MSD Map No. 18 P3 **Complaint Reference:** ☒ **1999 Master Plan** 4-4

☐ **2010 Survey Response** _____

Original Description: ☒ **Erosion** ☒ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

Heavy volume in creek passing through area causing flooding and serious erosion at 12553 and 12554 Royal Manor.

Site Description and Observations (include creek or tributary name, if known):

Creek at 12553 shows signs of creek erosion, but appears to have been maintained. Riprap has been placed in areas where bank has been eroded. Also banks are covered in vegetation. Creek at 12554 has erosion, but is not threatening to neighbor's yard.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

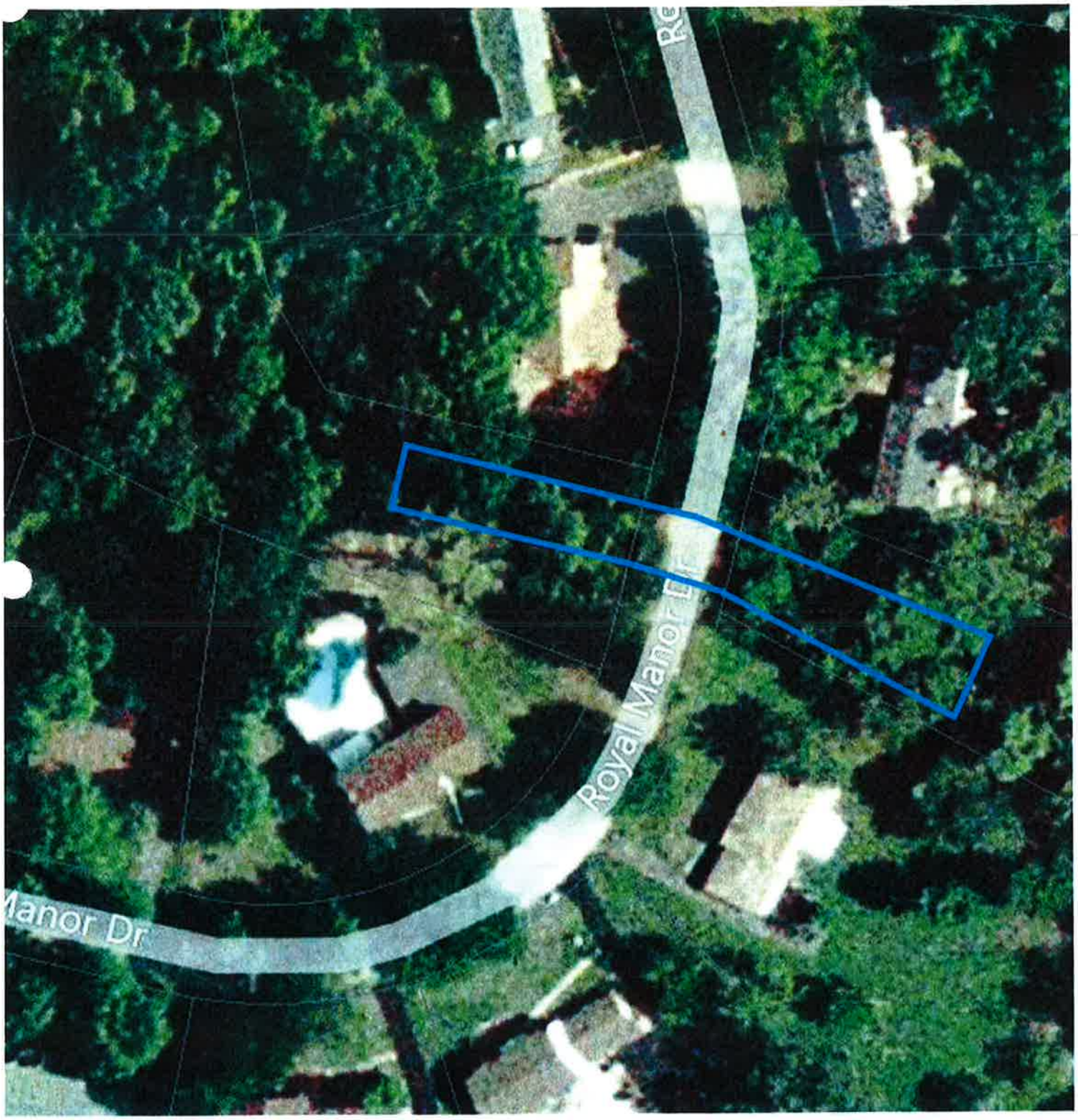
Field Crew: TJS

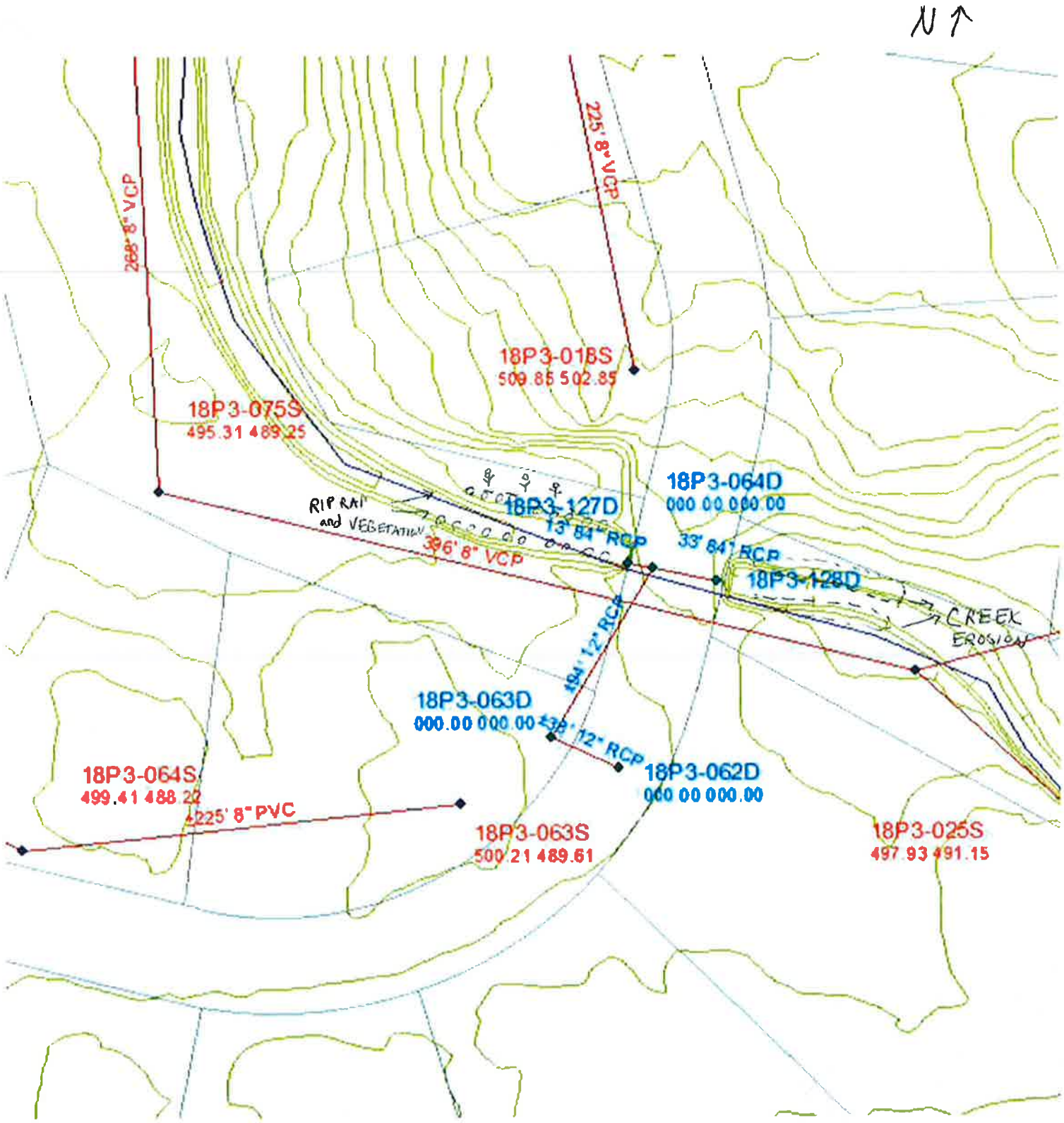
Date: 10-13-11

N ↑

LADUE WOODS
LADUE GROVE LN
PRIVATE RD
LADUE RD
LADUE RD
ROYAL GATE DR
ROYAL MANOR DR
ROYALWAY CT
ROYAL MANOR DR
104
115
121
102
108
12511
105
12467
12459
114
107
111
12466
12531
12518
12458
12655
12530
119
120
12537
12649
12538
127
128
12545
12641
12546
135
139
136
12553
12633
12554
141
145
144
12617
12601
12577
147
151
150
151
12616
12568
157
12608
12600
12584
12576

N ↑




N
268' 8" VCP
225' 8" VCP
18P3-018S
509.85 502.85
18P3-075S
495.31 489.25
RIP RAP
and VEGETATION
18P3-127D
13' 84" RCP
18P3-064D
000.00 000.00
33' 84" RCP
396' 8" VCP
18P3-128D
CREEK
EROSION
194' 12" RCP
18P3-063D
000.00 000.00
12" RCP
18P3-062D
000.00 000.00
18P3-064S
499.41 488.22
225' 8" PVC
18P3-063S
500.21 489.61
18P3-025S
497.93 491.15

CREEK AT 12554

CREEK AT 12553

CREEK AT 12554

HEADWALL AT 12554

CREEK AT 12553

CREEK AT 12553

HEADWALL AT 12553

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: WEST OF I-270 B/T LADUE and HWY 40

Street Address: 12318 Booth Bay Lane

MSD Map No. 1804 **Complaint Reference:** ☒ **1999 Master Plan** 4-5

☐ **2010 Survey Response** _____

Original Description: ☒ **Erosion** ☒ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

Creek erosion and flooding affects home on Culdesac.

Site Description and Observations (include creek or tributary name, if known):

Erosion evident on north side of 12318. Gully erosion present in backyard of 12310. Home owner of 12310 reported that he has seen manhole lid (storm manhole 1804-0740) blown off.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

Field Crew: TJS

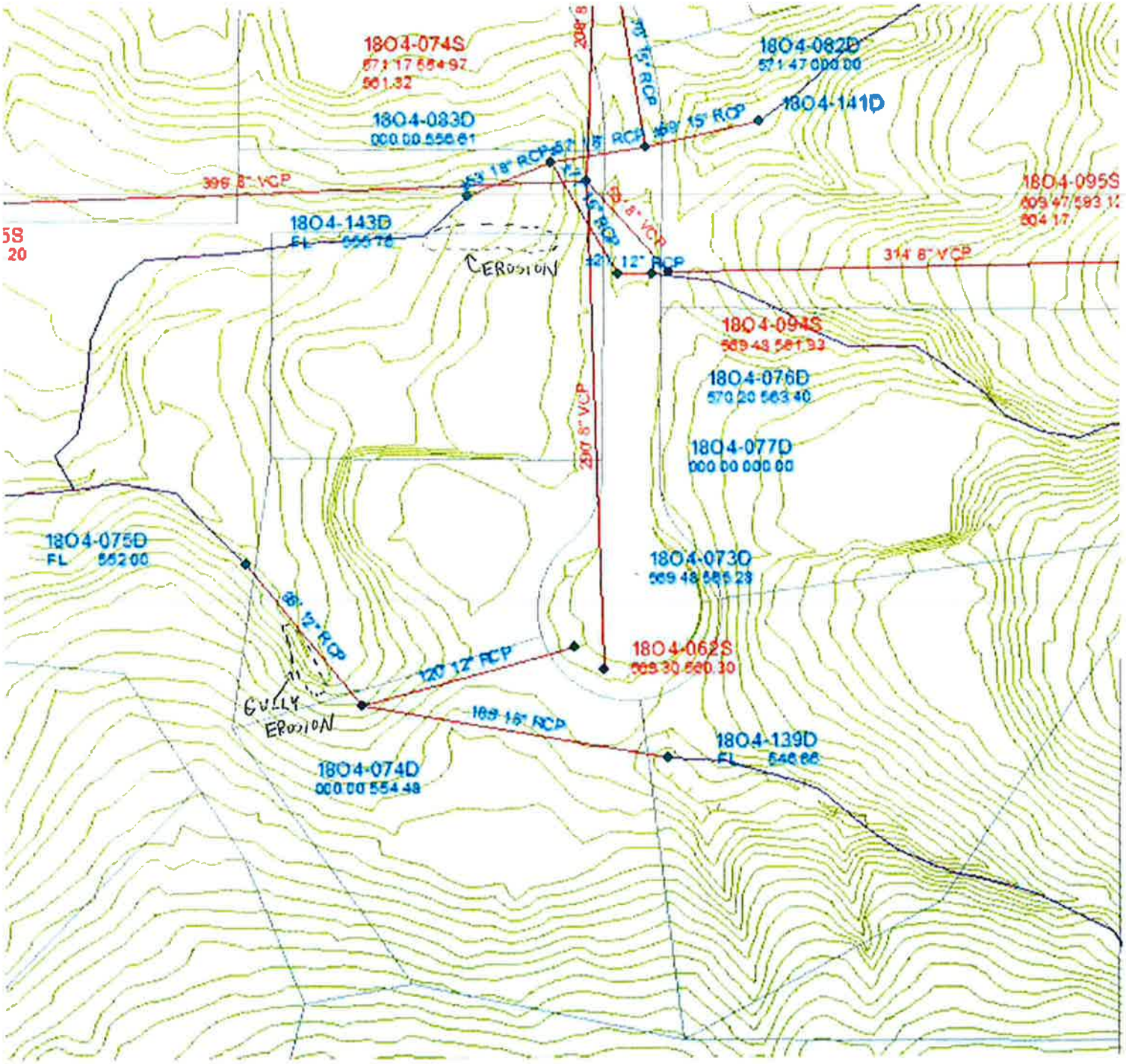
Date: 10-13-11

N ↑

LADUE RD
AB
BELLINGTON LN
BOOTHBAY CT
TOPSFIELD CT
BELLINGTON LN
DUE OAKS DR
121
111
12359
12353
12341
12335
12329
12218
141
129
110
12360
12354
12342
12321
137
124
12323
133
138
12318
12317
149
142
12324
12315
139
156
12310
145
157
12301
162
12371
12363
12302
155
153
165
12305
12350
201
216
12386
206
159
12372
12364
217
214
211
212
221
216
171
225
221
219
220

N →

N ↑


1804-074S
1804-082D
1804-141D
1804-083D
1804-095S
1804-143D
EROSION
1804-094S
1804-076D
1804-077D
1804-075D
FL 552.00
1804-073D
1804-062S
GULLY EROSION
1804-139D
1804-074D
000.00 554.48

NORTH SIDE LOT 12318

CREEK (NORTHWEST CORNER 12318)

NORTH SIDE LOT 12318

CREEK (NORTH WEST CORNER 12318)

BACKYARD LOT 12310

GULLY EROSION ON SIDE OF TREE

BACKYARD LOT 12318

RUNOFF FLOWING ONTO LOT 12310

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: WEST I-270 B/T OLIVE and LADUE

Street Address: 212 Clion 606, 622 Chamblee 225, 287, 305, 323 Ladue Lake

MSD Map No. 18P2 **Complaint Reference:** ☒ **1999 Master Plan** 4-10

☒ **2010 Survey Response** 19

Original Description: ☒ **Erosion** ☒ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

Erosion and flooding along creek and drainage swales.
Pond water remains in yard after rainfall.

Site Description and Observations (include creek or tributary name, if known):

606, 622 Chamblee - Creek eroding back yards, not threatening homes.
212 Clion - Erosion damage in southeast corner of yard.
225 Ladue Lake - Gully erosion affected by upstream runoff.
305, 323 Ladue Lake - Very minimal erosion observed. Not a concern.
287 Ladue Lake - Gully erosion along tree line, in backyard. Home owner explained water runs like a creek. Ponding occurs.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

Field Crew: TJS

Date: 10-25-11

N ↑

MPEIX LN
FALLING LEAVE
LADUE LAKE CT
CLION LN
CHAMBLEE LN
GREVE COEUR
326
318
335
332
12562
12550
12536
709
703
335
310
323
12561
12545
12527
301
300
305
232
287
12546
12528
253
230
12562
12534
224
271
268
225
220
259
216
252
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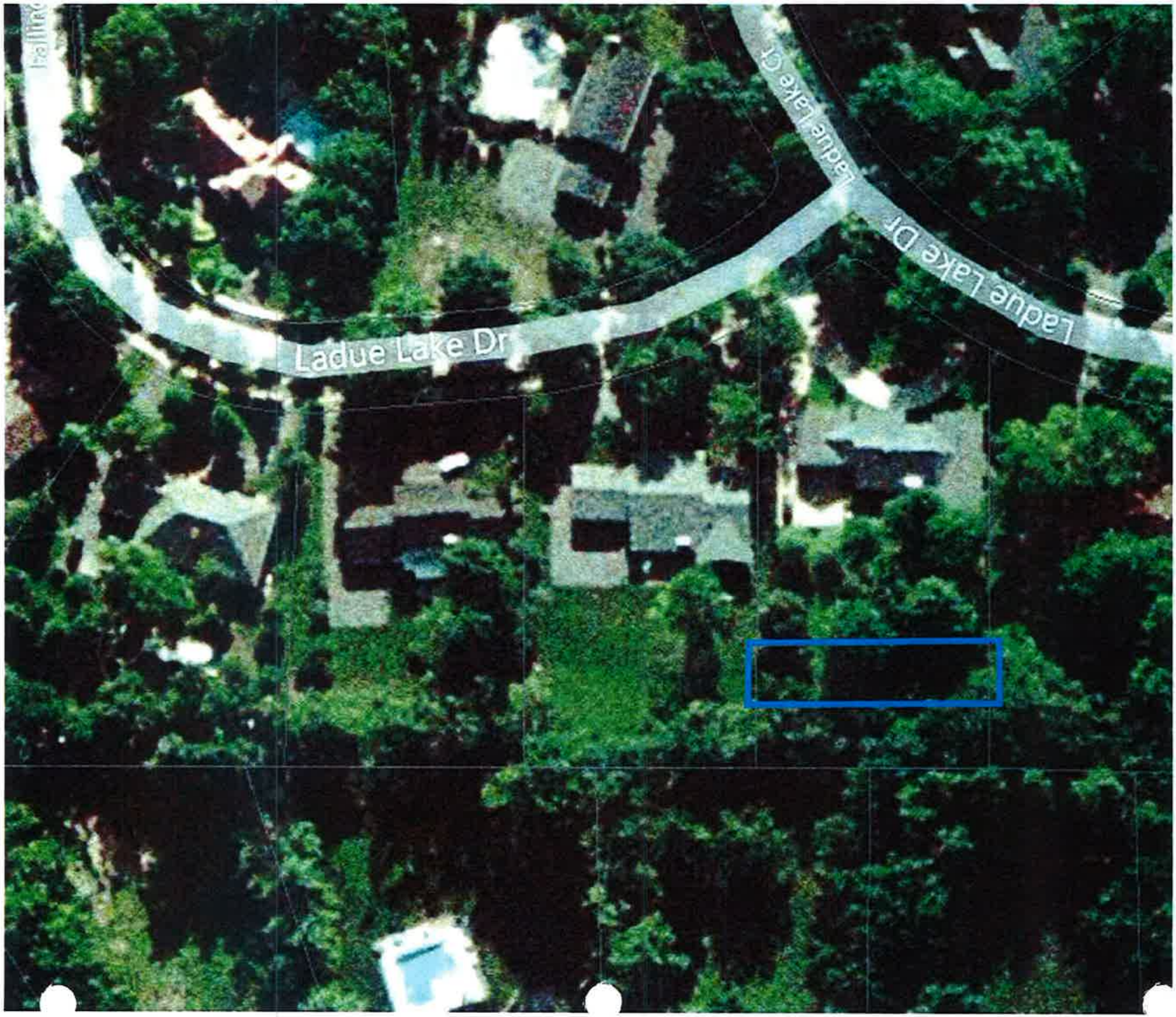
630
622
616
606
201
210



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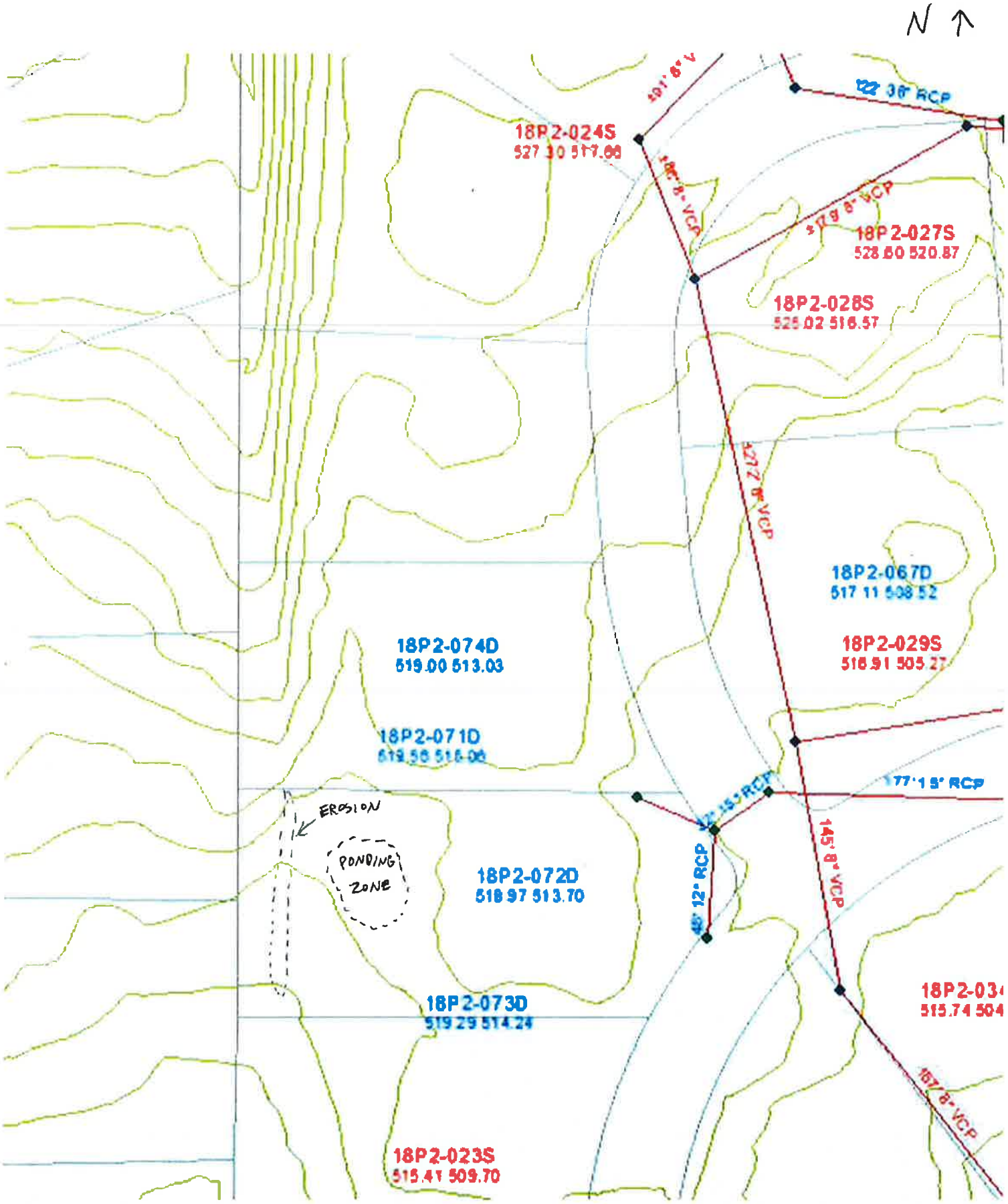
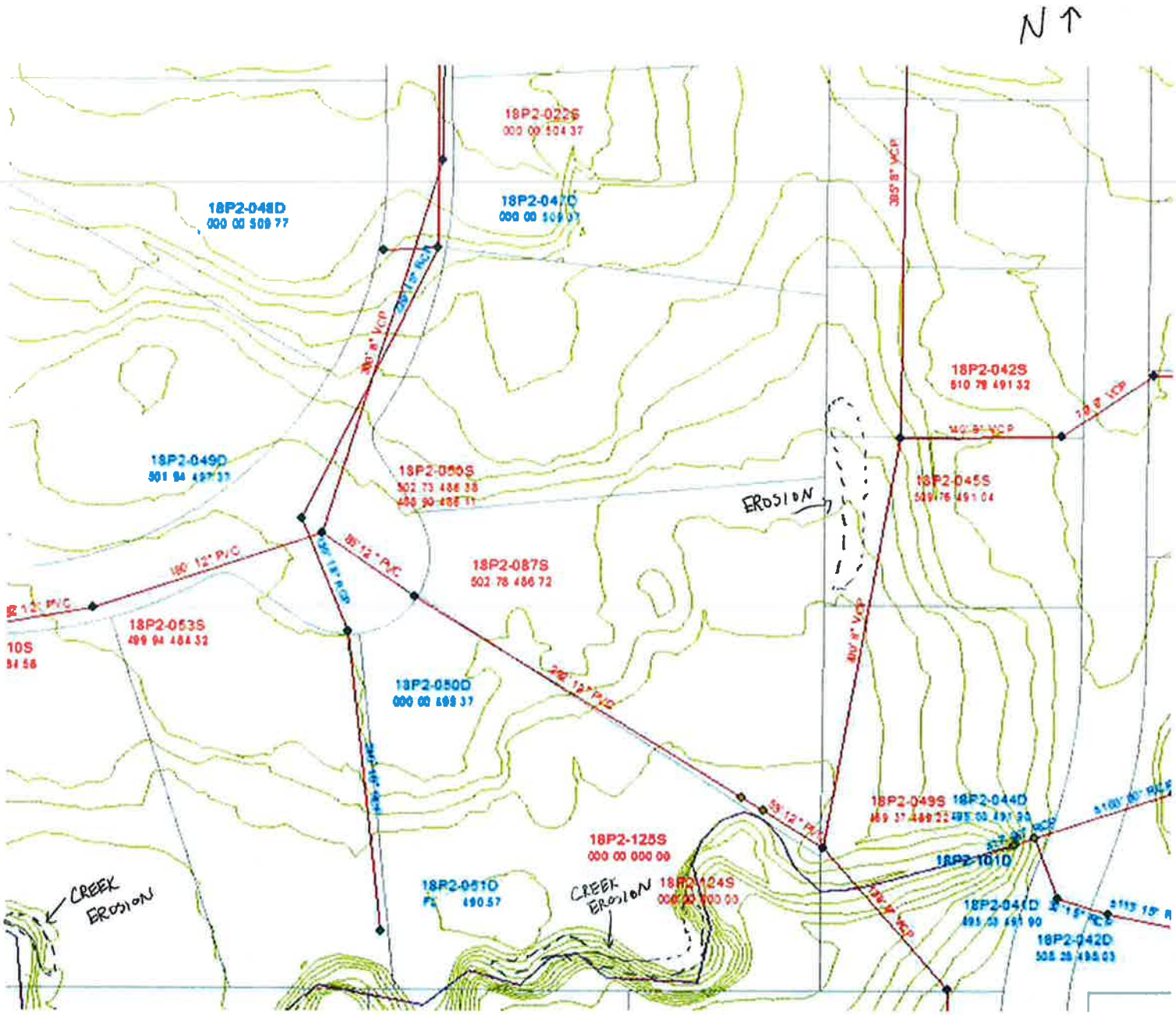

N
18P2-024S
527.30 517.66
18P2-027S
528.60 520.87
18P2-028S
525.02 516.57
18P2-067D
517.11 508.52
18P2-029S
516.91 505.27
18P2-074D
519.00 513.03
18P2-071D
EROSION
PONDING ZONE
18P2-072D
518.97 513.70
18P2-073D
519.29 514.24
18P2-023S
515.41 509.70
177' 15" RCP
145' 8" VCP
48' 12" RCP
167' 8" VCP

N


N
18P2-022S
18P2-048D
18P2-047D
18P2-042S
18P2-049D
18P2-050S
18P2-045S
ERODSION
18P2-087S
18P2-053S
18P2-050D
18P2-049S
18P2-044D
18P2-125S
18P2-101D
18P2-051D
CREEK EROSION
18P2-124S
CREEK EROSION
18P2-043D
18P2-042D

BACKYARD LOT 622

CREEK BEHIND LOT 622

BACKYARD LOT 622

CREEK BEHIND LOT 622

BACKYARD LOT 606

CREEK BEHIND LOT 606

BACKYARD LOT 606

CREEK BEHIND LOT 606

BACKYARD 212 FACING NORTH

BACKYARD 212 FACING SOUTH

BACKYARD 212 CLION

BACKYARD 212 FACING SOUTH

BACKYARD 225 FACING SOUTH

BACKYARD

BACKYARD 225 FACING SOUTH

BACKYARD 225 FACING SOUTA

LOT 305 FACING SOUTH

LOT 305 FACING NORTH

BACKYARD LOT 305

LOT 305 FACING NORTH

BACKYARD 323 FACING NORTH

BACKYARD 305

BACKYARD 323

BACKYARD 287

BACKYARD 287 FACING SOUTH

BACKYARD 287 FACING SOUTH

BACKYARD 287 FACING SOUTH

BACKYARD 287 FACING SOUTH

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: WEST I-270 B/T LADUE and HWY 40

Street Address: 240, Laduemont Dr.

MSD Map No. 18P3 **Complaint Reference:** ☒ **1999 Master Plan** 4-11

☐ **2010 Survey Response** _____

Original Description: ☒ **Erosion** ☒ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

Heavy volume in drainage channel passing through area causing yard flooding and erosion.

Site Description and Observations (include creek or tributary name, if known):

Yard erosion observed on northwest section of property, contributing from upstream runoff. Significant erosion at edge of tree line. No apparent threat to home or pool.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

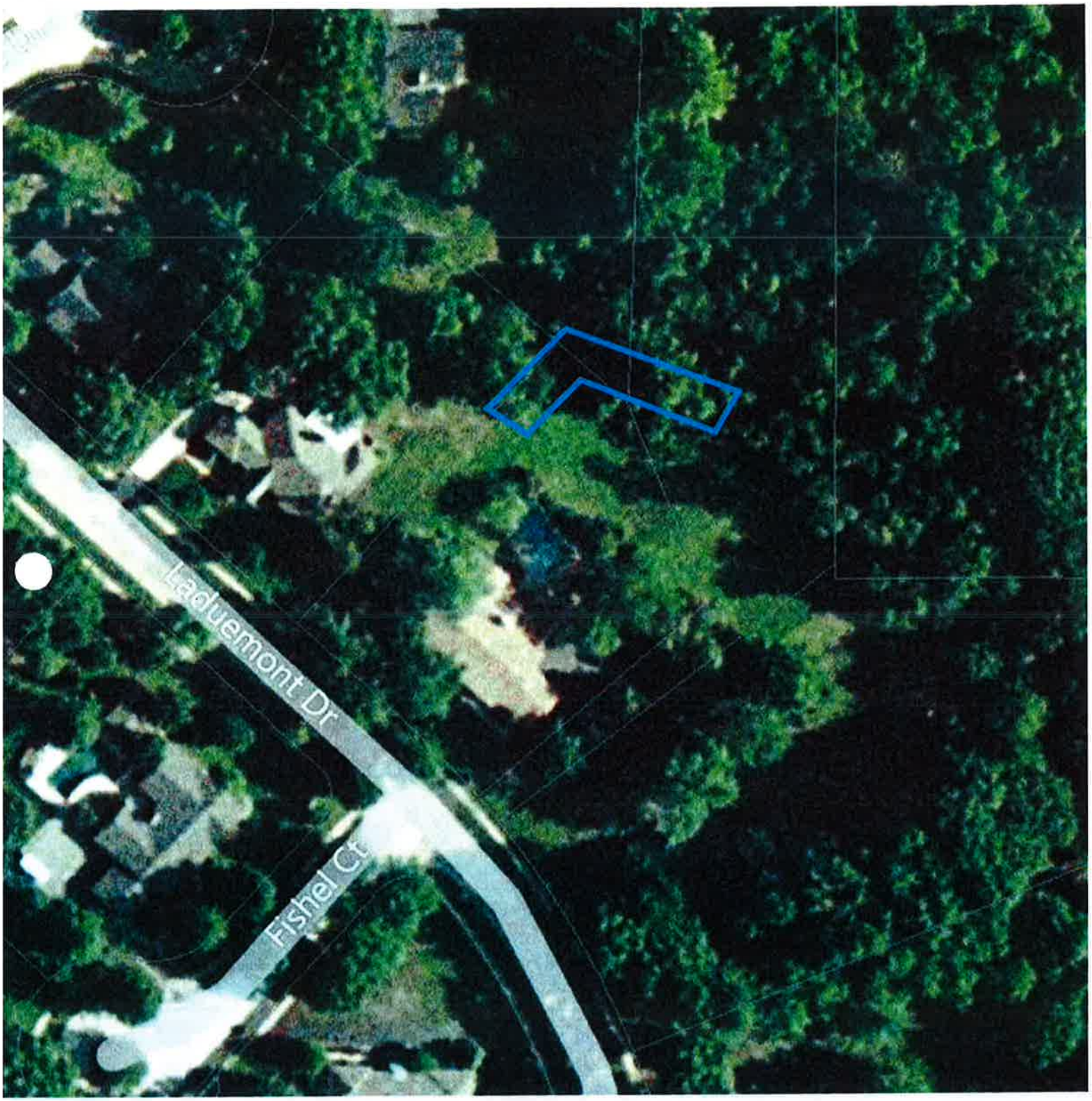
Field Crew: TJS

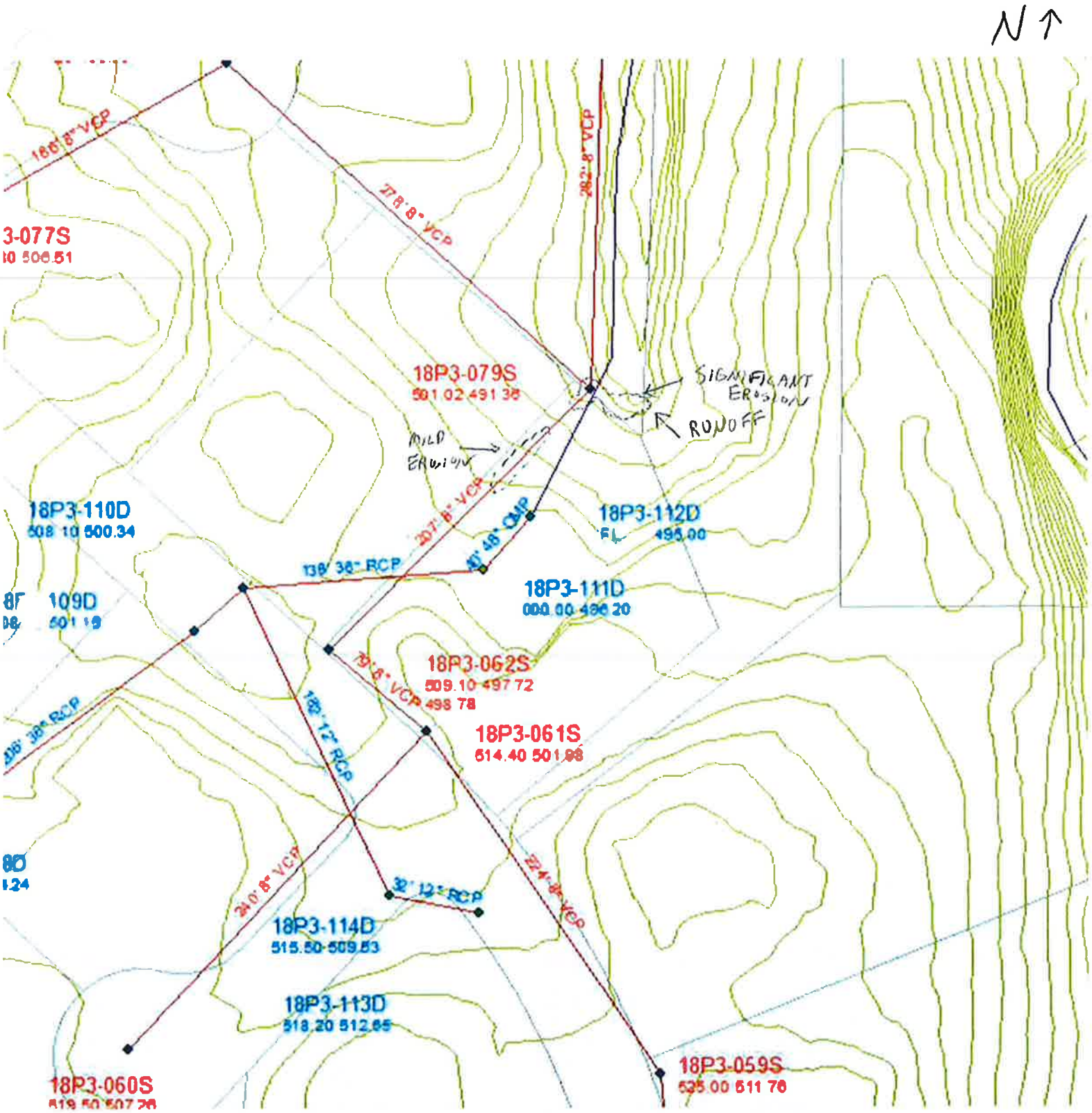
Date: 10-20-11

N ↑

LADUE RD
LADUE RD
102
121
130
12670
114
135
142
LADUEMONT DR
126
147
154
159
138
168
242
12765
171
184
150
183
12760
OAKSTONE LN
210
228
12828
12814
12802
240
217
LADUEMONT DR
304
12811
SHEL CT

N ↑




N
3-077S
18P3-079S
501.02 491.38
SIGNIFICANT EROSION
RUNOFF
MILD EROSION
18P3-110D
508.10 500.34
18P3-112D
495.00
138' 36" RCP
18P3-111D
000.00 496.20
109D
18P3-062S
509.10 497.72
498.78
18P3-061S
514.40 501.98
182' 12" RCP
32' 12" RCP
18P3-114D
515.50 509.53
18P3-113D
518.20 512.65
18P3-060S
18P3-059S
525.00 511.76

NORTHWEST SIDE PROPERTY

EROSION AT TREE LINE

NORTHWEST SIDE PROPERTY

NORTHWEST SIDE PROPERTY

EROSION ALONG TREE LINE

EROSION ALONG TREE LINE

EROSION ALONG TREE LINE

BACKYARD

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: WEST OF I-270 B/T OLIVE and LADUE

Street Address: 219 Hibler Oaks

MSD Map No. 1801 **Complaint Reference:** ☒ **1999 Master Plan** 2-1

☐ **2010 Survey Response** _____

Original Description: ☒ **Erosion** ☒ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

Steeply sloped yard channels water from Hibler Road and nearby homes, resulting in erosion and minor yard flooding.

Site Description and Observations (include creek or tributary name, if known):

Backyard erosion from upstream runoff. Tributary area upstream has steep slopes. Yard has been recently seeded along drainage path. Tree roots exposed from erosion.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

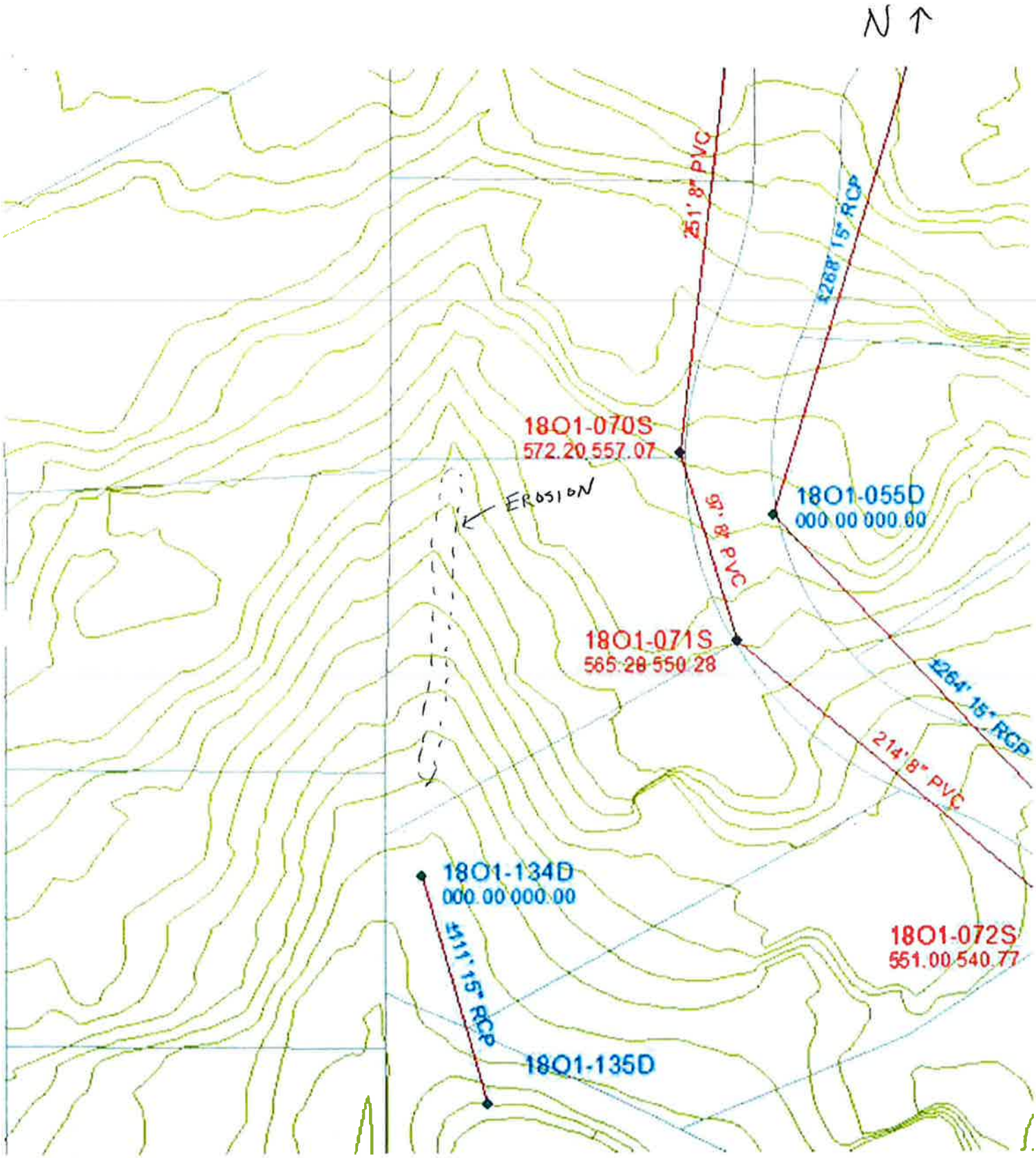
Field Crew: TJS

Date: 10-25-11

N ↑

WOODLINE DR
ROBINVIEW CT
HIBLER OAKS CT
HIBLER OAKS CT
HIBLER OAKS DR
FALAISE DR
LYONNAIS DR
HIBLER RD

N ↑


N
251' 8" PVC
268' 15" RCP
18O1-070S
572.20 557.07
EROSION
18O1-055D
000.00 000.00
59' 8" PVC
18O1-071S
565.28 550.28
264' 15" RCP
214' 8" PVC
18O1-134D
000.00 000.00
111' 15" RCP
18O1-072S
551.00 540.77
18O1-135D

FACING SOUTH, BACKYARD

FACING SOUTH, BACKYARD

FACING NORTH UPSTREAM

FACING SOUTH, BACKYARD

FACING SOUTH, BACKYARD

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: WEST OF I-270 B/T LADUE and HWY 40

Street Address: 24, 26 Balcon Estates

MSD Map No. 1904 **Complaint Reference:** ☐ **1999 Master Plan** _____

☒ **2010 Survey Response** 3, 4

Original Description: ☒ **Erosion** ☒ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

24 Balcon Estates - Creek erosion threatening house.

26 Balcon Estates - Creek erosion, lost bridge access, ponding water remains in yard. House has flooded.

Site Description and Observations (include creek or tributary name, if known):

24 Balcon Estates - Significant creek erosion at banks. Erosion is threatening yard, but not house. There is a gabion wall downstream of bridge, which appears to have been washed away. No erosion protection available at banks.

26 Balcon Estates - Gabion wall has been installed along creek banks. There is an upstream section of creek with no gabion walls. This section has heavy erosion and trees uprooted. Evidence of rip rap washed away. In backyard, runoff collects from side of hill. Homeowner has built ditch to control water. Homeowner explained creek reaches high water levels causing flooding of bridge and property. History and more info on issue is available from homeowner.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

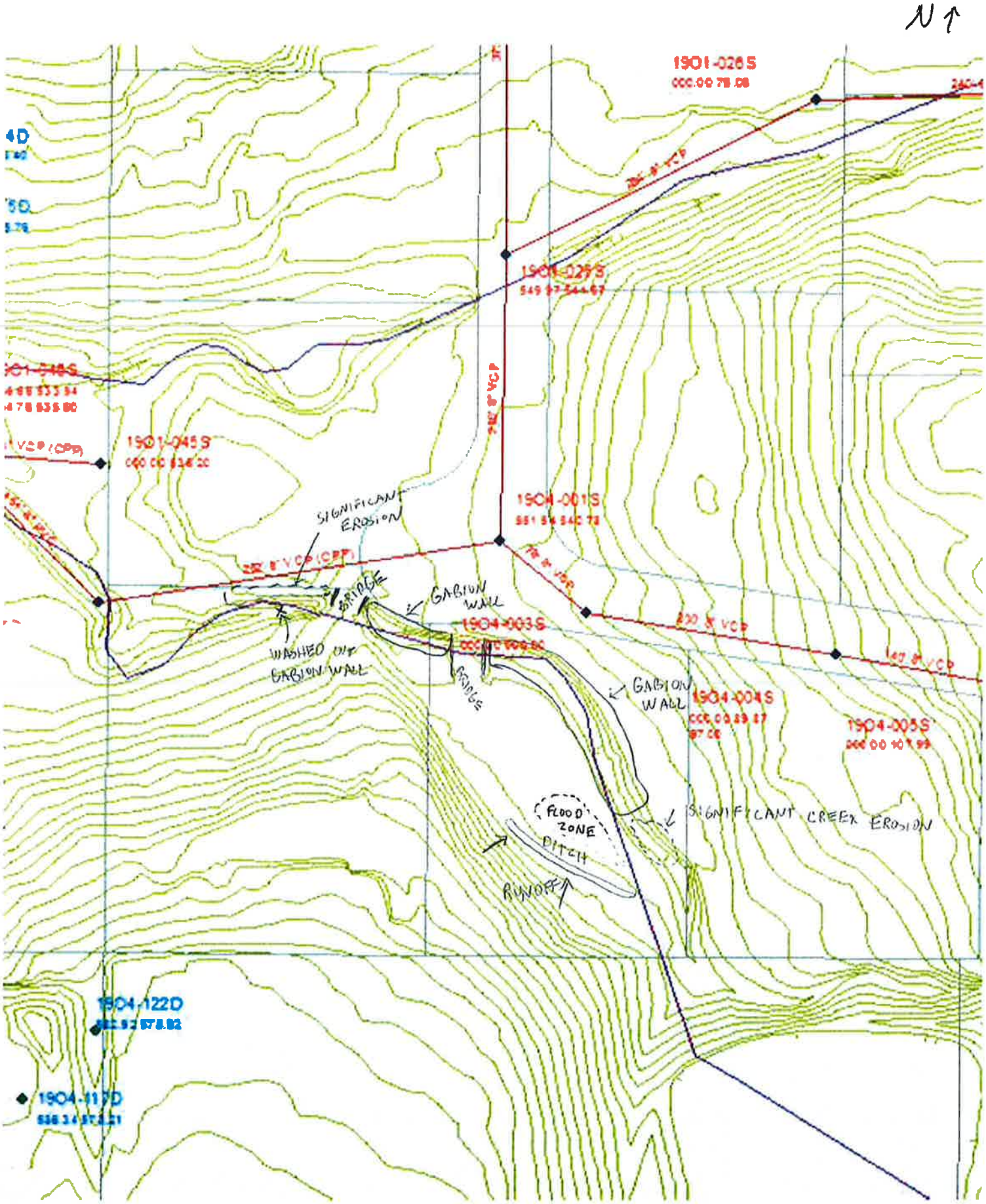
Field Crew: TSS

Date: 10-20-11

N ↑

ROLLING VIEW
CONWAY RD
BALCON EST
BALCON EST
BALCON EST
12418
12410
12402
12364
12356
12342
12311
122
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34

N ↑


N
1S01-026S
1S01-045S
1S04-001S
1S04-003S
1S04-004S
1S04-005S
1S04-122D
SIGNIFICANT EROSION
BRIDGE
GABION WALL
WASHED OUT GABION WALL
BRIDGE
GABION WALL
FLOOD ZONE
DITCH
RUNOFF
SIGNIFICANT CREEK EROSION

BACKYARD LOT 26

CREEK (SECTION WITH NO GABION WALL)

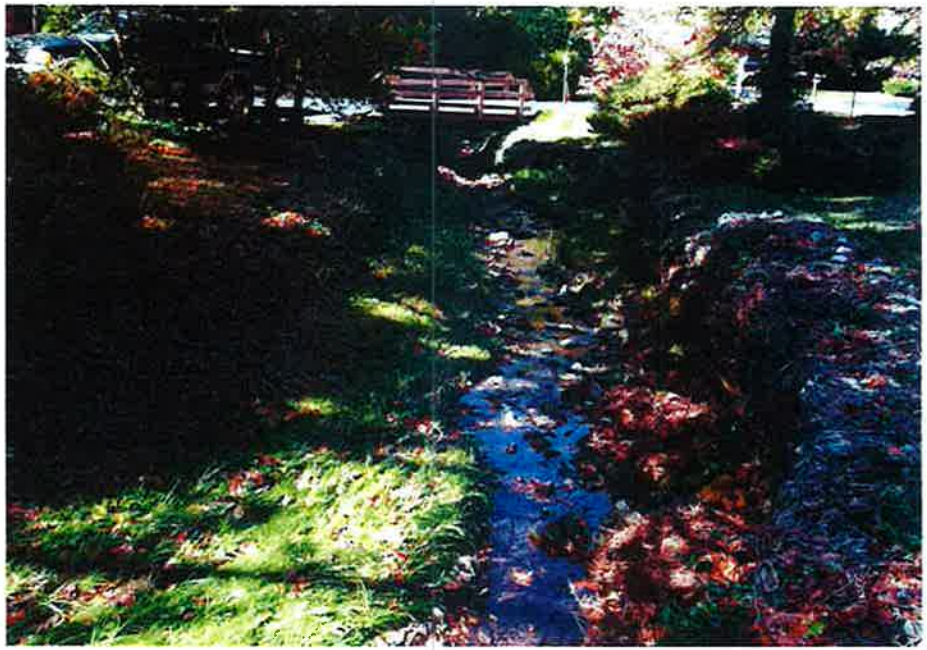
BACKYARD LOT 26

FACING SOUTH UP CREEK

CREEK

CREEK

CREEK



CREEK

CREEK UPSTREAM BRIDGE AT LOT 26

LOT 24

CREEK DOWNSTREAM BRIDGE AT LOT 26

LOT 24

CREEK EROSION AT LOT 24

CREEK EROSION AT LOT 24

CREEK EROSION AT LOT 24

WASHED OUT GABION WALL

CREEK EROSION LOT 24

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: WEST OF I-270 B/T OLIVE and LADUE

Street Address: 12969, 12985, 12993 Lampadaire / 13103, 13119 Gasgoigne 680, 686, 695, 12800, 12832 Bellerive Estates / 13105 D'Artaugan 12944, 12950, 12970, 12986, 12995, 13006, 13010, 13040, 13052 Ambois

MSD Map No.: 17-P1

Complaint Reference: ☒ **1999 Master Plan** 13-4

☒ **2010 Survey Response** 1, 15

Original Description: ☒ **Erosion** ☒ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

Severe erosion and flooding along creek behind homes.

Site Description and Observations (include creek or tributary name, if known):

Severe creek erosion at 12832 Bellerive Est. Banks are very unstable with a sandy soil. Pedestrian bridge washed out at 680 Bellerive due to possible creek flows. 686 Bellerive impacted from upstream runoff, not creek. Lots on Lampadaire on top of ridge. Erosion present at edge of ridge. 12944, 12950, 12970, 13040 are distant from creek and do not appear affected. Overall, significant erosion observed along parts of creek.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

Field Crew: TJS

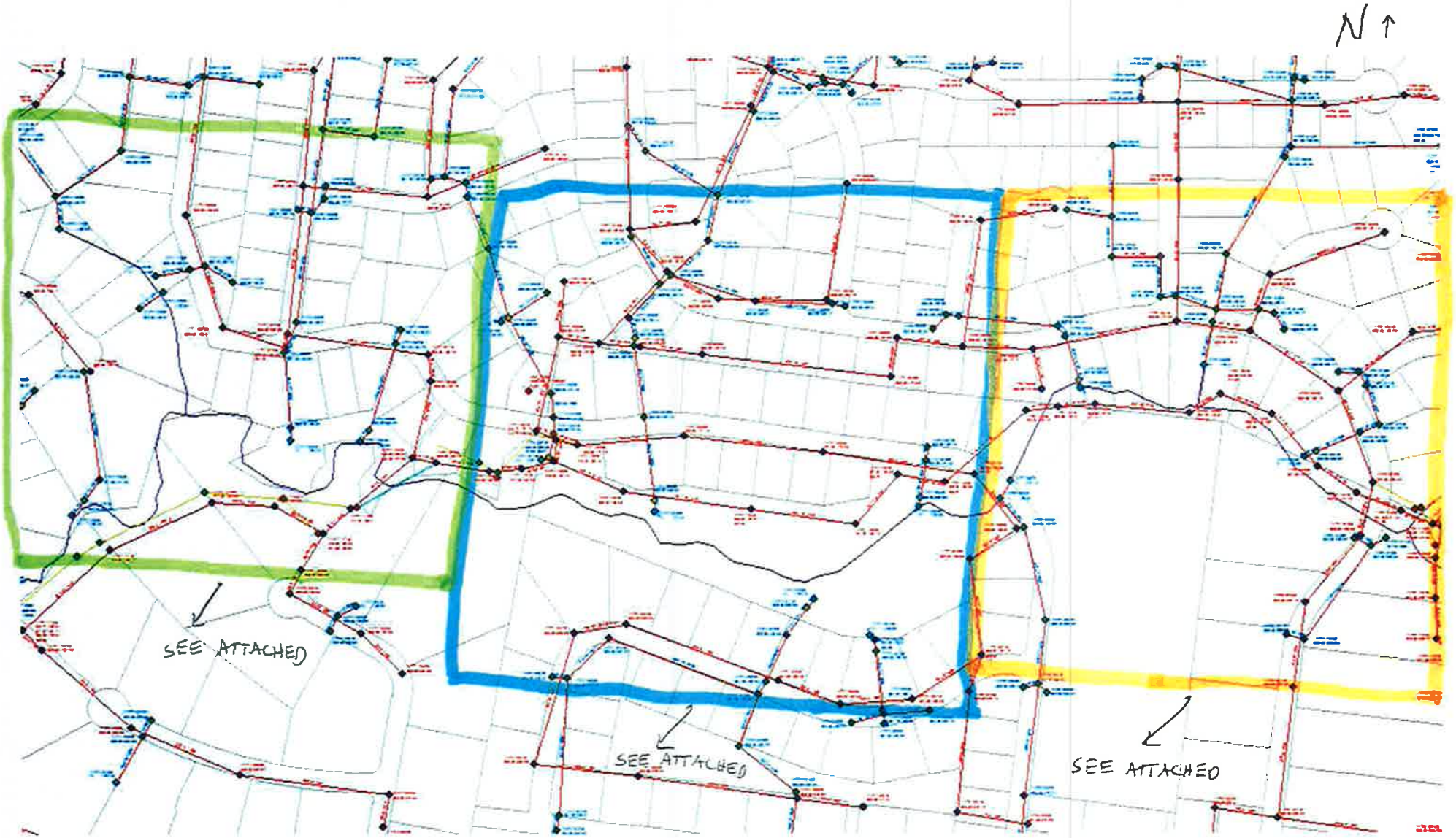
Date: 10-27-11

N ↑

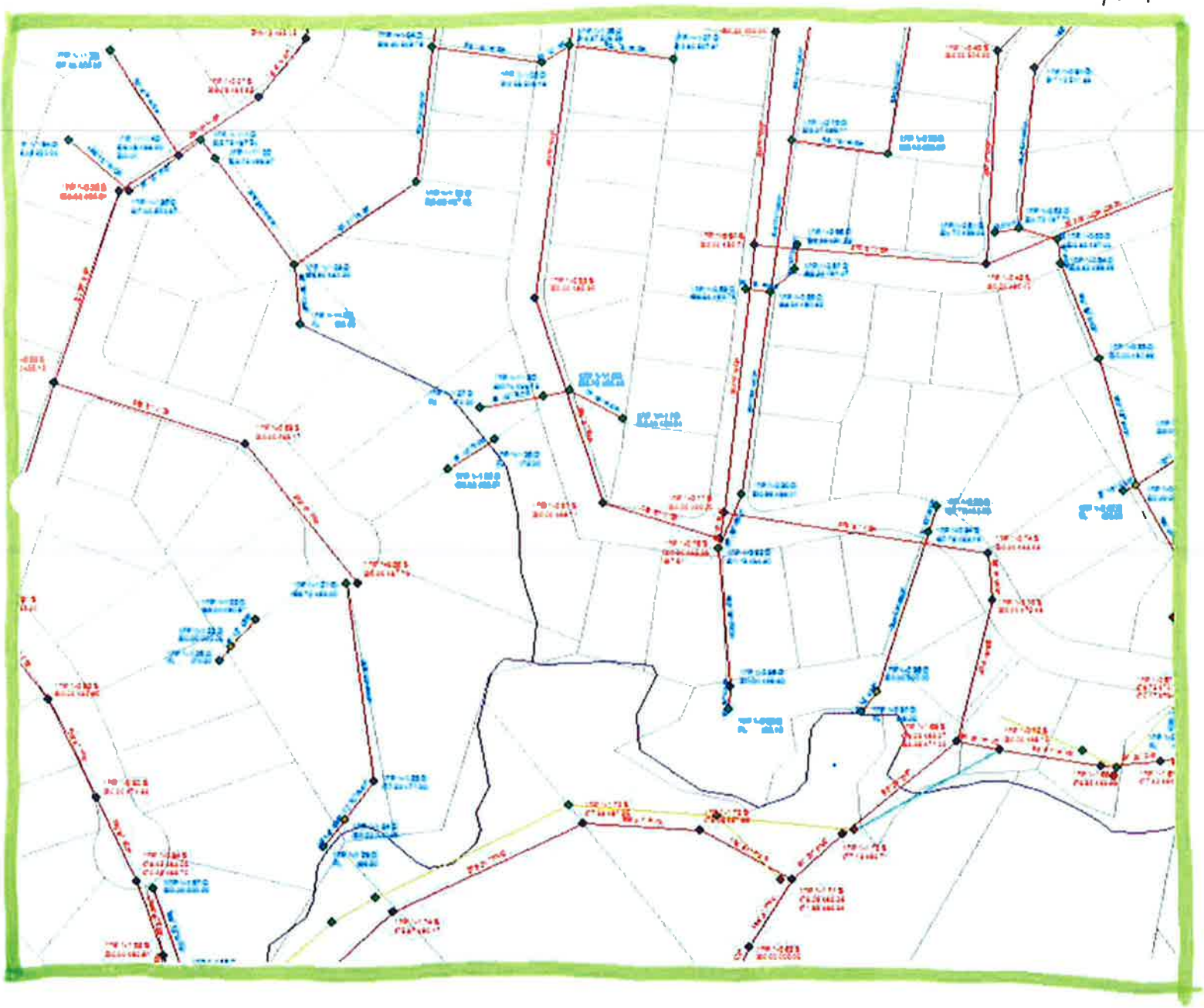
HAVERTON DR
NIMES DR
MONTAUBAN DR
BERGERAC DR
NARBONNE DR
GASCOGNE DR
GASCOGNE CT
ARAMIS DR
DARTAGNAN CT
BEAUVAIS CT
DEAUVILLE CT
BELLERIVE ESTATES DR
LEHAVRE DR
AMBOIS DR
LAMPADAIRE DR
RUE DE FLEUR DR
MUIRFIELD LN
MASON MANOR RD
DAUSTER

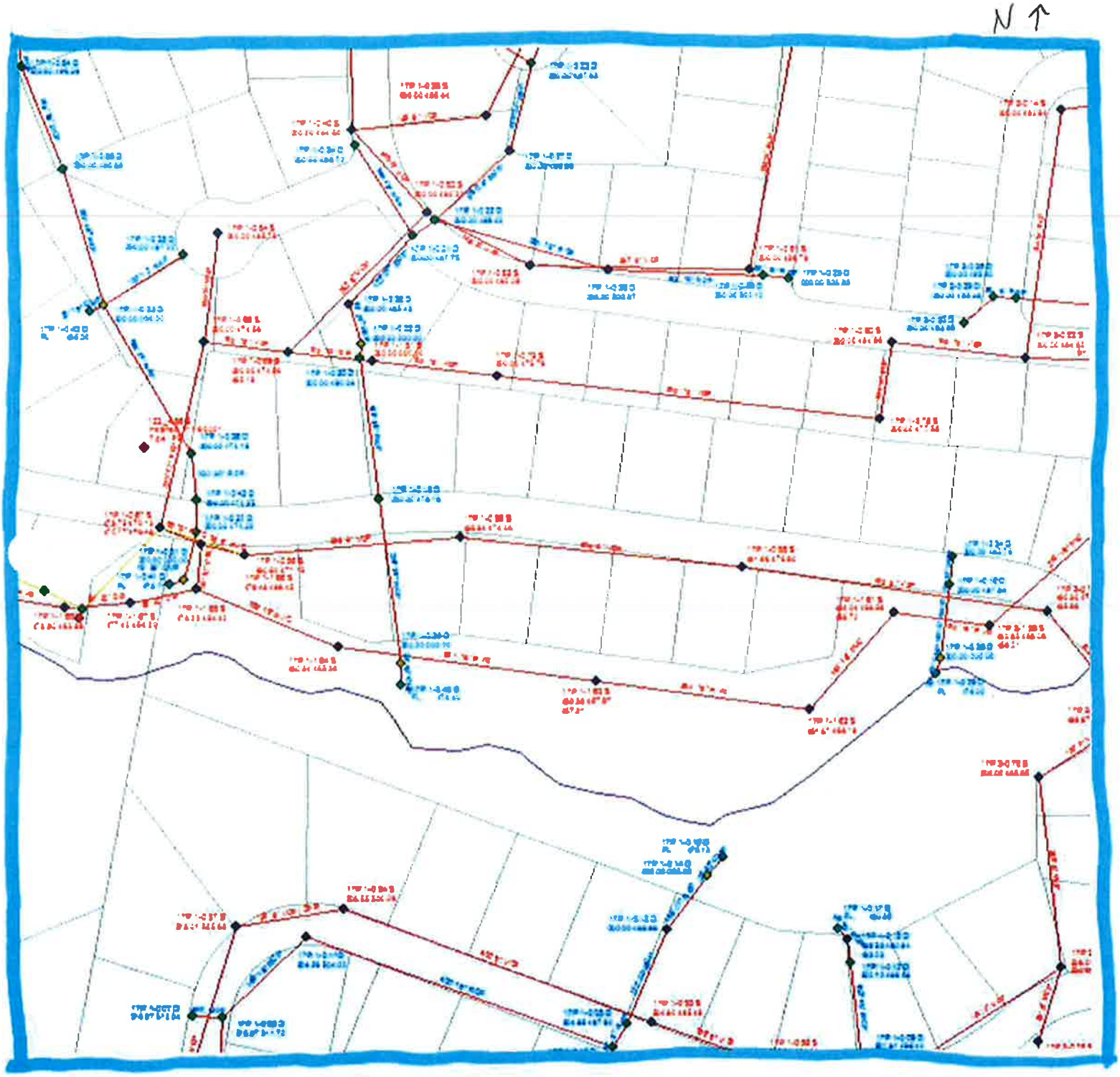
N ↑

Nimes Dr
Timber Run
Deauville Cir
Le Havre Dr
Bellenve Estates Dr
Bellenve Estates Dr
Beauvais Cir
Montauban Dr
Ambois Dr
Narbonne Dr
Montmantre Dr
Ambois Dr
Ambois Dr
Lampadaire Dr
Rue de Fleur Dr
Muirfield Dr
Muirfield Ln


N ↑
SEE ATTACHED
SEE ATTACHED
SEE ATTACHED

N ↑

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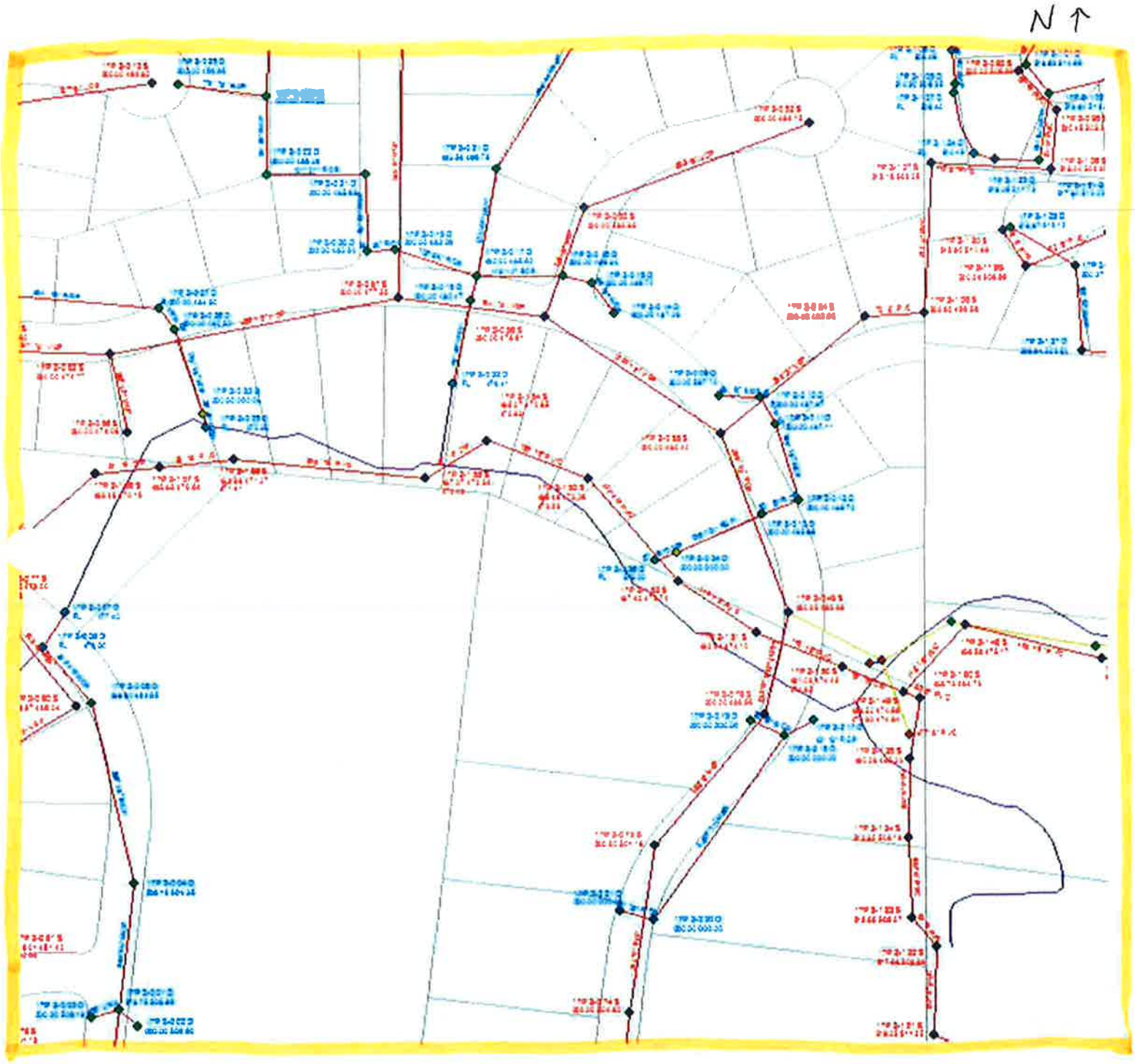

N

CREEK AT 12832 Bellerive Est.

BACKYARD 12800 / 695 Bellerive Est.

BACKYARD 12832 Bellerive Est.

CREEK AT 12832 Bellerive Est

695 Bellerive Est.

680 Bellerive Est.

12800 Bellerive Est.

695 Bellerive Est.

680 Bellerive Est.

BACKYARD 686 Bellerive Est.

680 Bellerive Est.

BACKYARD 680 Bellerive Est.

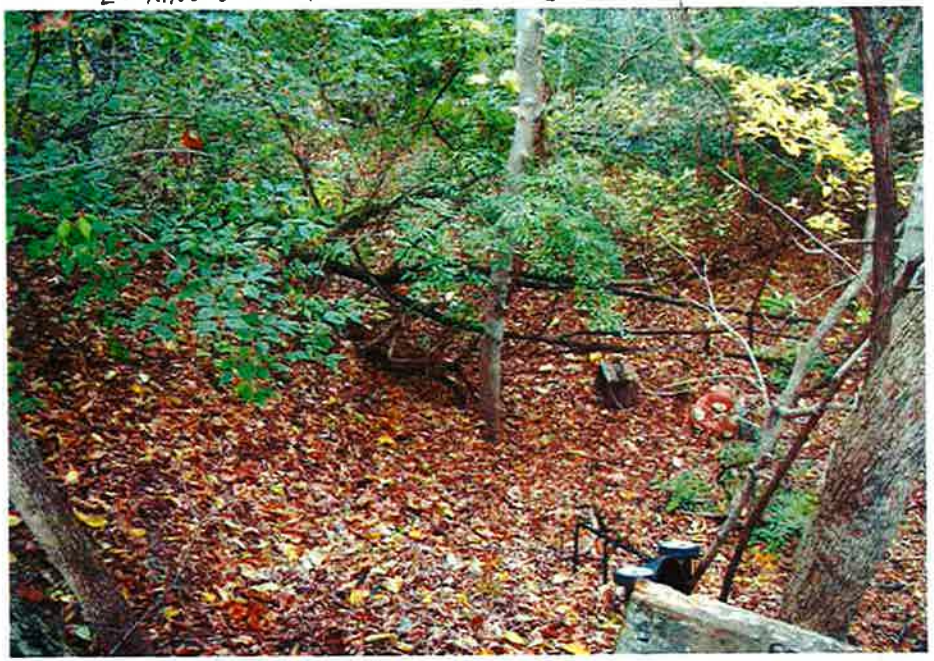
BACKYARD 12993 Lampadaire

LOOKING DOWN AT CREEK FROM 12985 Lampadaire

BACKYARD 686 Bellerive Est.

BACKYARD 12985 Lampadaire

LOOKING DOWN AT CREEK FROM 12969 Lampadaire



BACKYARD 12950 Ambois

BACKYARD 12969 Lampadaire

BACKYARD 12944 Ambois

BACKYARD 12986 Amboise

CREEK AT 12986 Amboise

BACKYARD 12970 Amboise

CREEK AT 12986 Amboise

CREEK AT 13006 Ambois

CREEK AT 13006 Ambois

CREEK AT 12986 Ambois

CREEK AT 13006 Ambois

BACKYARD 13040 Ambois

BACKYARD 13052 Ambois

BACKYARD 13010 Ambois

BACKYARD 13052 Ambois

13105 D'Artaugan

13103 Gasgogne

13105 D'Artaugan

13105 D'Artaugan

13103 Gasgogne

13119 Gasgogne

13103 Gasgogne

13103 Gasgogne

12995 Ambois (WEST SIDE PROPERTY)

BACKYARD 12995 Ambois

13119 Gasgogne

Ambois Street at 12995

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: WEST OF I-270 B/T OLIVE and LADUE

Street Address: 712, 729, 735, 741, 749 Beauvis Court

MSD Map No. 1782 **Complaint Reference:** [X] **1999 Master Plan** 13-1

[ ] **2010 Survey Response** _____

Original Description: [X] **Erosion** [X] **Flooding** [ ] **Inadequate Sewer Capacity** [ ] **Other**

Stormwater from homes above and intersection of Nimes and Somerton Ridge causing yard flooding and erosion in backyards. Resident reports water entering home through lower level windows.

Site Description and Observations (include creek or tributary name, if known):

Lot 712 has no observed issues.
Lot 735 has new swale and inlet added to collect runoff.
Lots 729, 741, 749 still have current issue with runoff from homes on Nimes Dr. flooding and eroding yards. Lot 741 has greatest concern due to flooding endangering house.

Attached (w/ the problem area highlighted): [X] **MSD facilities map**

[X] **Aerial photo**

[X] **Site photos**

Field Crew: TSS

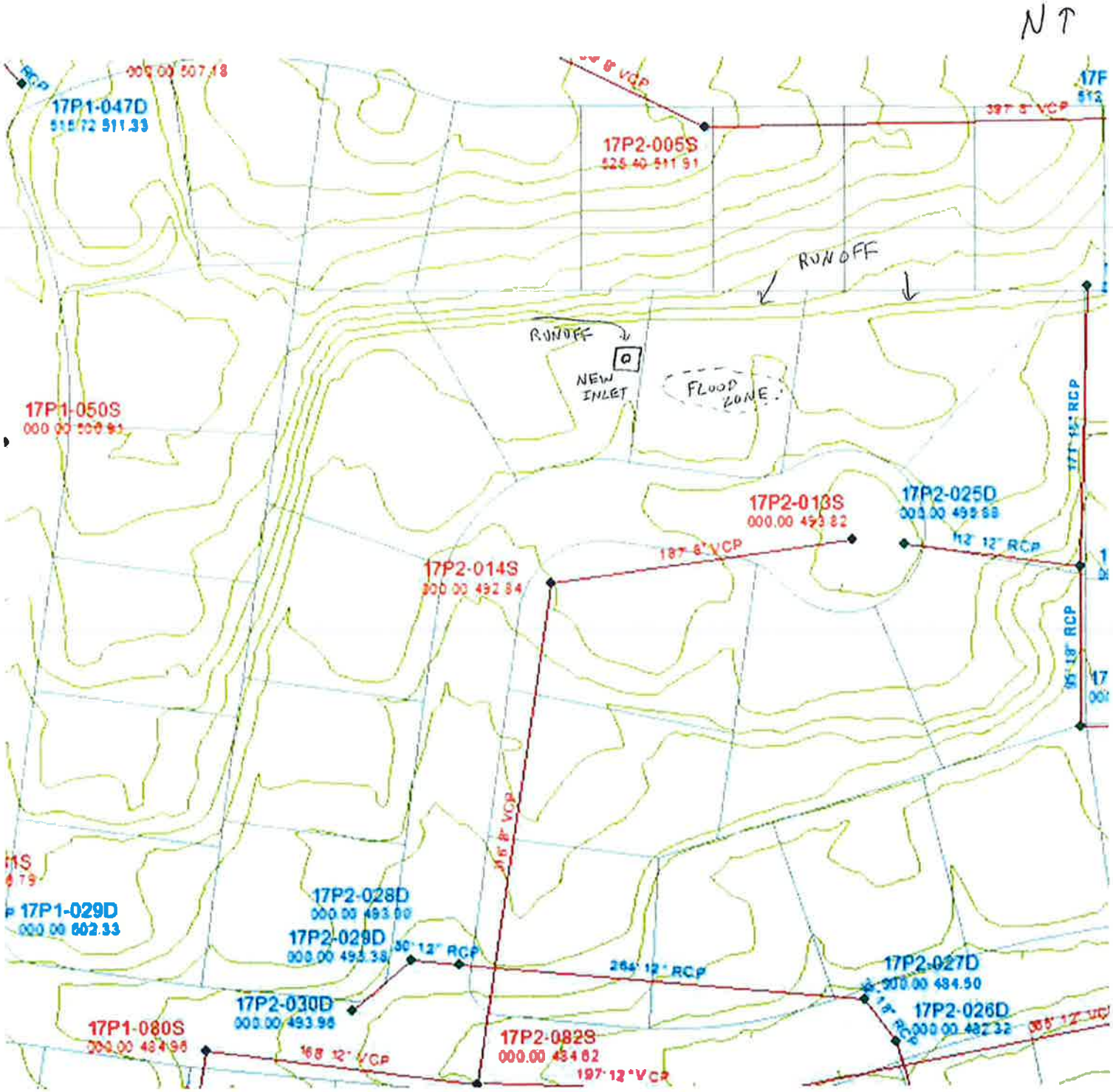
Date: 10-27-11

N ↑

ARIEGE DR
LESPARRE DR
SOMERTON RIDGE DR
MONTAUBAN DR
NIMES DR
TIMBER RUN DR
BEAUVAIS CT
BELLERIVE ESTATES DR
AMBOIS DR
729
735
741
749
712

N ↑

Nimes Dr
Beauvais Ct
Beauvais Dr
Bellerive Estates Dr
Bellerive Estates Dr


N
17P1-047D
17P2-005S
RUNOFF
RUNOFF
NEW INLET
FLOOD ZONE
17P1-050S
17P2-013S
000.00 493.82
17P2-025D
17P2-014S
000.00 492.84
187' 8" VCP
112' 12" RCP
95' 18" RCP
17P2-028D
000.00 493.00
17P1-029D
000.00 602.33
17P2-029D
000.00 493.38
30' 12" RCP
264' 12" RCP
17P2-027D
000.00 484.50
17P2-030D
000.00 493.96
17P2-026D
17P1-080S
000.00 484.96
168' 12" VCP
17P2-082S
000.00 484.62
197' 12" VCP

SWALE and INLET AT 735

BACKYARD 741

BACKYARD SWALE AT 735

BACKYARD 741

WASH OUT OF WALL BEHIND BACKYARD 749

BACKYARD 749

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: WEST OF I-270 B/T LADUE and Olive

Street Address: 373 Hibler Ct.

MSD Map No. 1802 **Complaint Reference:** ☒ **1999 Master Plan** 3-10

☐ **2010 Survey Response** _____

Original Description: ☒ **Erosion** ☒ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

Drainage from houses above on Hibler causing erosion and yard flooding. Existing paved flume is deteriorating and water not properly controlled.

Site Description and Observations (include creek or tributary name, if known):

Concrete flume does not properly control runoff from neighboring subdivision. Flume was clogged with leaves. Homeowner has placed rocks on side of flume as a barrier when water exceeds flume. Filter fabric placed in corner of yard to prevent further washout of yard.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

Field Crew: TJS

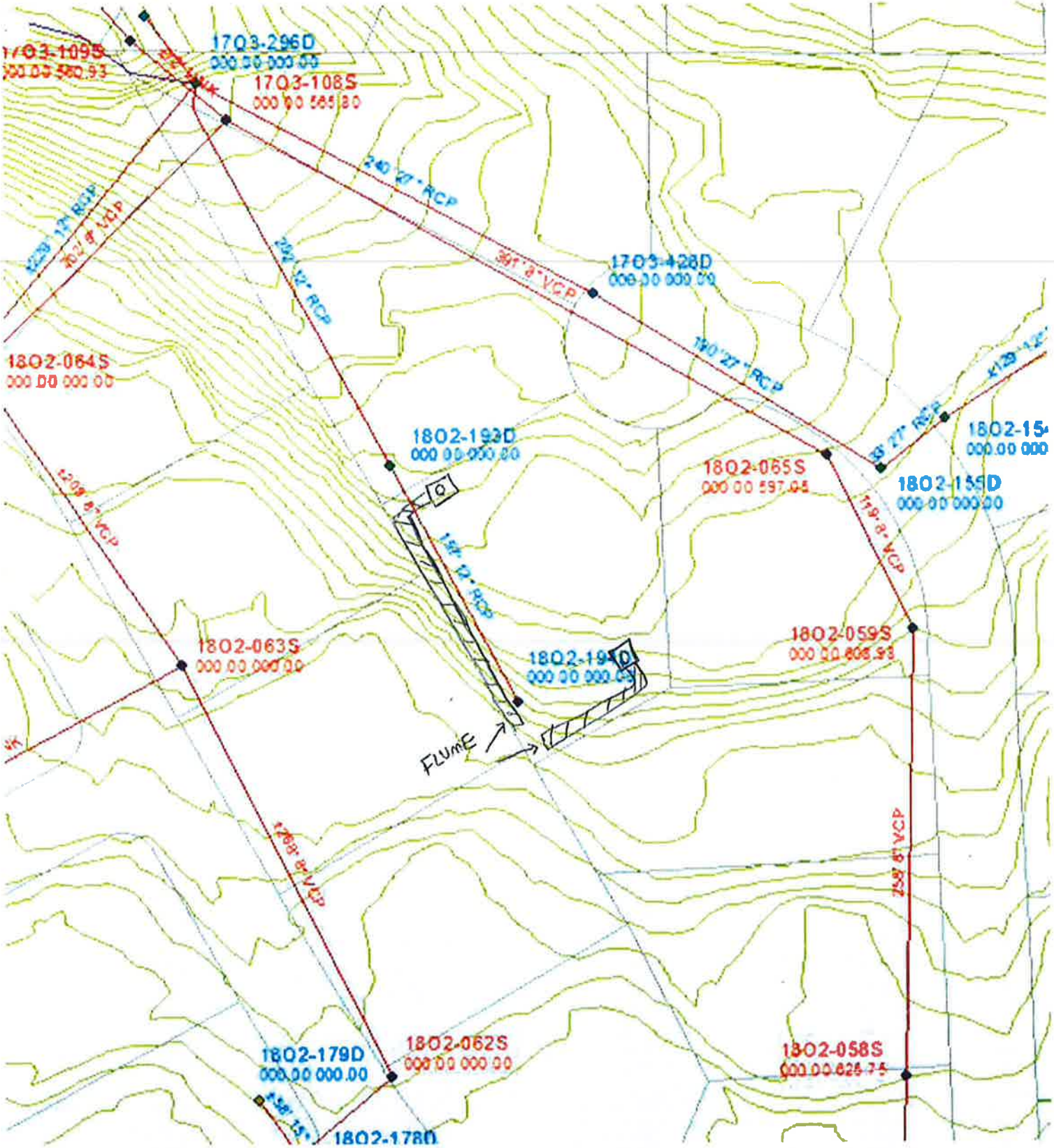
Date: 10-21-11

N ↑

ROYAL VALLEY DR
GREVE COEUR
COEUR DE VILLE DR
HIBLER DR
HIBLER CT
PRINCETOWNE DR
WEYBRIDGE DR
LADUE HEIGHTS DR
270
12147
12135
12121
12115
348
336
12174
12166
12158
12150
12142
12134
12122
12116
342
12205
330
12183
12175
374
362
358
381
12169
352
318
12180
12161
373
355
344
315
312
12166
12153
339
336
12207
306
12173
12145
331
328
12164
12133
12204
296
12176
277
12121
320
261
289
290
12134
253
262
12120
12128
12114
12106
281
284
245
248
272
12151
12139
12125
12117
12111
237
12171
260
229
259
254
12172
12156
12142
12130
12118
12110
223

N ↑

N ↑


1703-109S
000 00 580.93
1703-296D
000 00 000 00
1703-108S
000 00 565.80
240' 27" RCP
361' 8" VCP
1703-428D
000 00 000 00
1802-064S
000 00 000 00
1802-193D
000 00 000 00
1802-065S
000 00 597.05
1802-155D
000 00 000 00
119' 8" VCP
1802-063S
000 00 000 00
1802-059S
000 00 606.93
1802-194D
000 00 000 00
FLUME
1802-062S
000 00 000 00
1802-058S
000 00 625.75
1802-179D
000 00 000 00
1802-178D

FLUME ON NORTHWEST SIDE

FLUME ON N.W.

FLUME ON N.W. PROPERTY LINE

FLUME ON N.W.

SOUTH CORNER OF YARD

FLUME ON NORTHEAST SIDE

FLUME ON NORTHWEST SIDE

FLUME ON NORTHEAST SIDE

BACKYARD FACING NORTH

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: WEST OF I-270 B/T OLIVE and LADUE

Street Address: 12295 Country Manor Ln

MSD Map No. 1704 **Complaint Reference:** ☐ **1999 Master Plan** _____

☒ **2010 Survey Response** 11

Original Description: ☒ **Erosion** ☐ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

Issue is erosion at pipe discharge into common ground below his property. Concerned that this will affect an adjacent utility pole.

Site Description and Observations (include creek or tributary name, if known):

Significant erosion at end of discharge pipe. Homeowner has placed rocks and leaves in an attempt to mitigate issue. Erosion threatens nearby utility pole. Home owner would like pipe to be extended another 30 feet to resolve issue.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

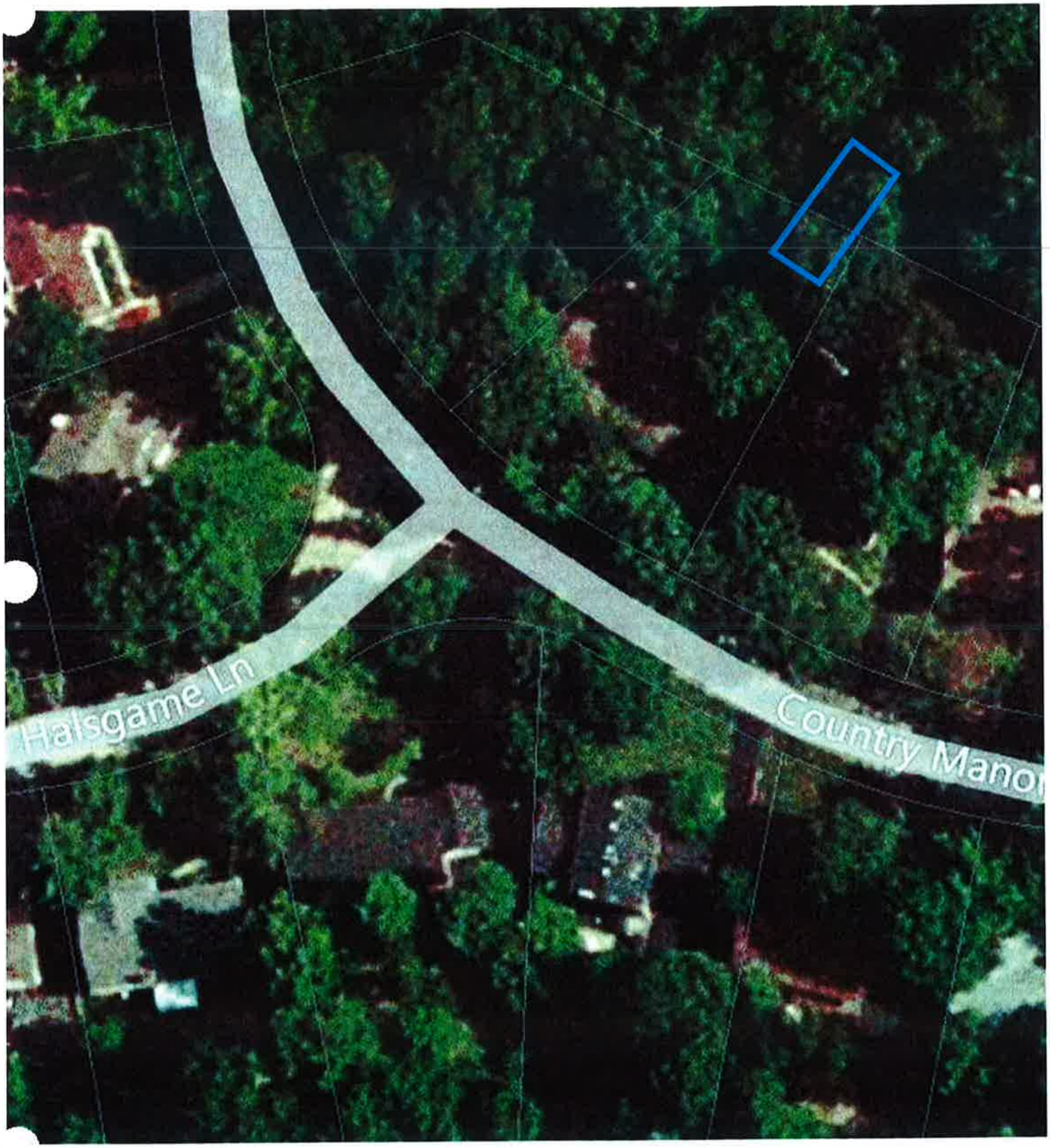
Field Crew: TJS

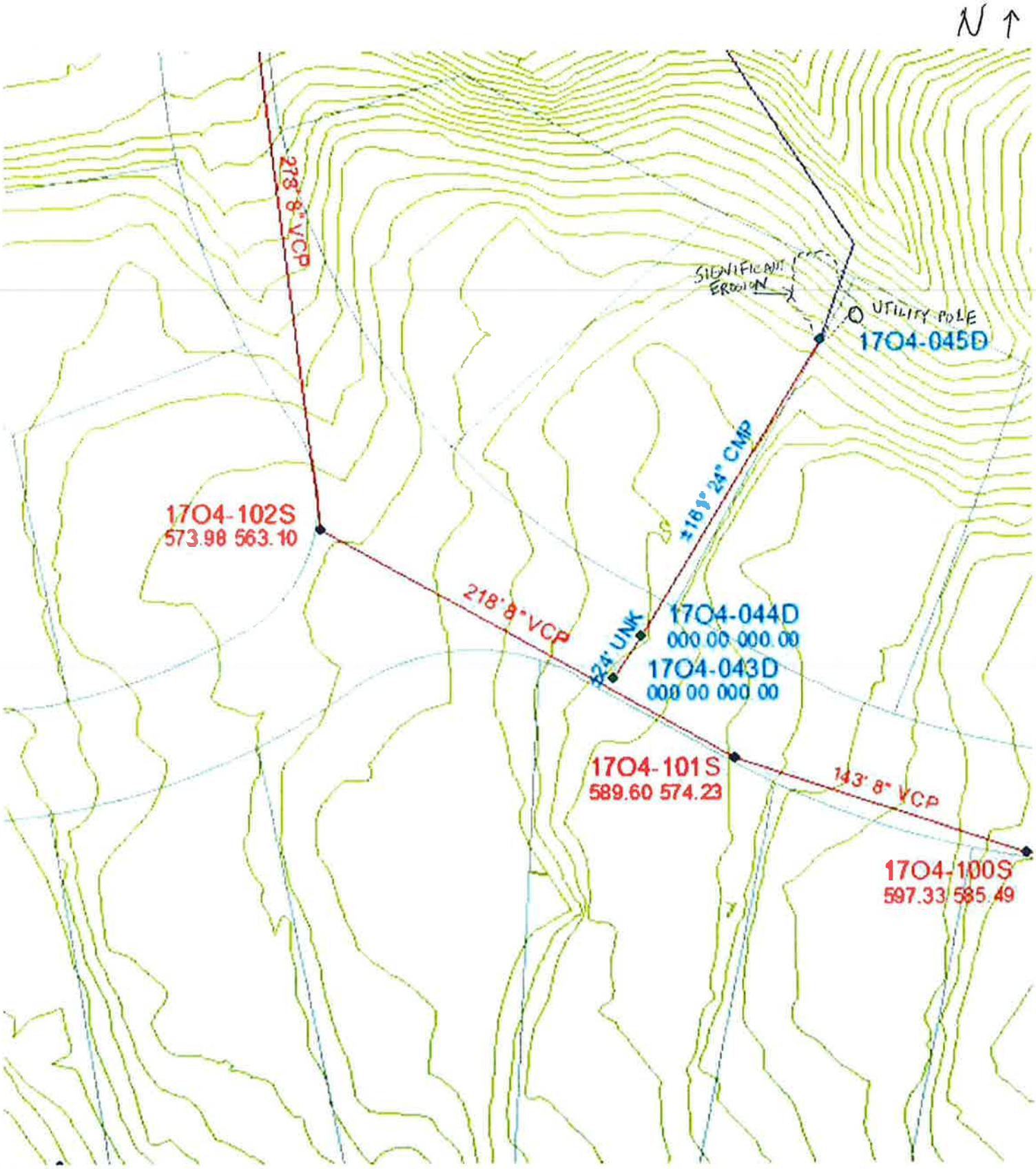
Date: 10-21-11

N ↑

HALSGAME LN
ROYAL VALLEY DR
ROYALWOOD DR
ROYALWOOD CT
COEUR DE VILLE DR
ROYAL VALLEY DR

N ↑




N
273' 8" VCP
SIGNIFICANT EROSION
UTILITY POLE
17O4-045D
±18'9" 24" CMP
17O4-102S
573.98 563.10
218' 8" VCP
±24" UNK
17O4-044D
000.00 000.00
17O4-043D
000.00 000.00
17O4-101S
589.60 574.23
143' 8" VCP
17O4-100S
597.33 585.49

DISCHARGE PIPE

END DRIVEWAY (DISCHARGE PIPE IN BACKGROUND)

EROSION AT DISCHARGE

BELOW RETAINING WALL

UTILITY POLE

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: WEST OF I-270 B/T OLIVE AND LADUE

Street Address: 12318 Halsgame

MSD Map No. 1704 **Complaint Reference:** ☐ **1999 Master Plan** _____

☒ **2010 Survey Response** 17

Original Description: ☒ **Erosion** ☐ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

There is erosion at the back of my property. It has created a ditch that will only get worse unless something can be done to control runoff.

Site Description and Observations (include creek or tributary name, if known):

Minimal erosion observed along backyard fence line. Mostly covered in leaves and debris. Most noticeable yard erosion in southwest corner of yard. No flooding threatening house.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

Field Crew: TJS

Date: 10-21-11

N ↑

RKEY CT
HALSGAME LN
ROYAL VALLEY DR
ROYALWOOD DR
ROYALWOOD CT
COEUR DE VILLE DR
COUNTRY C
867
659
650
668
678
12315
12303
12295
12283
12271
12263
12255
12227
12215
12161
12153
12145
12137
12129
12121
12300
12306
12286
12278
12270
12264
12256
441
442
12154
12140
12128
12114
429
12155
12120
12227
12221
12215
12209
12203
12149
415
12143
12131
12123
12117
379
12233
390
395
12193
12156
407
12148
12226
12212
12204
387
12140
12173
12132
12124
12118
12110
385
384
12196
12165
379
12190
12182
12153
12234
376
372
12147
12135
12121
12115
371
362
366
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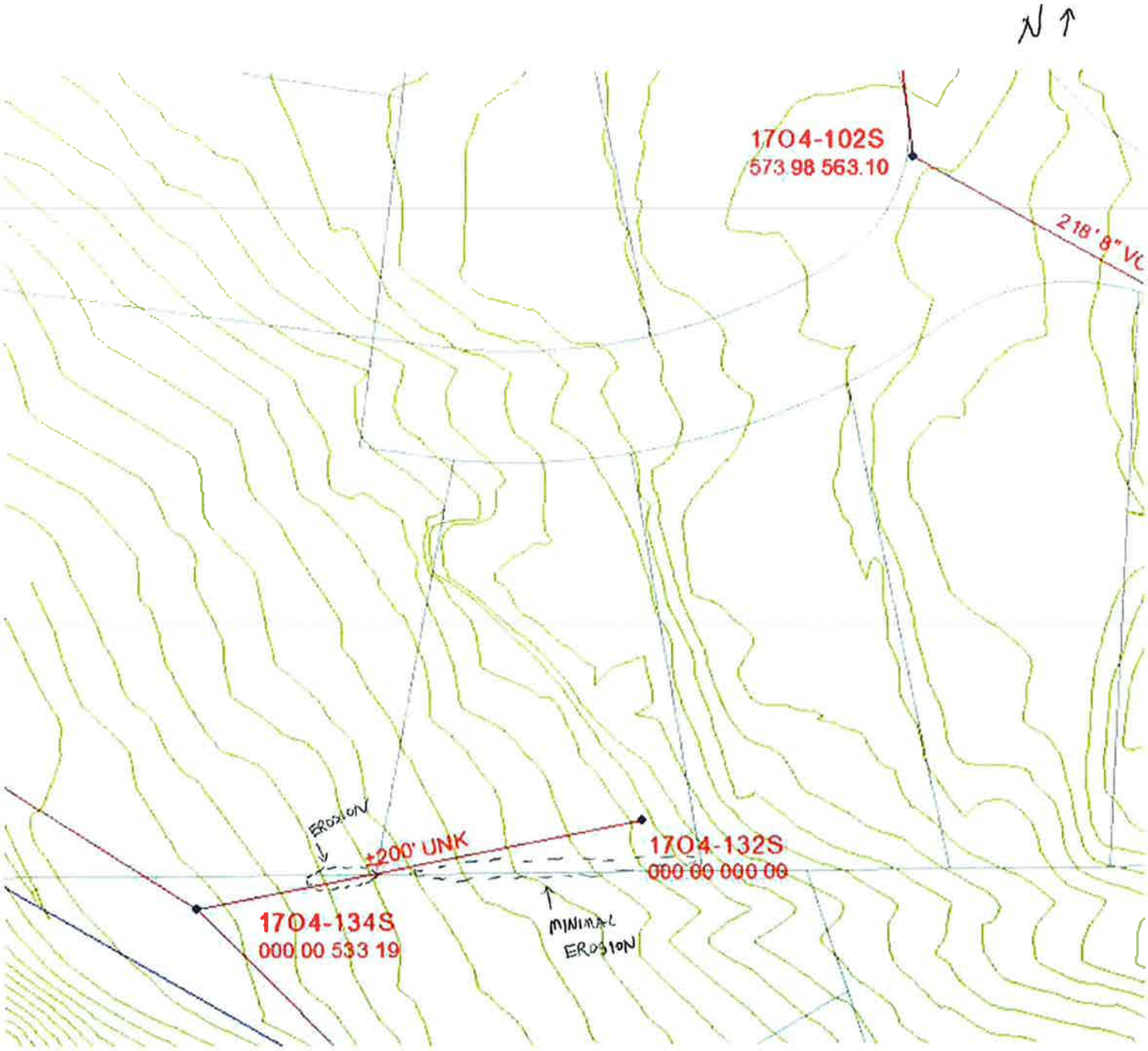
12122
12116
359
342

N ↑


N
1704-102S
573 98 563.10
218' 8" VC
ERODION
+200' UNK
1704-132S
000 00 000 00
1704-134S
000 00 533 19
MINIMAL
ERODION

BACKYARD FACING WEST

SOUTHWEST SECTION OF YARD

SOUTHEAST SECTION OF YARD

BACKYARD FACING WEST

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: WEST OF I-270 B/T OLIVE and LADUE

Street Address: 12121 Royal Valley Dr.

MSD Map No. 1703 **Complaint Reference:** ☐ **1999 Master Plan** _____

☒ **2010 Survey Response** 26

Original Description: ☒ **Erosion** ☒ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

Have "river" running through yard during heavy rains as the water heads downhill. "Bank" erosion remains a problem in back portion of yard although mitigated with plantings and recontouring of area. Eventually erodes.

Site Description and Observations (include creek or tributary name, if known):

Rill erosion observed in backyard. Trib area in surrounding area appears relatively flat. Yard has eroded most near fence line. Homeowner has placed railroad ties to mitigate runoff. Backyard of lot 12135 is also affected, as yard erosion is evident.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

Field Crew: TJS

Date: 10-21-11

N ↑

ROYALWOOD DR
ROYALWOOD CT
ROYAL VALLEY DR
COEUR DE VILLE DR
HIBLER CT
HIBLER DR
EMERSON RD
CREVE COEUR
270
429
12155
12114
12120
523
12203
415
12149
12143
12131
12123
12117
12193
12156
407
12148
12140
12173
12132
12110
12124
12118
12165
12190
12182
12153
12147
12135
12121
12115
12174
12166
12158
12150
12142
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12122
12116
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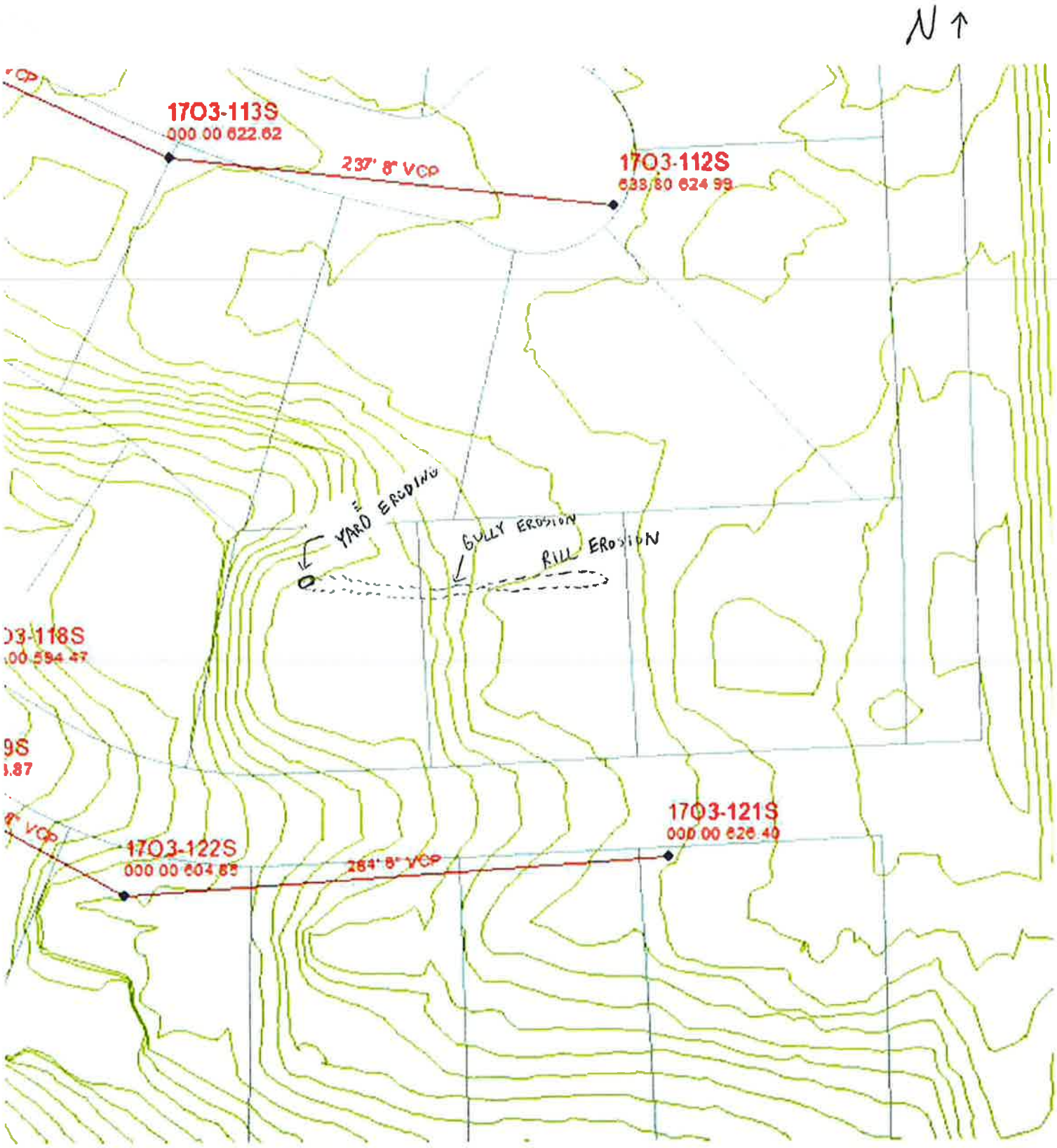
374
362
358
330
12183
12175
381
352
318
12169
12180
12161
373
355
344
312
12166
12153
339
336
12173
306
12145
331
328
12164
12133
296
12176
277
12121
320
261

N ↑

Royalwood Ct
e Ville Ln
Coeur de Ville Ln
Royal Valley Dr
alley Dr


N
1703-113S
000 00 622.62
237' 8" VCP
1703-112S
633 80 624 99
YARD ERODING
GULLY EROSION
RILL EROSION
03-118S
00 594 47
9S
1.87
1703-121S
000 00 626 40
1703-122S
000 00 604 85
264' 8" VCP

BACKYARD 12121 FACING WEST

BACKYARD 12121

BACKYARD 12121 FACING WEST

BACKYARD 12121

BACKYARD 12135

FENCE B/T 12121 and 12135

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: EAST OF DALLAS B/T LADUE and HWY 40

Street Address: 11732 Tarrytown / 11700 Tarrytown / 11600 Lakeshore

MSD Map No. 1803 **Complaint Reference:** [X] **1999 Master Plan** 4-8

[X] **2010 Survey Response** 29

Original Description: [X] **Erosion** [X] **Flooding** [ ] **Inadequate Sewer Capacity** [ ] **Other**

The size of the creek in our backyard has enlarged tenfold from 20 years ago and becomes raging river with heavy rains. Trees have been uprooted and trash accumulates in creek.

Flooding and erosion along creek through common ground affecting nearby homes.

Site Description and Observations (include creek or tributary name, if known):

Evidence of creek erosion behind backyard (11732 Tarrytown) fence. Tree branches and other yard waste has been placed on the banks to prevent creek from eroding banks.

Flooding and erosion at upstream / downstream of culvert at 11700 Tarrytown. Home owner explained that creek floods upstream/downstream of culvert. Water ponds causing potential health issue. Home owner has planted vegetation in attempt to alleviate issue.

Flooding of common ground near 11600 appears to have no direct impact.

Attached (w/ the problem area highlighted): [X] **MSD facilities map**

[X] **Aerial photo**

[X] **Site photos**

Field Crew: TJS

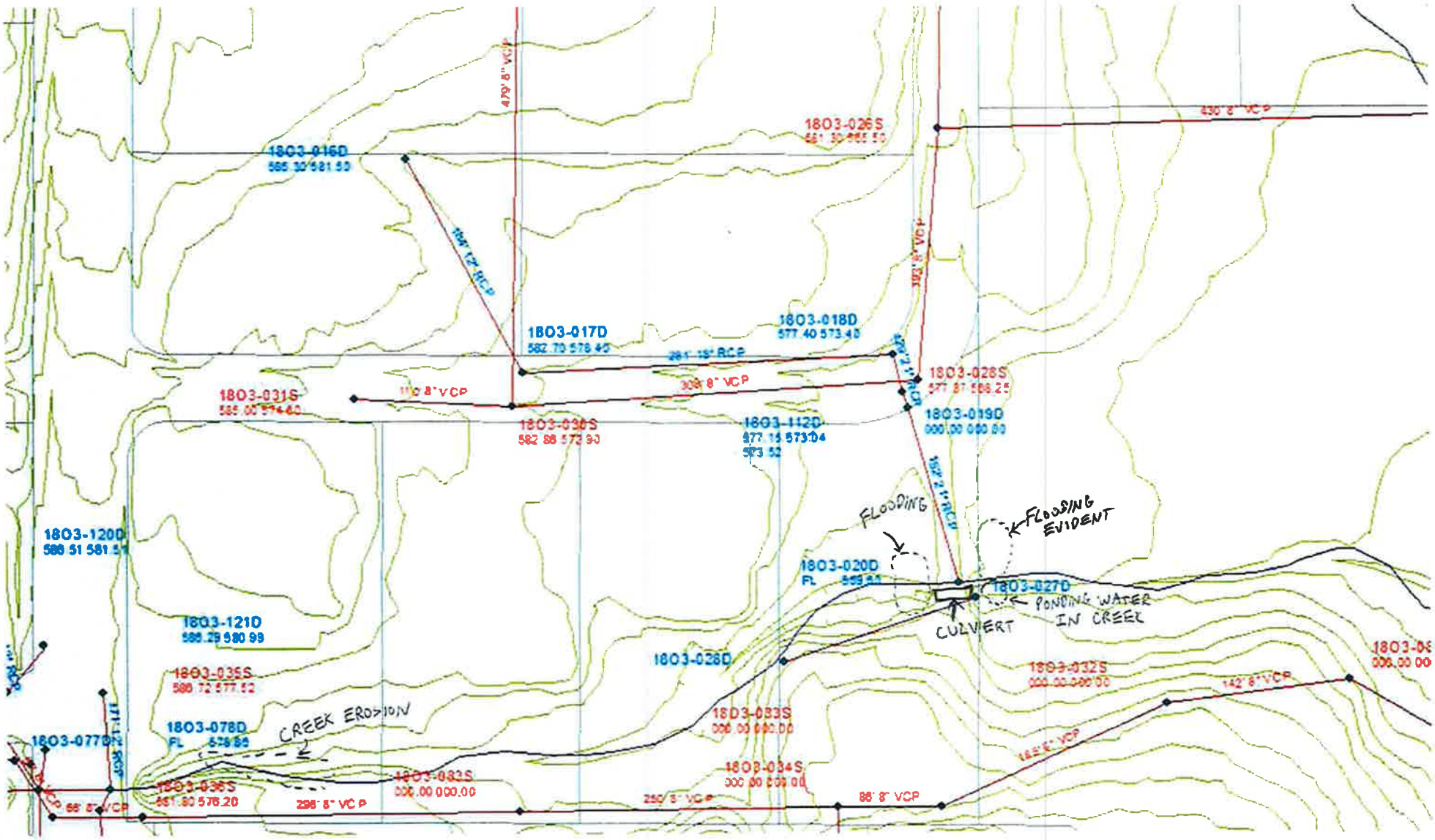
Date: 10-13-11

N ↑

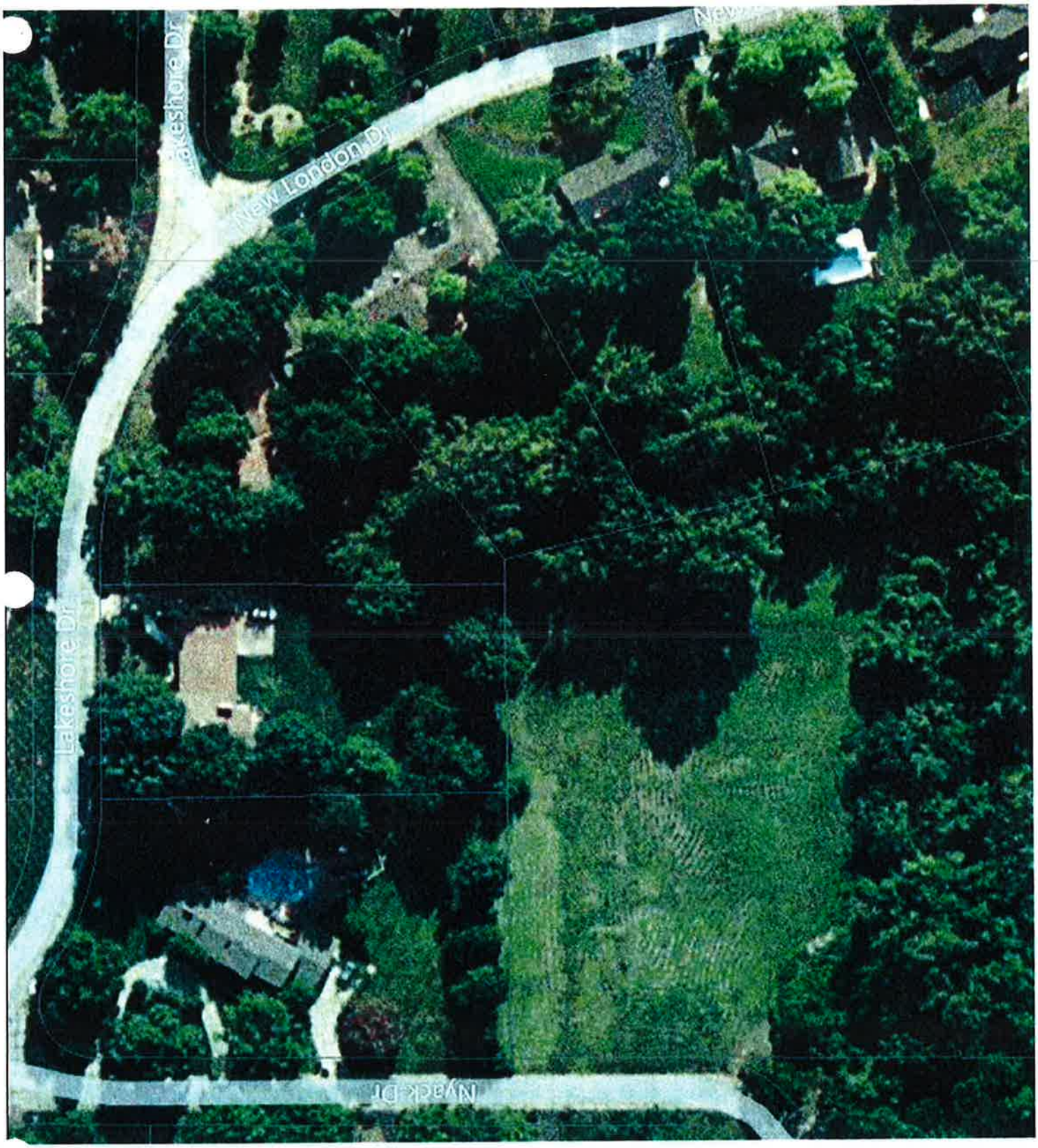
LAKESHORE DR
LAKESHORE DR
S NEW BALLAS RD
S NEW BALLAS RD
NYACK DR
TARRYTOWN DR
NEW LONDON DR
11724
11700
312
311
324
323
11725
11703
11732
11720
11710
11700
11732
11720
11710
11700
11623
11611
11601
11575
11634
11622
11600
11592
11584
11801
11576
11572
11576
11572
11801
11566
303
319
341
611

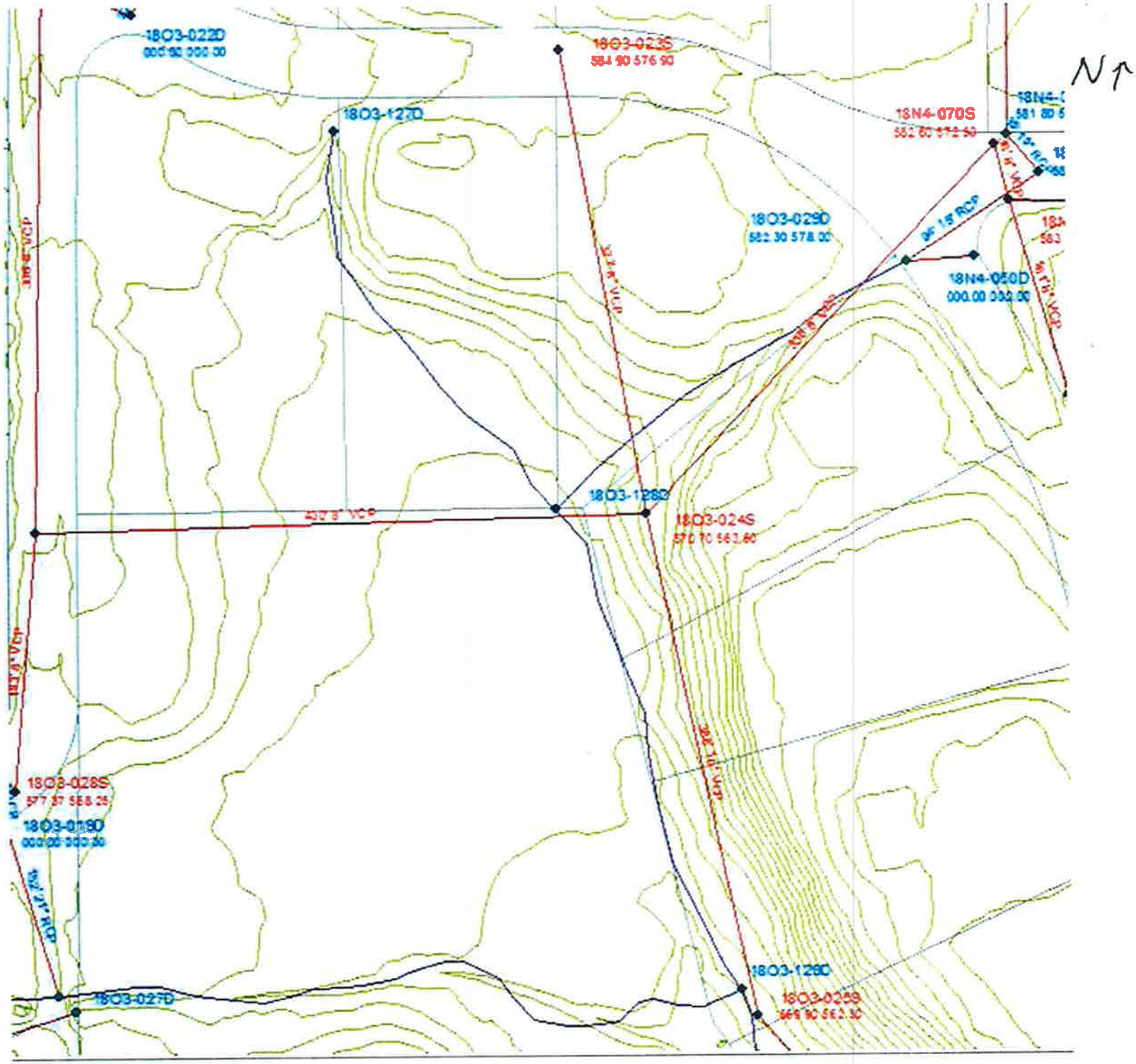
N

N↑


1803-016D
1803-017D
1803-018D
1803-026S
1803-028S
1803-019D
1803-031S
1803-030S
1803-112D
1803-120D
1803-121D
1803-035S
1803-078D
1803-077D
1803-036S
1803-033S
1803-034S
1803-020D
1803-027D
1803-028D
1803-032S
FLOODING
FLOODING EVIDENT
PONDING WATER IN CREEK
CULVERT
CREEK EROSION

N




N
18O3-022D
18O3-023S
584.90 576.90
18O3-127D
18N4-070S
18O3-029D
582.30 578.00
18N4-050D
000.00 000.00
18O3-128D
18O3-024S
570.70 563.60
18O3-026S
577.37 568.25
18O3-118D
000.00 000.00
18O3-027D
18O3-125D
18O3-025S
566.90 562.30

CREEK BEHIND 1732

YARD WASTE AT TOP OF BANK

CREEK BEHIND 1732

YARD WASTE AT TOP OF BANK

FENCE OF 11732 (FACING SOUTH)

DOWNSTREAM OF CULVERT (LOT 11700)

FENCE OF 11732 (FACING WEST)

UPSTREAM CULVERT (LOT 11700)

DOWNSTREAM SIDE

SOUTH CORNER LOT 11600

DOWNSTREAM SIDE

FLOODING EVIDENCE (DOWNSTREAM)

SOUTH CORNER LOT 11600

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: East New Ballas Rd between Olive and Ladue

Street Address: 631 and 647 Fairways Circle

MSD Map No. 17 N 4 **Complaint Reference:** ☒ **1999 Master Plan** 3-7

☐ **2010 Survey Response** _____

Original Description: ☒ **Erosion** ☒ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

Runoff from commercial properties on Olive draining down behind houses on Fairways Circle. Yard Flooding and erosion occuring. Inadequate drainage swales

Site Description and Observations (include creek or tributary name, if known):

Runoff from commercial properties evident. Home owner at 647 explained that backyard runs full of water during a storm event, but has not experienced house flooding. Very steep slopes drain to backyard from commercial properties. Home owner of 631 has placed rock in drainage path. Could not access Lot 639 due to fence and dog.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

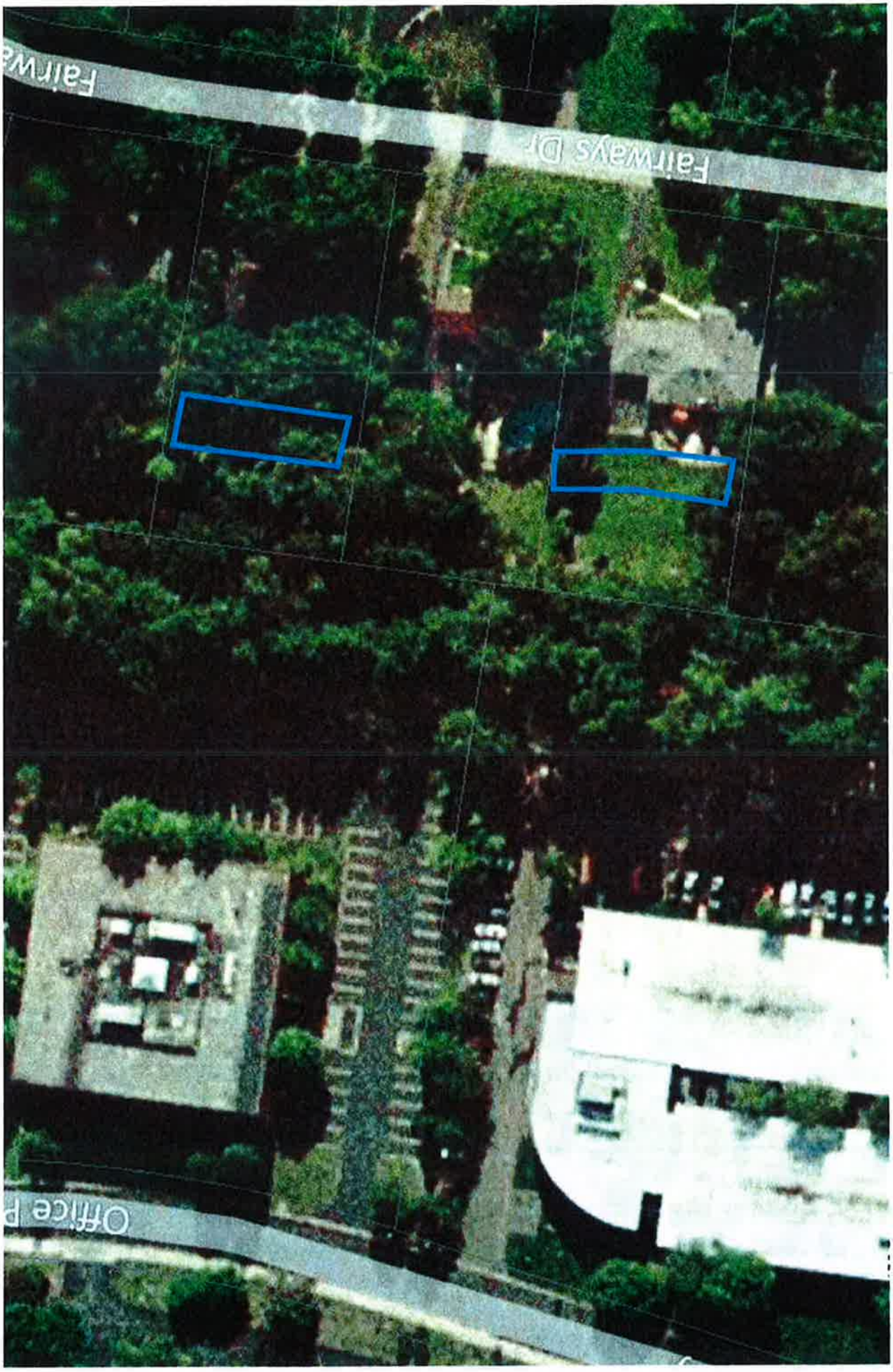
Field Crew: TJS

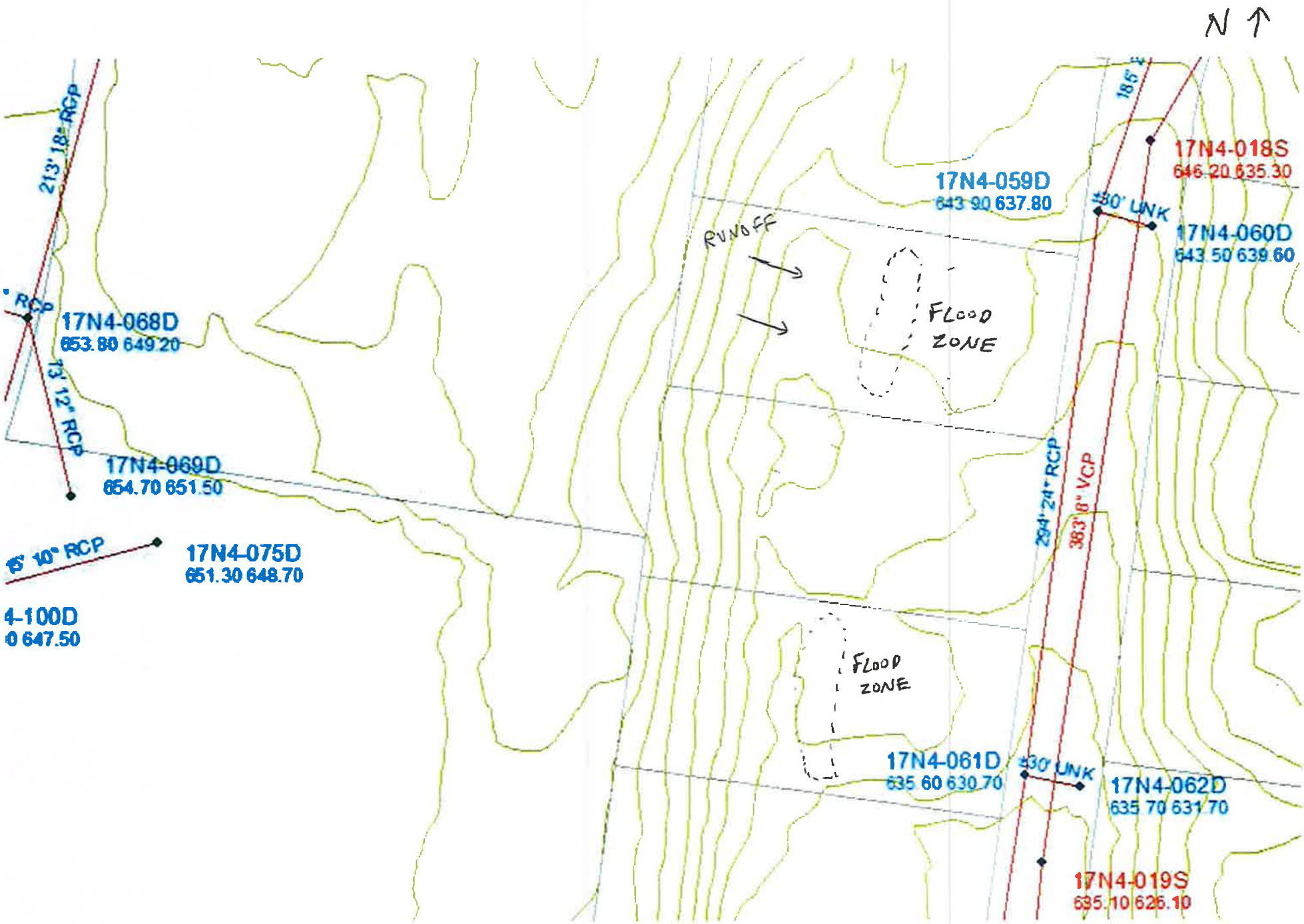
Date: 10-4-11

N ↑

11318
788
700
760
752
744
819
723
719
715
709
703
663
726
720
700
701
655
647
642
665
639
636
657
631
630
649
634
11433
623
624
641
615
618
633
625
612
607
617
OFFICE PKWY
FAIRWAYS CIR
FAIRWAYS CIR
N MOSLEY RD
N MOSLEY RD

N




N
213' 18" RCP
RCP
17N4-068D
653.80 649.20
73' 12" RCP
17N4-069D
654.70 651.50
15' 10" RCP
17N4-075D
651.30 648.70
4-100D
0 647.50
RUNOFF
FLOOD ZONE
FLOOD ZONE
17N4-059D
643.90 637.80
18.5'
17N4-018S
646.20 635.30
±30' UNK
17N4-060D
643.50 639.60
294' 24" RCP
383' 8" VCP
17N4-061D
635.60 630.70
±30' UNK
17N4-062D
635.70 631.70
17N4-019S
635.10 626.10

BACKYARD LOT 647 LOOKING WEST

BACKYARD LOT 647 LOOKING SOUTH

BACKYARD LOT 647 LOOKING WEST

BACKYARD LOT 647 LOOKING SOUTH

BACKYARD LOT 631

BACKYARD LOT 631 LOOKING SOUTH

BACKYARD LOT 647 (SOUTH)

BACKYARD LOT 631

BACKYARD LOT 631

BACKYARD LOT 631 LOOKING SOUTH

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: WEST OF SPOEDE B/T LADUE and HWY 40

Street Address: 60 Villa Coublay Dr.

MSD Map No. 19N2 **Complaint Reference:** [X] **1999 Master Plan** 2-4

[ ] **2010 Survey Response** _____

Original Description: [X] **Erosion** [X] **Flooding** [ ] **Inadequate Sewer Capacity** [ ] **Other**

Resident reports erosion along old railroad right-of-way.
Creek flooding and erosion - erosion in ravine.

Site Description and Observations (include creek or tributary name, if known):

Creek erosion along banks behind Lot 60. Back yard is approximately 30 ft higher than creek.

Attached (w/ the problem area highlighted): [X] **MSD facilities map**

[X] **Aerial photo**

[X] **Site photos**

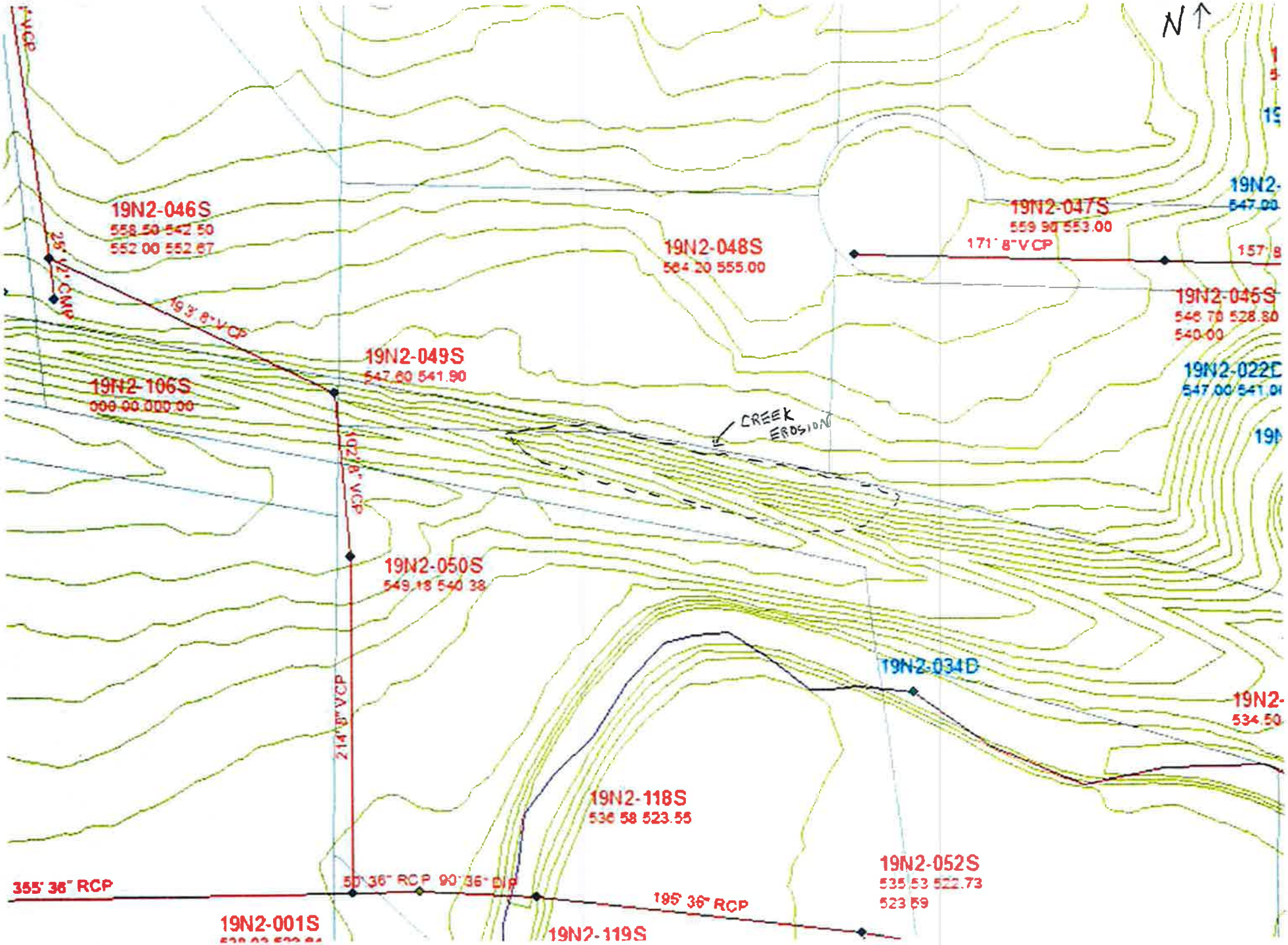
Field Crew: TJS

Date: 11-12-10

N ↑

E LADUE ESTATES DR
TATES DR
VILLA COUBLAY DR
234
245
248
274
277
73
74
257
10955
290
289
75
76
10954
297
296
10952
48
78
252
77
79
61
53
47
43
80
60
66
70
50
44
30
31
655
802
28
808
816

Villa Coublay Dr


N
19N2-046S
558.50 542.50
552.00 552.67
25' 12" CMP
193' 8" VCP
19N2-049S
547.60 541.90
19N2-106S
000.00 000.00
102' 8" VCP
19N2-050S
549.18 540.38
214' 8" VCP
CREEK EROSION
19N2-048S
564.20 555.00
19N2-047S
559.90 553.00
171' 8" VCP
19N2-045S
546.70 528.80
540.00
19N2-022D
547.00 541.04
19N2-034D
19N2-118S
536.58 523.55
19N2-052S
535.53 522.73
523.59
355' 36" RCP
50' 36" RCP 90' 36" DIP
195' 36" RCP
19N2-001S
19N2-119S

BANK EROSION

BANK EROSION

BANK EROSION

BANK EROSION

BACKYARD LOT 60

BACKYARD LOT 60

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: East New Ballas b/t Olive and Ladue

Street Address: 527 Fairways Circle

MSD Map No. 17N4 **Complaint Reference:** ☒ **1999 Master Plan** 25

☐ **2010 Survey Response** _____

Original Description: ☒ **Erosion** ☒ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

Creek erosion behind 527 Fairways Circle.

Site Description and Observations (include creek or tributary name, if known):

Creek along golf course discharges along side of headwall causing erosion. No evidence of damage to home owner's yard. Erosion at top of bank that has been filled in with yard clippings.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

Field Crew: TSS

Date: 10-4-11

N ↑

612
607
606
601
11317
11311
549
FAIRWAYS
11400
544
539
541
538
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531
536
FAIRWAYS CIR
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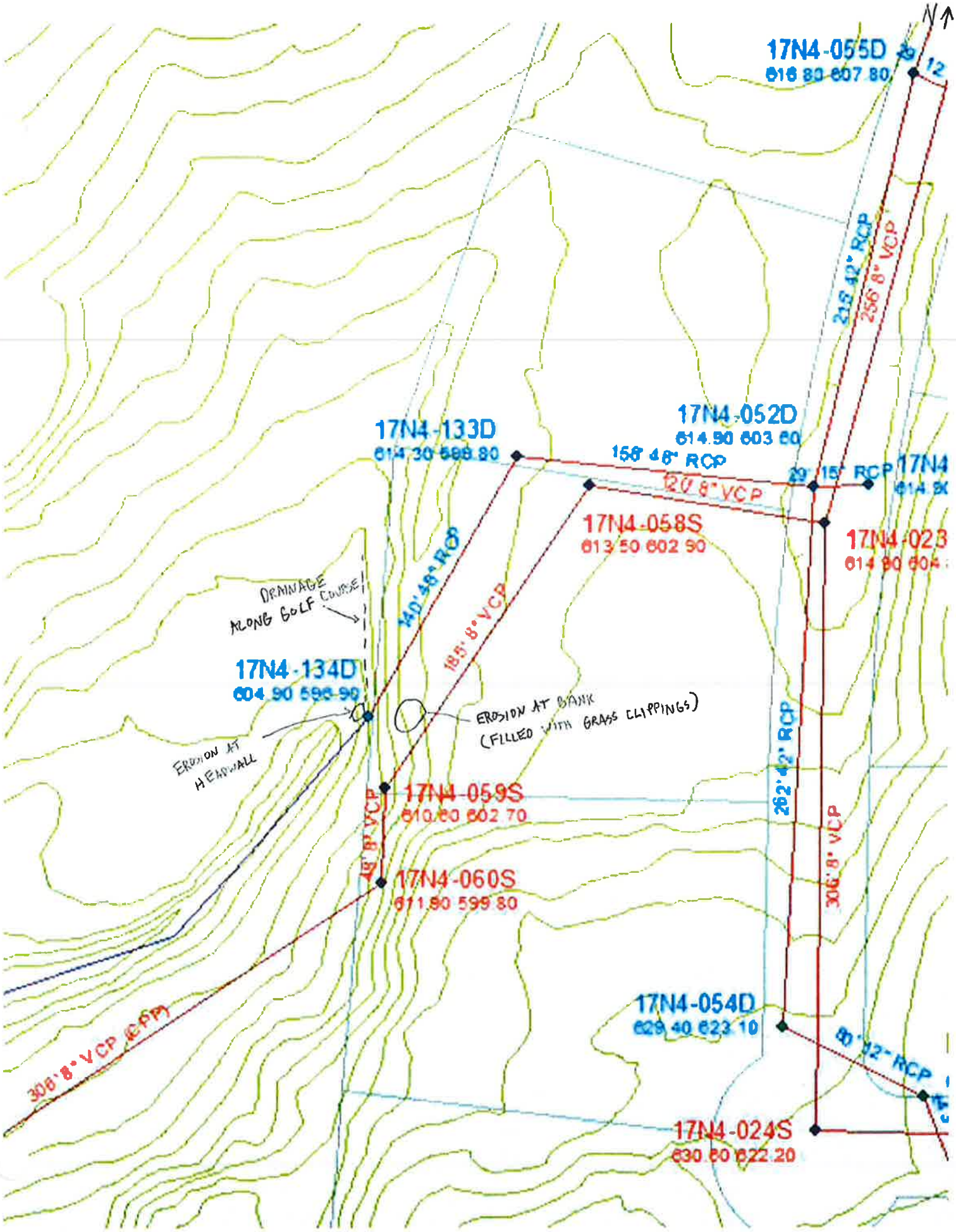
510
516

N
Fairways Circle


N
17N4-055D
616.80 607.80
12
215' 42" RCP
256' 8" VCP
17N4-052D
614.90 603.60
17N4-133D
614.30 598.80
158' 48" RCP
120' 8" VCP
29
15" RCP
17N4
17N4-058S
613.50 602.90
17N4-023
DRAINAGE
ALONG GOLF COURSE
140' 48" RCP
185' 8" VCP
17N4-134D
604.90 596.90
ERODION AT BANK
(FILLED WITH GRASS CLIPPINGS)
ERODION AT
HEADWALL
17N4-059S
610.60 602.70
48' 8" VCP
262' 42" RCP
306' 8" VCP
17N4-060S
611.90 599.80
17N4-054D
629.40 623.10
80' 12" RCP
308' 8" VCP (CPP)
17N4-024S
630.80 622.20

HEADWALL LOOKING N.E.

HEADWALL LOOKING N.E.

HEAD WALL LOOKING WEST

HEADWALL LOOKING N.E.

EROSION ALONG WEST SIDE OF HEADWALL

TOP OF HEADWALL

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: WEST OF SPOEDE B/T LADUE and HWY 40

Street Address: 5 Ladue Estates Dr

MSD Map No. 18 N 4 **Complaint Reference:** ☒ **1999 Master Plan** 1-6

☐ **2010 Survey Response** _____

Original Description: ☒ **Erosion** ☐ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

Yard damage and erosion affecting back slope of property draining to Mosley Road

Site Description and Observations (include creek or tributary name, if known):

Minor erosion observed along backyard near landscaping. Landscaping does not appear damaged. Home owner placed yard waste in backyard to possibly alleviate problem. Honeysuckle vegetation is present.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

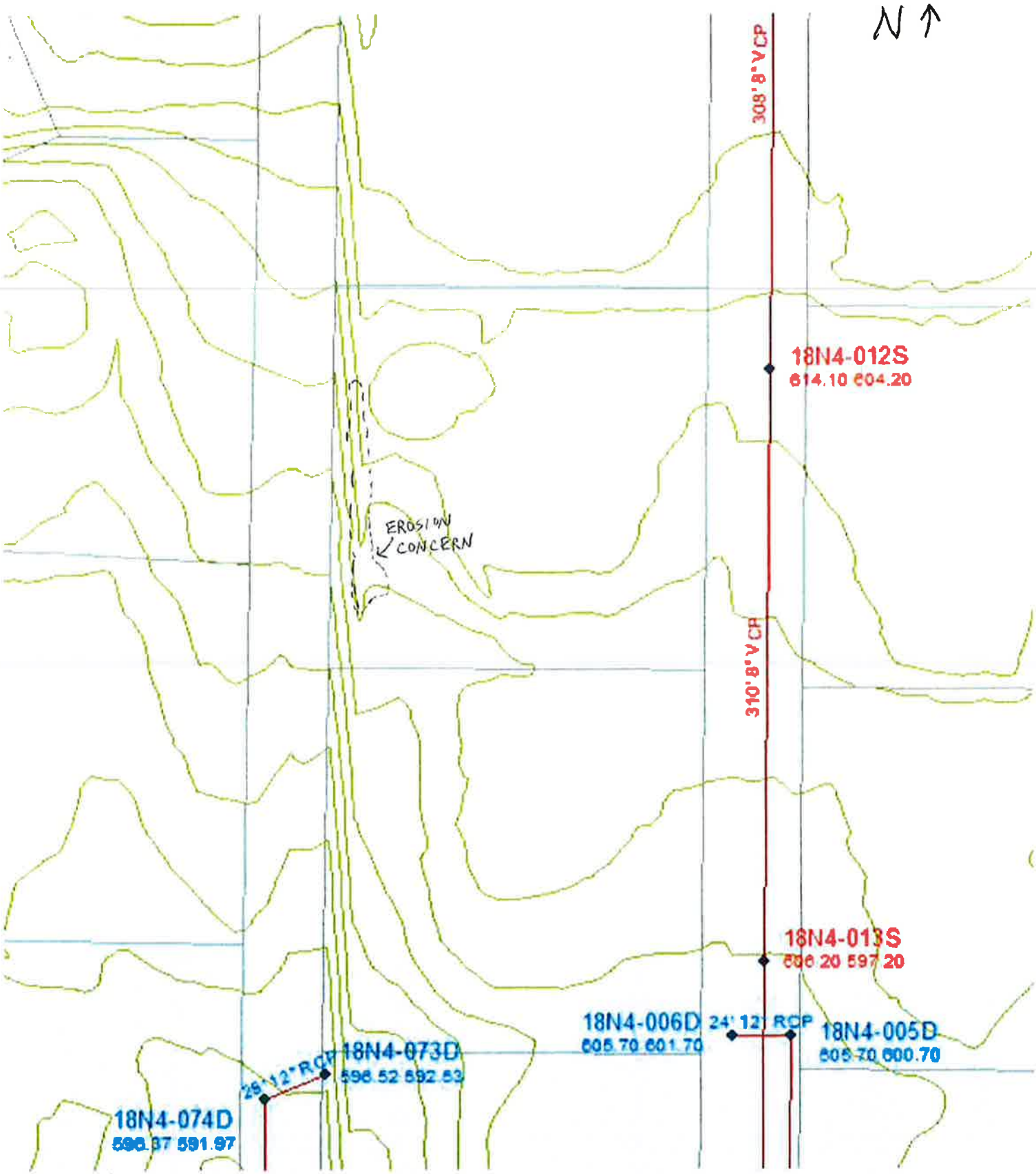
☒ **Site photos**

Field Crew: TJS

Date: 10-12-11

N
LADUE RD
LADUE RD
LADUE MEADOWS LN
N MOSLEY RD
S MOSLEY RD
CARRIAGE
SQUARE DR
W LADUE ESTATES DR
W LADUE ESTATES DR
LADUE ESTATES DR
26
25
101
100
111
105
108
11255
11201
105
106
11320
11304
140
117
131
154
159
176
192
168
181
191
188
180
1
2
27
3
4
29
5
6
31
7
8
33
9
10
35
11
12
37
11350
11342
11334
200
202
205
216
213
214
217

N


N
308' 8" V CP
18N4-012S
614.10 604.20
EROSION CONCERN
310' 8" V CP
18N4-013S
596.20 597.20
18N4-006D
605.70 601.70
24" 12" RCP
18N4-005D
605.70 600.70
18N4-073D
596.52 592.53
25" 12" RCP
18N4-074D
596.37 591.97

BACKYARD

YARD WASTE IN LANDSCAPING

BACKYARD

BACKYARD FACING SOUTH

SOUTHWEST CORNER YARD

LANDSCAPE AREA

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: East New Ballas Rd b/t Olive and Ladue

Street Address: 104 Ladue Meadows Ln.

MSD Map No. 18N1 **Complaint Reference:** ☐ **1999 Master Plan** _____

☒ **2010 Survey Response** 20

Original Description: ☒ **Erosion** ☒ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

Ponding remains in yard after rainfall

Erosion has damaged lawn, trees, or fence.

the culdesac of Ladue Meadows Ln is frequently flooded.

New adjacent homes have increased amount of water.

Site Description and Observations (include creek or tributary name, if known):

Rill erosion along west side of property line contributed from runoff of Ladue Meadows. Area inlets in backyards of Mosley appear not capable of handling flow and therefore are flooding onto homeowners backyard.

Erosion at base of MSD inlet at Southwest corner of property.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

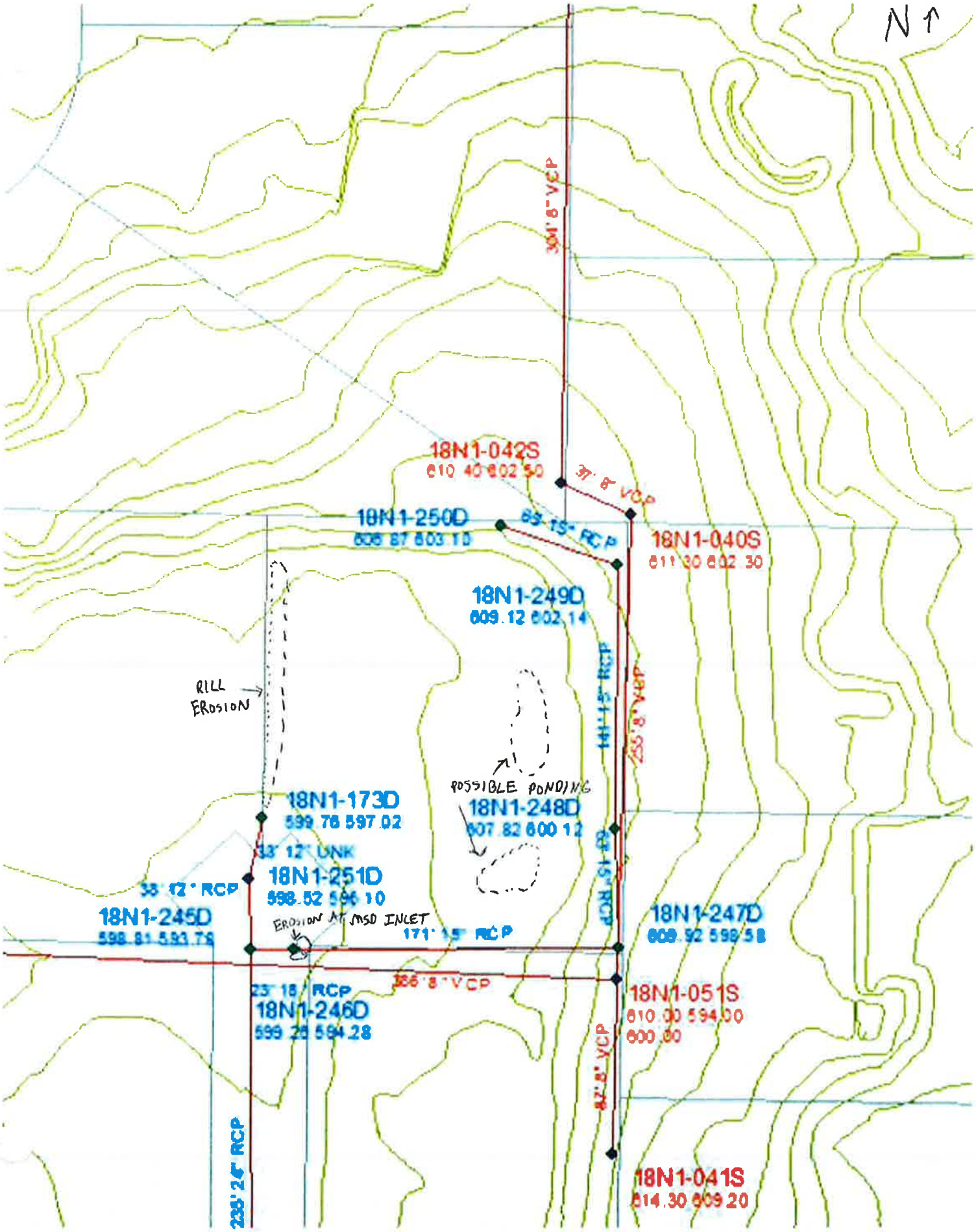
Field Crew: TJS

Date: 10-5-11

N ↑

41
36
33
219
40
37
32
215
N MOSLEY RD
209
31
39
38
201
30
28
29
131
27
123
107
104
LADUE MDWS
26
LADUE MEADOWS LN
111
26
25
101
100
24
105
N MOSLEY RD
LADUE RD
CARRIAGE
110
105
106
11320
11304

N


N
301' 8" VCP
18N1-042S
610 40 602 50
37' 8" VCP
18N1-250D
606 87 603 10
83' 15" RCP
18N1-040S
611 30 602 30
18N1-249D
609 12 602 14
141' 15" RCP
255' 8" VCP
RILL EROSION
POSSIBLE PONDING
18N1-248D
607 82 600 12
18N1-173D
599 78 597 02
33' 12" UNK
18N1-251D
598 52 596 10
33' 12" RCP
18N1-245D
598 81 593 79
EROSION AT MSD INLET
171' 15" RCP
18N1-247D
609 92 598 58
186' 8" VCP
23' 18" RCP
18N1-246D
599 28 594 28
18N1-051S
610 00 594 00
600 00
82' 8" VCP
209' 24" RCP
18N1-041S
614 30 609 20

FRONT YARD (WEST)

FRONT YARD (WEST)

CULDESAC

FRONT YARD (WEST)

WEST SIDE

BACKYARD (WEST)

WEST SIDE

BACKYARD (WEST)

BACKYARD (NORTH)

BACKYARD (NE CORNER)

NW CORNER

BACKYARD (NORTH)

BACKYARD (EAST)

BACKYARD (EAST)

BACKYARD (EAST)

BACKYARD (EAST)

BACKYARD (SOUTH)

SW CORNER/EROSION AT BASE

BACKYARD (SE CORNER)

SIDE (SOUTH)

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: East New Ballas b/t Olive and Ladue

Street Address: 434 Runnymede Dr.

MSD Map No. 18N1 **Complaint Reference:** ☐ **1999 Master Plan** _____

☒ **2010 Survey Response** 27

Original Description: ☐ **Erosion** ☒ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

Ponding water remains in yard after rainfall.
Damage occurs to lawn, trees, or fence
New subdivision construction behind house has generated excess runoff.

Site Description and Observations (include creek or tributary name, if known): Possible ponding evidence on north side of property near driveway. Runoff from neighboring subdivision appears to be flowing down south side of property causing slight rill erosion. Home owner has installed drain along south property line.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

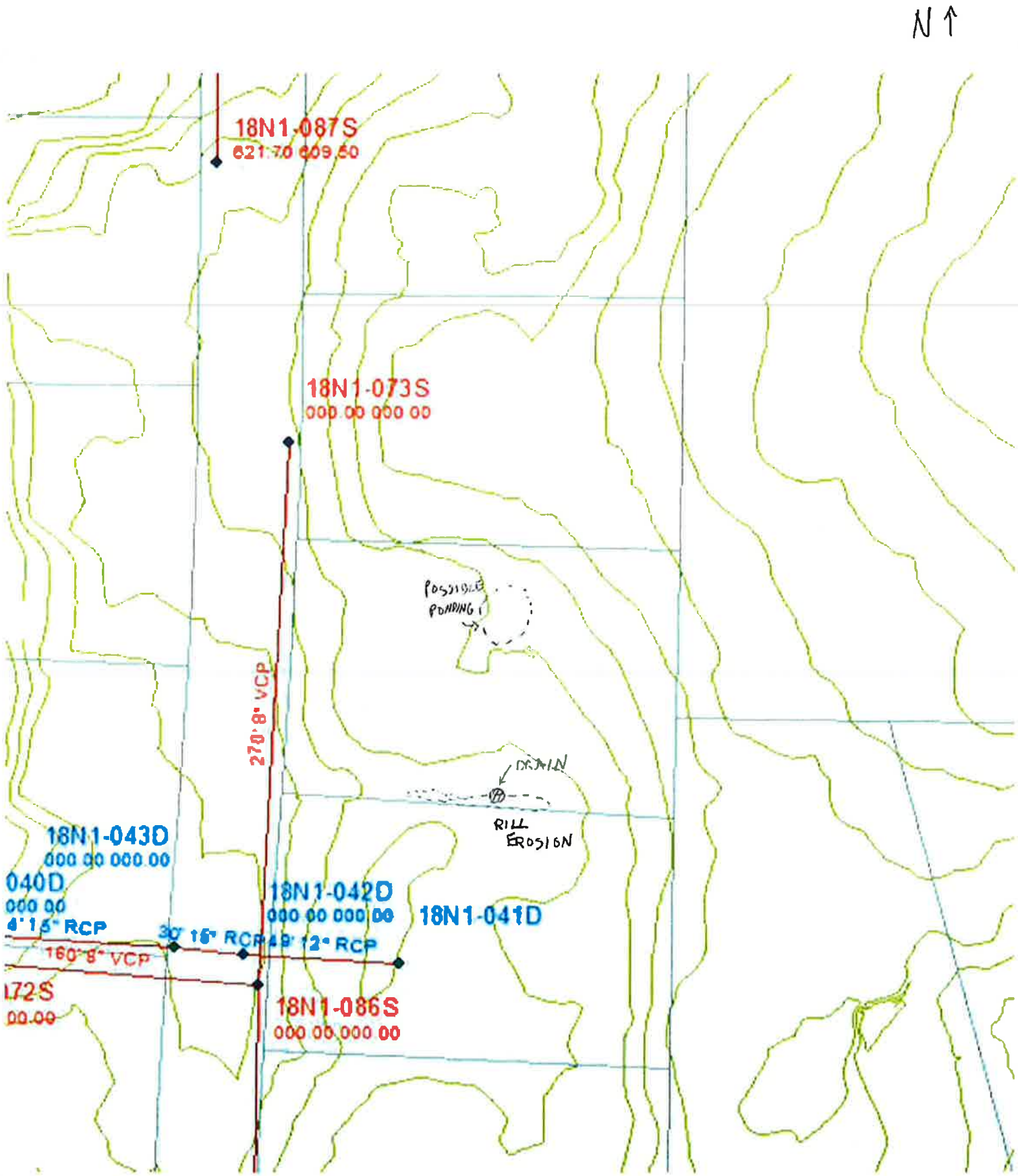
Field Crew: TJS

Date: 10-5-11

N ↑

501
488
474
466
466
11351
11345
477
487
455
458
458
465
MOSLEY LN
RUNNYMEDE DR
464
450
450
449
11360
452
442
442
11354
437
444
434
434
425
ORD DR
436
420
420
11375
422
417
11363
408
408
11387
11523
11509
405
MOSLEY FOREST DR
400
400
TEMPLAR DR
13
12
344
344
11522
11510
331
14
LADUE MDWS
328
328
15
42
11515
305
310
310

N


N
18N1-087S
621.70 609.50
18N1-073S
000.00 000.00
POSSIBLE PONDING
270' 8" VCP
DRAIN
RILL EROSION
18N1-043D
000.00 000.00
040D
000.00
4' 15" RCP
160' 8" VCP
172S
00.00
18N1-042D
000.00 000.00
30' 15" RCP
49' 12" RCP
18N1-041D
18N1-086S
000.00 000.00

BACKYARD (NORTH SIDE)

BACKYARD (NORTH SIDE)

BACKYARD (NORTH SIDE)

BACKYARD (NORTH SIDE)

FRONT YARD (SOUTH SIDE)

BACK YARD (SOUTH)

FRONT YARD (SOUTH SIDE)

SIDE OF HOUSE (SOUTH)

BACKYARD (SOUTH)

BACKYARD (SOUTH)/DRAIN

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: East of Mosley B/t Olive and Ladue

Street Address: 7, 10, 11, 12 Mosely Acres

MSD Map No. 17N3 **Complaint Reference:** ☒ **1999 Master Plan** 7-1

☐ **2010 Survey Response** _____

Original Description: ☐ **Erosion** ☒ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

Residents report lake overtopping dam at East edge of Mosely pond. Flooding threatens home at #10, especially if dam should fail.

Site Description and Observations (include creek or tributary name, if known):

Spillway (overflow) of dam is covered with debris and vegetation. Earth dam on East side of Mosley lake covered in vegetation. Evidence of flooding at lot #10. Shore erosion along south side of lake.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

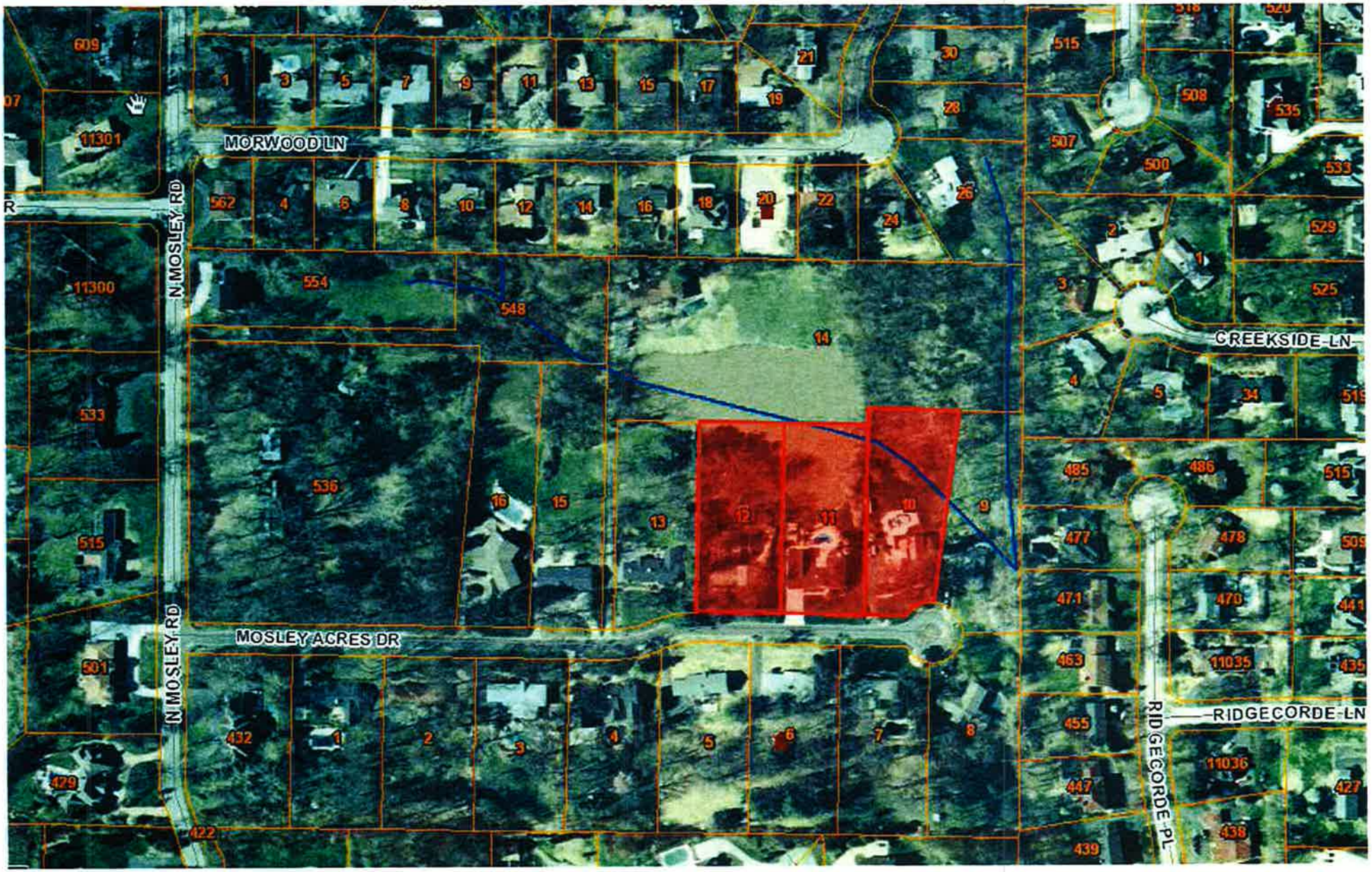
☒ **Aerial photo**

☒ **Site photos**

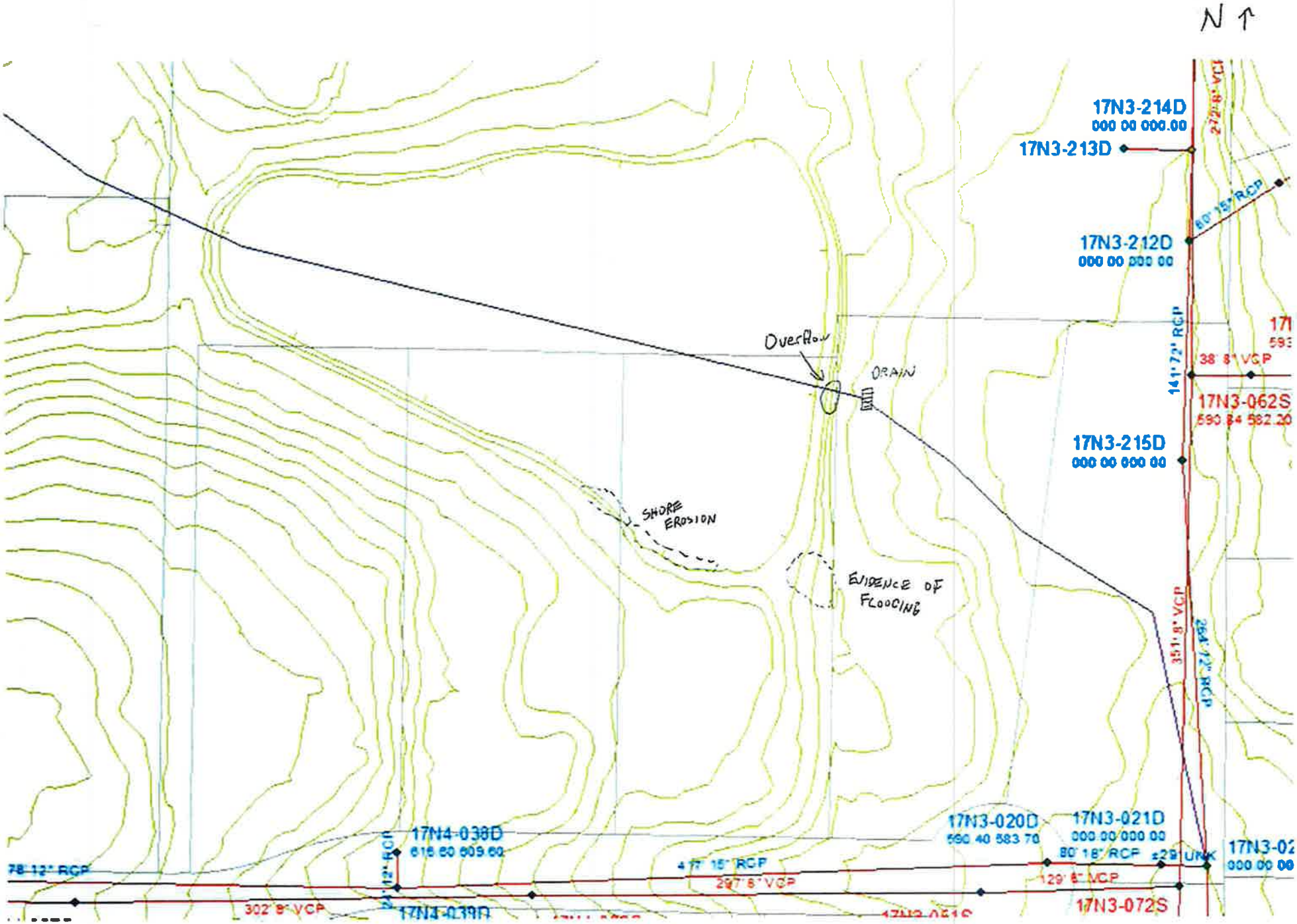
Field Crew: TJS

Date: 10-5-11

N ↑


MORWOOD LN
N MOSLEY RD
N MOSLEY RD
MOSLEY ACRES DR
CREEKSIDE LN
RIDGECORDE LN
RIDGECORDE PL

N ↑


N
17N3-214D
000 00 000.00
17N3-213D
272' 8" VCP
80' 15" RCP
17N3-212D
000 00 000 00
141' 72" RCP
38' 8" VCP
17N3-062S
590 84 582.20
17N3-215D
000 00 000 00
Overflow
DRAIN
SHORE EROSION
EVIDENCE OF FLOODING
351' 8" VCP
264' 12" RCP
17N3-020D
590 40 583 70
17N3-021D
000 00 000 00
80' 18" RCP
±29' UNK
17N3-072S
17N4-038D
616 60 609 60
78' 12" RCP
24' 12" RCP
417' 15" RCP
297' 8" VCP
129' 8" VCP
302' 8" VCP
17N4-039D

SPILLWAY

DRAIN (DOWNSTREAM SPILLWAY)

SPILLWAY

DRAIN

POSSIBLE FLOODING EVIDENCE

BACKYARD

BACKYARD

SOUTH EAST CORNER OF BERM

SE CORNER OF BERM

SOUTH SIDE LAKE

SE CORNER OF BERM

SOUTH SIDE LAKE

SHORE EROSION (SOUTH SIDE LAKE)

LAKE LOOKING NORTH EAST

SHORE EROSION

LAKE LOOKING NORTH EAST

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: West of Spoede b/t Olive and Ladue

Street Address: 11076 Graeser Ln

MSD Map No. 17N2 **Complaint Reference:** ☐ **1999 Master Plan** _____

☒ **2010 Survey Response** 16

Original Description: ☒ **Erosion** ☒ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

Storm water has entered home.
Flooding has occured in yard.
Damage occurs to lawn, trees, or fence.
New construction upstream has contributed to excessive water flowing to downhill properties.

Site Description and Observations (include creek or tributary name, if known):

After discussion with home owner, new remodeled homes on Graeser Ln have created additional runoff. Flooding occurs in front yard, despite the riprap channel that exists intended to collect flow. Water has entered home through foundation. Home owner has installed drain in sidewalk as well as french drain around front of house.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

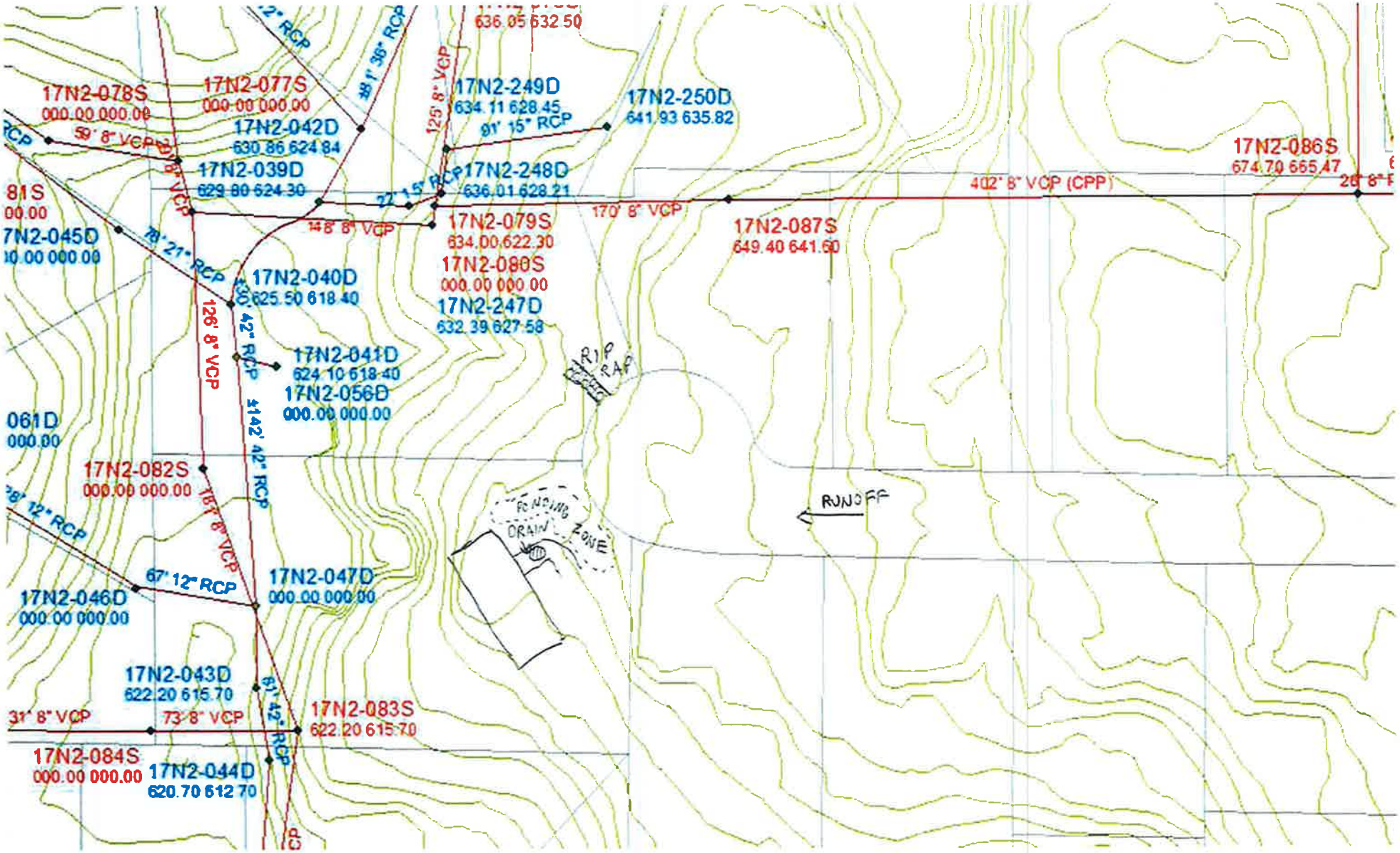
Field Crew: TJS

Date: 10-4-11

N

804
805
808
803
800
801
11045
719
GRAESER RD
11071
11077
11059
11041
11035
11029
703
11126
GRAESER LN
GRAESER LN
11076
11048
11036
629
11068
11060
56
58
573
567
605
54
561

N


N
17N2-078S
000.00 000.00
17N2-077S
000.00 000.00
17N2-042D
630.86 624.84
17N2-039D
629.80 624.30
17N2-249D
634.11 628.45
17N2-250D
641.93 635.82
17N2-248D
636.01 628.21
17N2-079S
634.00 622.30
17N2-080S
000.00 000.00
17N2-247D
632.39 627.58
17N2-087S
649.40 641.60
17N2-086S
674.70 665.47
17N2-040D
625.50 618.40
17N2-041D
624.10 618.40
17N2-056D
000.00 000.00
17N2-082S
000.00 000.00
17N2-047D
000.00 000.00
17N2-046D
000.00 000.00
17N2-043D
622.20 615.70
17N2-083S
622.20 615.70
17N2-084S
000.00 000.00
17N2-044D
620.70 612.70
59' 8" VCP
81' 36" RCP
125' 8" VCP
91' 15" RCP
22' 15" RCP
148' 8" VCP
170' 8" VCP
402' 8" VCP (CPP)
78' 21" RCP
126' 8" VCP
30' 42" RCP
142' 42" RCP
181' 8" VCP
67' 12" RCP
81' 42" RCP
31' 8" VCP
73' 8" VCP
RIP RAP
RUNOFF
PONDING DRAIN ZONE

LOOKING WEST AT END OF CULDESAC

FRONT YARD

LOOKING EAST UP GRAESER LN

FRONT YARD

DRAIN IN SIDEWALK

FRONT YARD

RIPRAP AT END OF CULDESAC

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: East of Mosley b/t Olive and Ladue

Street Address: 16 Mosley Acres

MSD Map No. 17N4 **Complaint Reference:** ☐ **1999 Master Plan** _____

☒ **2010 Survey Response** 23

Original Description: ☒ **Erosion** ☐ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

Bank erosion has damaged lawn, trees, or fence. Since Mosley Rd was resurfaced and drainage modified, continuous erosion issues have occurred.

Site Description and Observations (include creek or tributary name, if known):

Mosley Acres has been (asphalted) resurfaced causing the curb not to function properly. Minor erosion damage was observed 1-2 ft next to street curb. Homeowner has seeded area. All properties along Mosley Acres have same problem.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

Field Crew: TJS

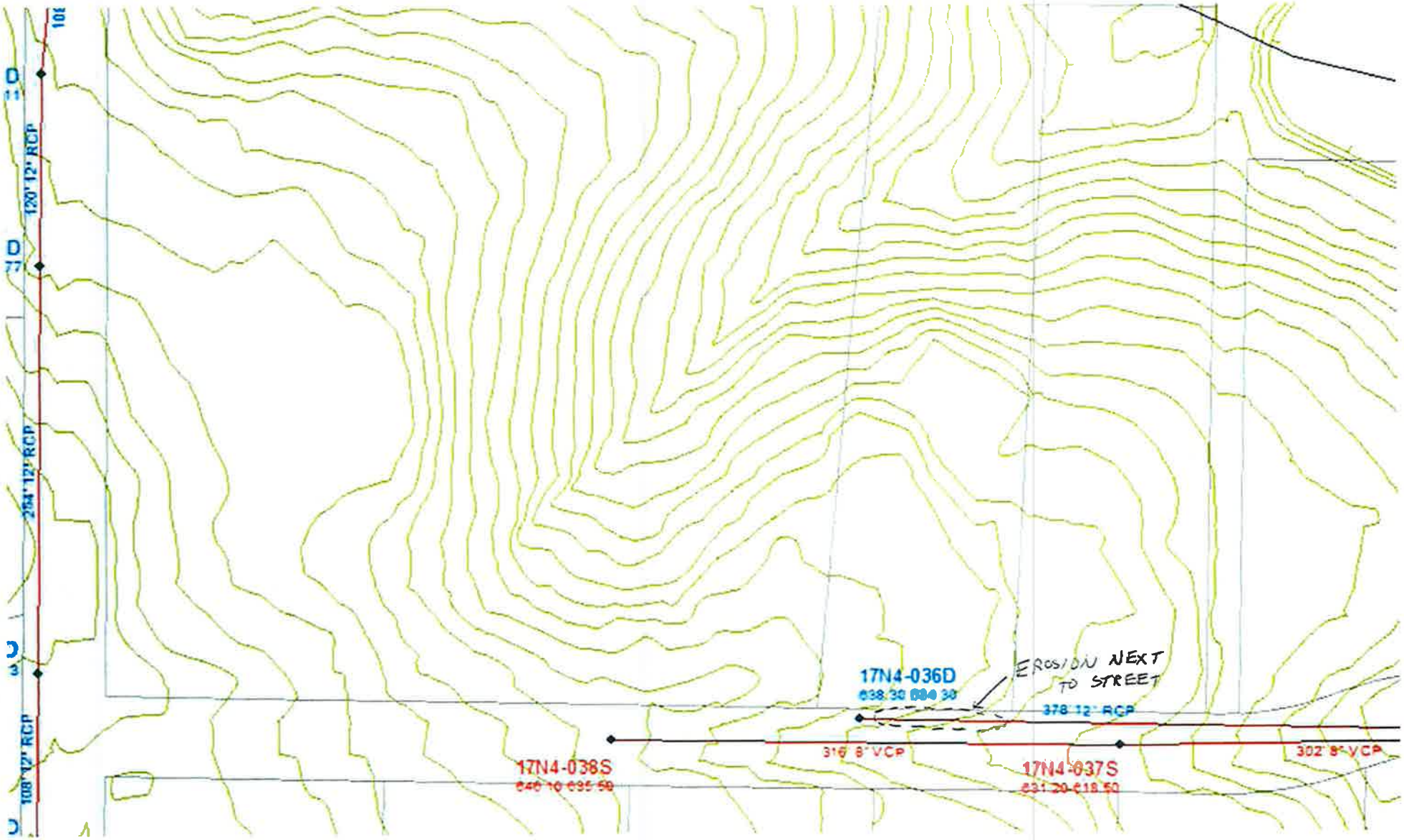
Date: 10-5-11

N
MORWOOD LN
FAIRWAYS DR
N MOSLEY RD
FAIRWAYS CIR
MOSLEY ACRES DR
609
11311
11307
11301
562
4
6
8
10
12
14
16
18
20
22
24
26
28
30
21
19
17
15
13
11
9
7
5
3
1
540
11300
554
548
534
533
536
515
526
501
520
432
429
422
11201
11204

N ↑

N Mosley Rd
N Mosley Rd
Mosley Acres
Mosley Acres
Mosley Acres

N ↑


120' 12" RCP
254' 12" RCP
108' 12" RCP
17N4-036D
638.30 634.30
EROSION NEXT TO STREET
378' 12" RCP
316' 8" VCP
302' 8" VCP
17N4-038S
640.10 635.50
17N4-037S
631.20 618.50

FRONT YARD LOT 16

FRONT YARD

LOOKING WEST UP MOSLEY ACRES

FRONT YARD

FRONT YARD

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: East of Mosley N/f Olive and Ladue

Street Address: 121 Mystic Meadows Ln.

MSD Map No. 18N1 **Complaint Reference:** ☐ **1999 Master Plan** _____

☒ **2010 Survey Response** 24

Original Description: ☒ **Erosion** ☒ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

Storm water has entered through doors.
Ponding water remains in yard after rainfall.
Street flooding along Mystic Meadows.
Rain water flows in torrents down south side of property

Site Description and Observations (include creek or tributary name, if known):

Erosion along south and north property line. (worst condition along south)
Evidence of ponding along south, although home owner has built a berm to control water. Gully erosion at upstream side of property. Home owner built wall along driveway to prevent water from flowing onto driveway. A drain has also been installed in an attempt to collect a portion of runoff.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

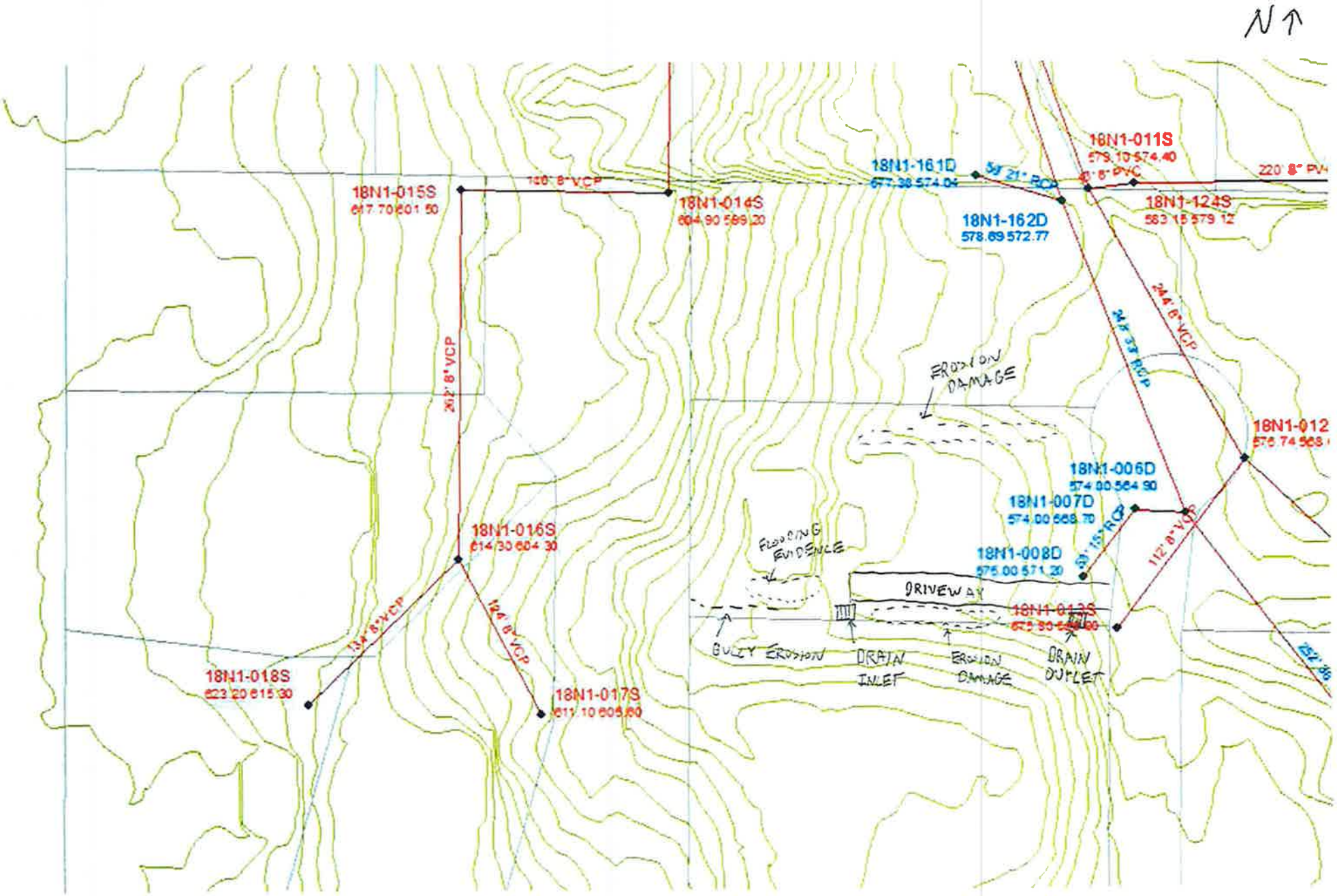
☒ **Site photos**

Field Crew: TJS

Date: 10-5-11

N
MOSLEY HILL DR
N MOSLEY RD
N MOSLEY RD
LADUE RD
MYSTIC MEADOWS LN
LADUE ESTATES DR
219
215
209
201
131
123
111
105
11304
11247
11239
11231
11223
210
146
140
11234
11226
11218
132
135
132
11233
120
121
108
11255
11201
110
2
27
28
3
4
29
30

N


N
18N1-015S
617.70 601.50
140' 8" VCP
18N1-014S
604.90 589.20
18N1-161D
577.38 574.04
58' 21" RCP
18N1-011S
579.10 574.40
8" PVC
220' 8" PV
18N1-124S
583.15 579.12
18N1-162D
578.69 572.77
262' 8" VCP
244' 8" VCP
24' 33" RCP
EROSION DAMAGE
18N1-012
576.74 568.
18N1-006D
574.00 564.90
18N1-007D
574.00 568.70
18N1-016S
614.30 604.30
FLOODING EVIDENCE
18N1-008D
575.00 571.20
112' 8" VCP
DRIVEWAY
18N1-013S
134' 8" VCP
124' 8" VCP
GULLY EROSION
DRAIN INLET
EROSION DAMAGE
DRAIN OUTLET
18N1-018S
623.20 615.30
18N1-017S
611.10 605.60

SOUTH SIDE PROPERTY (GULLY EROSION)

SOUTH SIDE PROPERTY

SOUTH SIDE PROPERTY

SOUTH SIDE PROPERTY

SOUTH SIDE PROPERTY

SOUTH SIDE PROPERTY

SOUTHSIDE PROPERTY (DRAIN INLET)

SOUTH SIDE PROPERTY

NORTH SIDE PROPERTY

NORTH SIDE PROPERTY

SOUTH SIDE PROPERTY (DRAIN OUTLET)

NORTH SIDE PROPERTY

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: East of Mosley bet Olive and Ladue

Street Address: 11205 Tureen Dr.

MSD Map No. 18N1 / 18N2 **Complaint Reference:** ☐ **1999 Master Plan** _____

☒ **2010 Survey Response** 30

Original Description: ☒ **Erosion** ☒ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

Damage occurs to lawn, trees or fence.
Erosion at base of MSD sewer
Street flooding in front of house.

Site Description and Observations (include creek or tributary name, if known):

Backyard has slight erosion. According to home owner, erosion has been worse. Home owner explained that new construction has created additional runoff in yard. No flooding evident in front yard near street. Base of area inlet has been eroded. Home owner also explained that a sink hole exists in backyard along berm. Home owner has photos and reports on the problems available.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

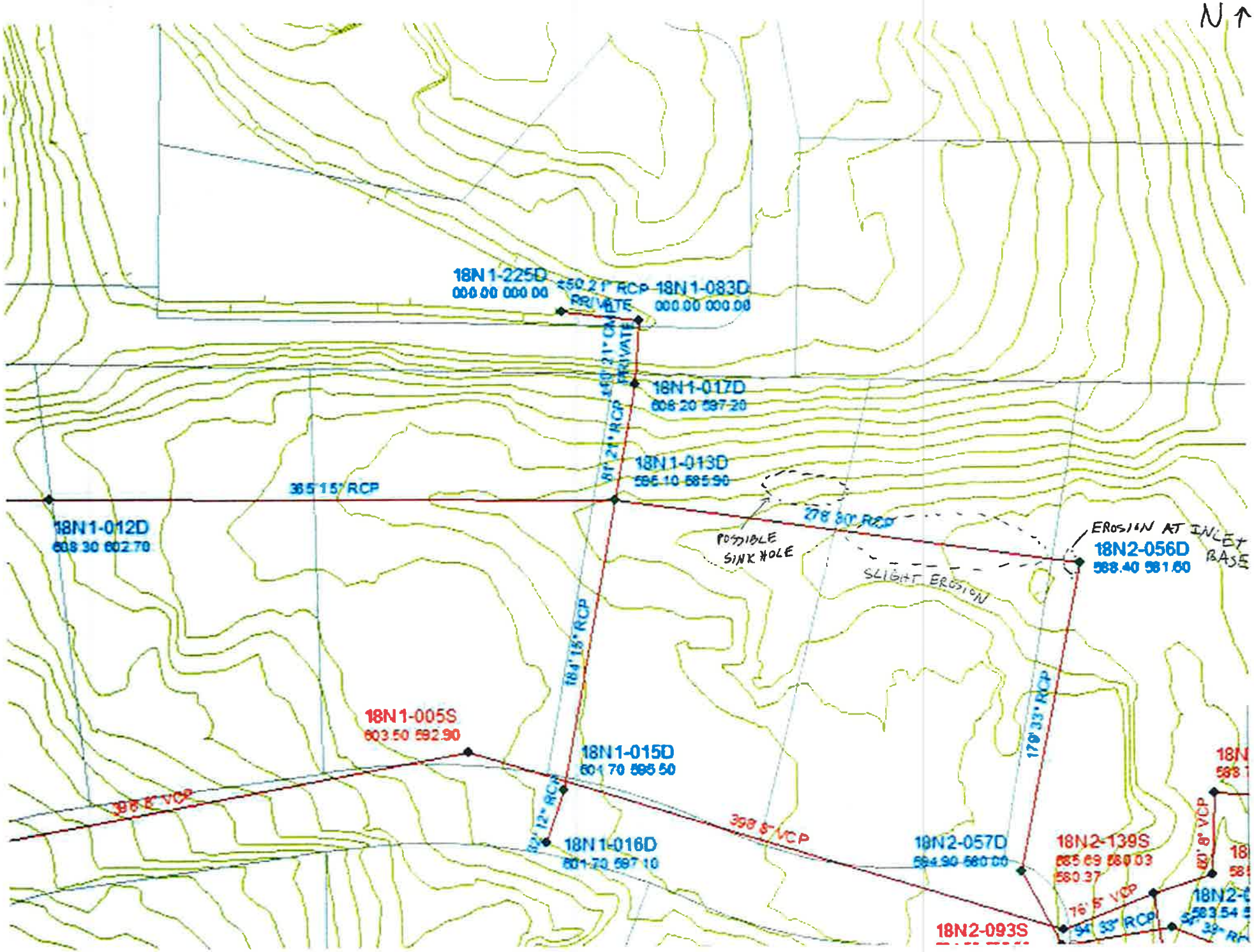
Field Crew: TJS

Date: 10-5-11

N ↑

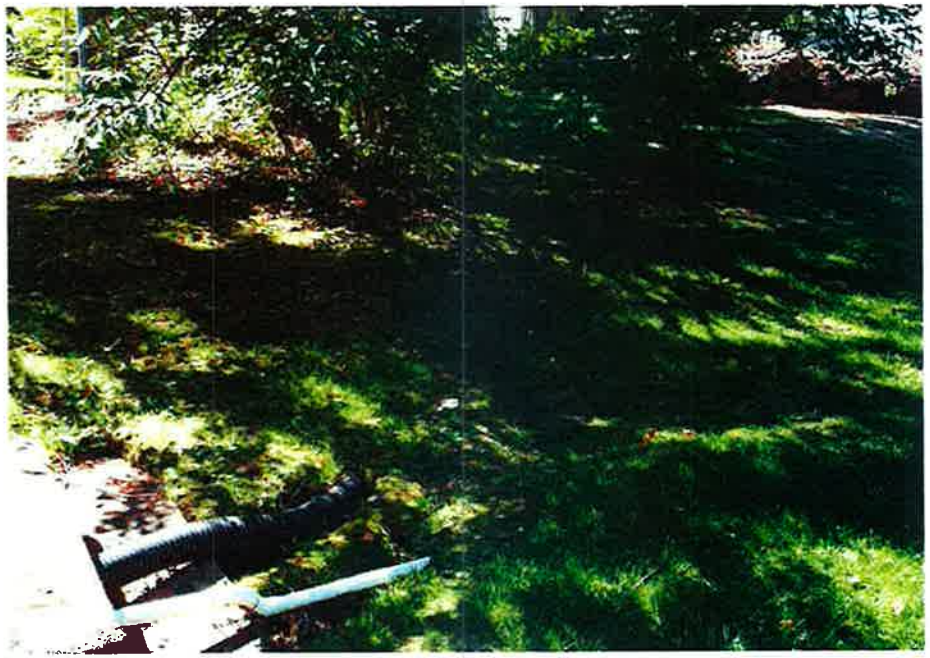
N MOSLEY RD
MOSLEY ACRES DR
13
12
11
432
1
2
3
4
5
6
7
8
422
418
11225
11217
11201
11204
11209
11212
TRI LANE DR
11215
360
11223
11217
11211
11205
11235
11229
11249
11201
TUREEN DR
11230
11240
11232
11226
11218
11210
11202
11243
320

Tri Ln
Tri Ln
Tureen Dr
Tureen Dr
N


N
18N1-225D
000.00 000.00
250.21' RCP
18N1-083D
000.00 000.00
PRIVATE
18N1-017D
606.20 597.20
18N1-013D
595.10 585.90
365.15' RCP
18N1-012D
608.30 602.70
278.80' RCP
POSSIBLE SINK HOLE
EROSION AT INLET BASE
18N2-056D
588.40 581.60
SLIGHT EROSION
184.15' RCP
170.33' RCP
18N1-005S
603.50 592.90
18N1-015D
601.70 595.50
398.8' VCP
398.8' VCP
18N1-016D
601.70 597.10
18N2-057D
594.90 580.00
18N2-139S
585.69 580.03
580.37
76.5' VCP
94.33' RCP
18N2-093S

EAST SIDE PROPERTY

EROSION AT BASE



MSD INLET (NE side of yard)

EROSION AT BASE

BACKYARD LOOKING EAST

BACKYARD

BACKYARD LOOKING WEST

BACKYARD

NEIGHBOR'S YARD LOOKING NORTH

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: West of Spoede b/t Olive and Ladue

Street Address: 6 and 7 Wedgewood Ln

MSD Map No. 17N2/17N3 **Complaint Reference:** ☐ **1999 Master Plan** _____

☒ **2010 Survey Response** 31/32

Original Description: ☒ **Erosion** ☒ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

Storm water has entered both homes.
Bank erosion has damaged lawn, trees, or fence.
New construction projects nearby have adversely caused runoff to effect homes.

Site Description and Observations (include creek or tributary name, if known):

Homeowner at 6 Wedgewood installed landscape riprap and silt fence to alleviate runoff from neighboring subdivision. No erosion observed. Ponding is possible in backyard and driveway. Slight erosion observed on north side of 7 Wedgewood. Ponding is possible in backyard although not evident.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

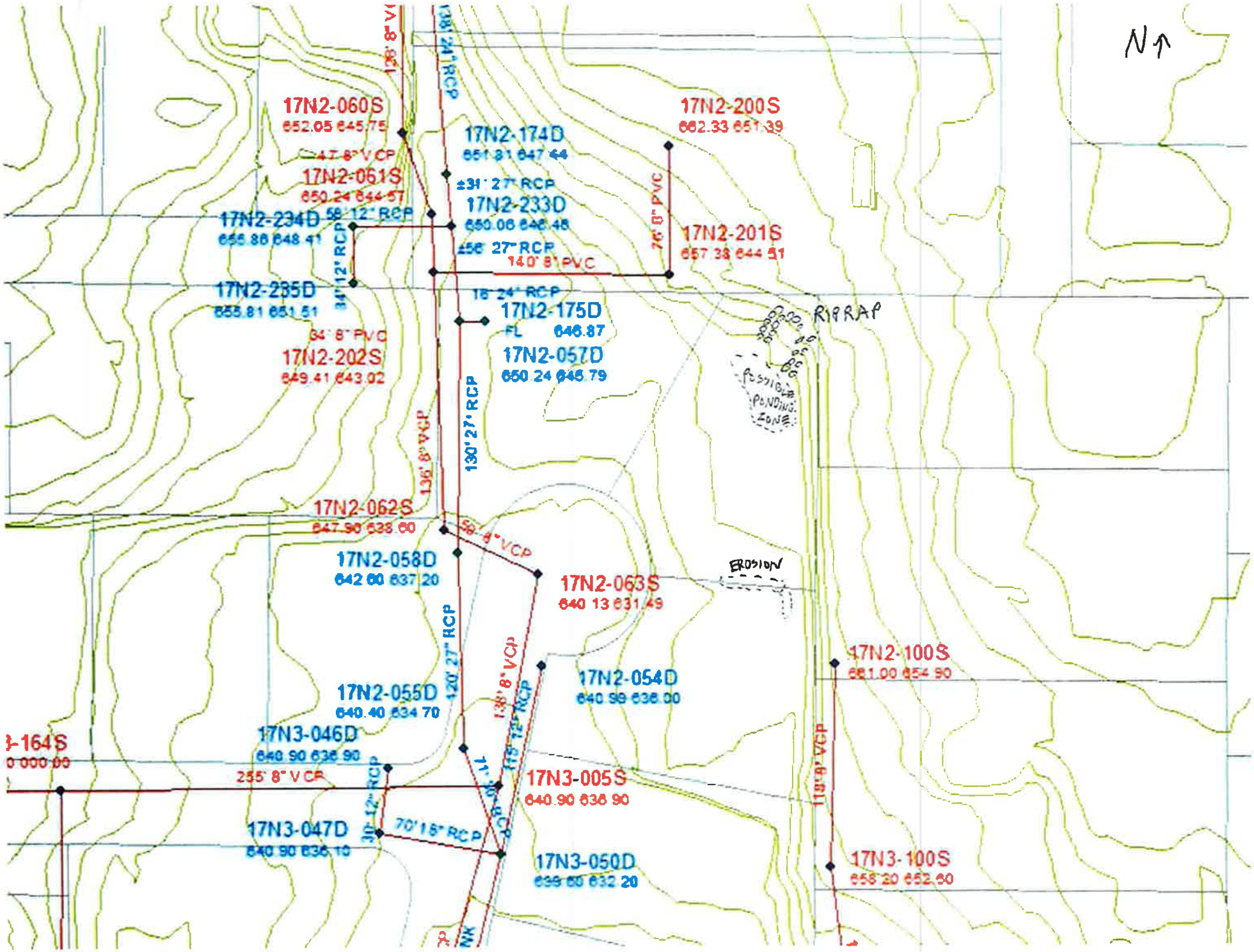
Field Crew: TSS

Date: 10-4-11

N

FARON HILL RD
WEDGEWOOD LN
GRAESER RD
DEAVER LN
LARKIN AVE
COLONIAL HILLS PKWY
LANGDON WAY CT

Colonial Hills Pkwy
Beaver Ln
Wedgewood Ln
N


N
17N2-060S
652.05 645.75
17N2-174D
651.31 647.44
17N2-200S
662.33 651.39
47.8" VCP
17N2-061S
650.24 644.57
±31' 27" RCP
17N2-233D
650.06 646.48
17N2-234D
656.86 648.41
58' 12" RCP
±56' 27" RCP
140' 8" PVC
76' 8" PVC
17N2-201S
657.38 644.51
17N2-235D
655.81 651.51
84' 12" RCP
18' 24" RCP
17N2-175D
FL 646.87
34' 8" PVC
17N2-202S
649.41 643.02
17N2-057D
650.24 646.79
RIPRAP
POSSIBLE PONDING ZONE
130' 27" RCP
136' 8" VCP
17N2-062S
647.90 638.60
58' 8" VCP
17N2-058D
642.00 637.20
17N2-063S
640.13 631.49
EROSION
120' 27" RCP
138' 8" VCP
17N2-100S
681.00 654.90
17N2-054D
640.99 636.00
17N2-055D
640.40 634.70
17N3-046D
640.90 636.90
-164S
0.000.00
255' 8" VCP
115' 12" RCP
17N3-005S
640.90 636.90
118' 8" VCP
30' 12" RCP
70' 15" RCP
17N3-047D
640.90 636.10
17N3-050D
639.60 632.20
17N3-100S
658.20 652.60

BACKYARD LOT 6

NORTH EAST CORNER LOT 6

BACKYARD LOT 6 FACING NORTH EAST

NORTH EAST CORNER LOT 6

NORTH SIDE ALONG LOT 7

NORTH EAST CORNER LOT 7

BACKYARD LOT 6

NORTH EAST CORNER LOT 7

NORTHEAST CORNER LOT 7

NORTHSIDE ALONG LOT 7

BACKYARD LOT 8

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: West of Spoede b/t Olive and Ladue

Street Address: 6 Wind Rush Creek East

MSD Map No. 18N2 **Complaint Reference:** ☐ **1999 Master Plan** _____

☒ **2010 Survey Response** 33

Original Description: ☒ **Erosion** ☐ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

The grass drainage swale in front of this house has experienced significant erosion over the past 10 years.

Site Description and Observations (include creek or tributary name, if known):

Severe channel erosion in front yard. Home owner explained that second pipe culvert was added after new home construction was completed upstream. To relieve street flooding, new curb inlets have been constructed which have contributed additional flow to channel. Water has reached 10 feet past top of channel bank at times according to home owner. Erosion on north side of headwall.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

Field Crew: TSS

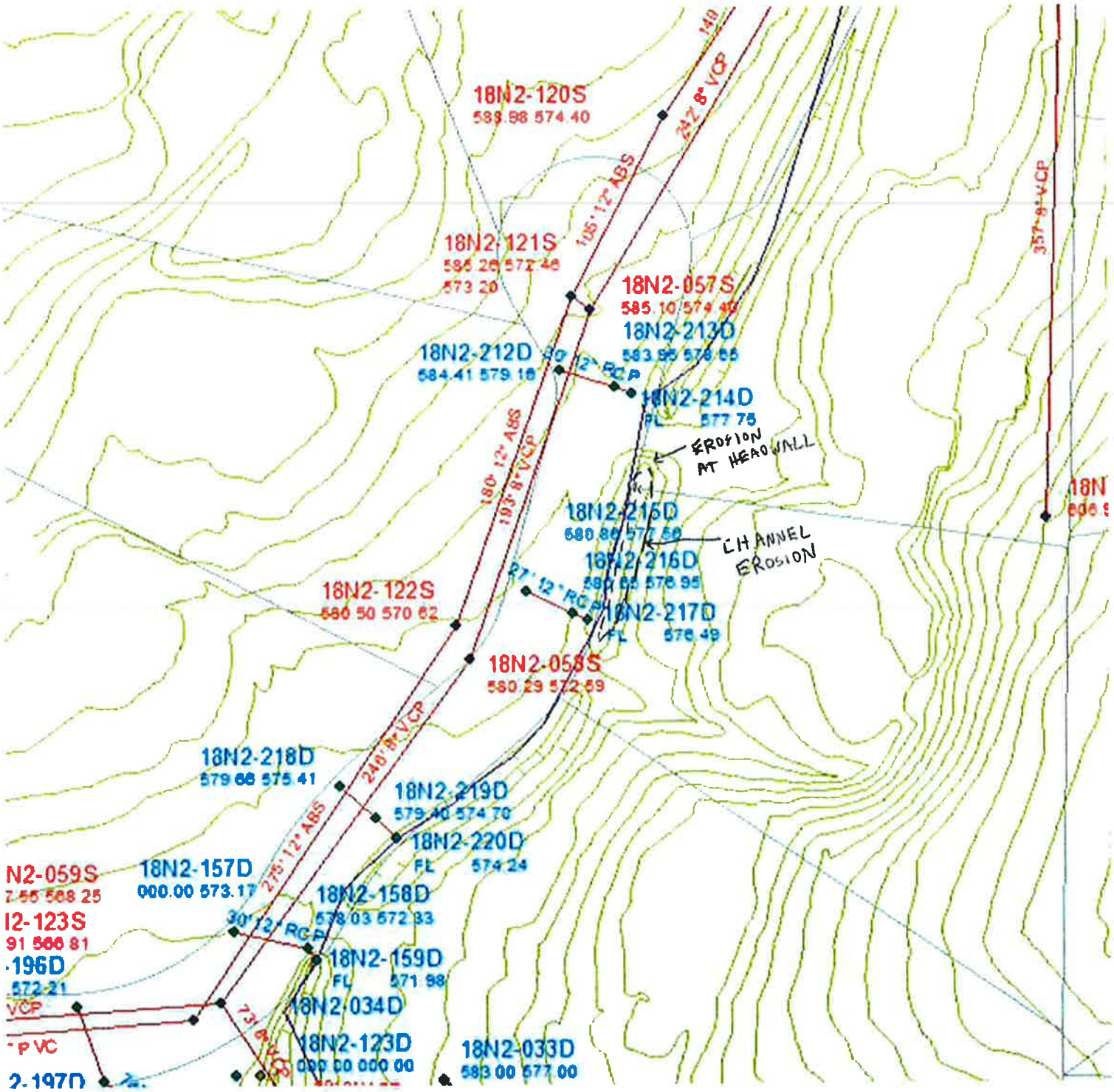
Date: 10-4-11

N ↑

NE MANOR DR
SPOEDE LN
WYNDTOP LN
GRAESER RD
GREVE COEUR
E WINDRUSH CRK
RONDELAY DR
RONDELAY CT
408
426
438
19
2
4
5
1
3
18
20
20
17
343
12
10
3
4
16
15
8
6
5
14
11
2
4
1
6
12
301
7
10
8
262
211
212
150
10933
10847
250
10921
10965
10909
10859
140
10966
10950
10930
10918
10854
134

N ↑

N↑


18N2-120S
583.98 574.40
242' 8" VCP
149
105' 12" ABS
18N2-121S
585.26 572.46
573.20
18N2-057S
585.10 574.40
18N2-213D
583.95 578.55
18N2-212D
584.41 579.18
30' 12" RCP
18N2-214D
FL 577.75
EROSION AT HEADWALL
180' 12" ABS
193' 8" VCP
18N2-215D
580.80 577.59
CHANNEL EROSION
18N2-216D
580.65 576.95
18N2-122S
580.50 570.62
87' 12" RCP
18N2-217D
FL 576.49
18N2-058S
580.29 572.59
248' 8" VCP
18N2-218D
579.66 575.41
18N2-219D
579.40 574.70
18N2-220D
FL 574.24
N2-059S
7.55 568.25
18N2-157D
000.00 573.17
275' 12" ABS
18N2-158D
578.03 572.33
I2-123S
91 566.81
30' 12" RCP
18N2-159D
FL 571.98
·196D
572.21
VCP
18N2-034D
P VC
18N2-123D
000.00 000.00
18N2-033D
583.00 577.00
2-197D
357' 8" VCP
18N
606.5

CORB INLETS IN STREET

FRONT YARD

FRONT YARD FACING NORTH

SOUTH HEADWALL

FRONT YARD

UPSTREAM SIDE OF CULVERTS

NORTH SET OF CULVERTS

UPSTREAM OF CULVERTS

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: WEST OF SPOEDE B/T LADUE and HWY 40

Street Address: 73 E. Ladue Estates Dr

MSD Map No. 18 N 3 **Complaint Reference:** ☐ **1999 Master Plan** _____

☒ **2010 Survey Response** 18

Original Description: ☐ **Erosion** ☒ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

Ponding water remains in yard after rainfall.
the ground on either side of property line b/t Lot 71/73 is always saturated.

Site Description and Observations (include creek or tributary name, if known):

Backyard between Lot 71 and 73 was presently soggy. Homeowner of Lot 71 explained that water runs through backyards. Areas of backyard pond due to insufficient slope. A portion of runoff diverges from the backyard and drains b/t the houses. No erosion was observed. Home owner of Lot 73 placed rock landscaping around trees possibly to protect trees from flooding.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

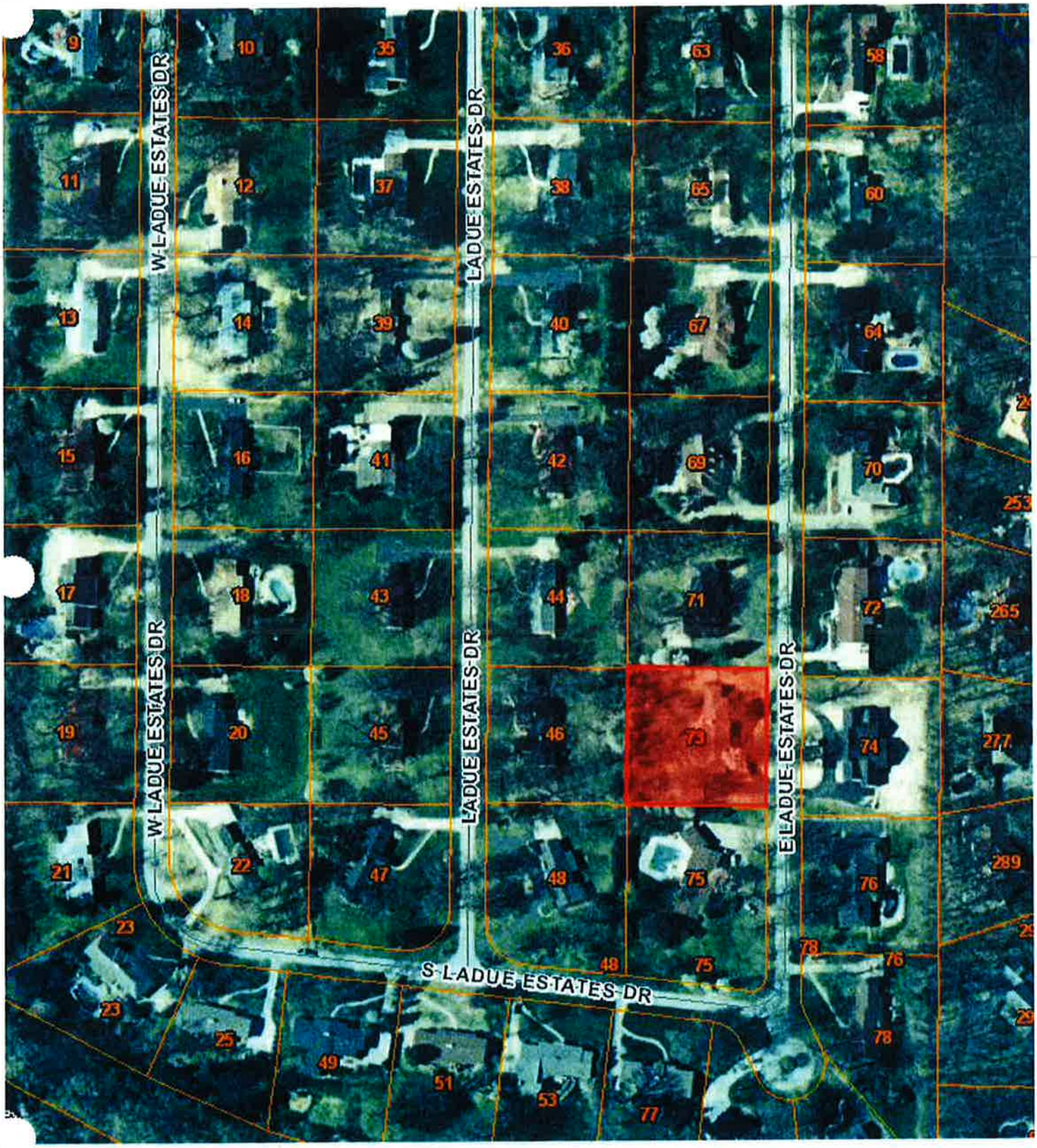
☒ **Aerial photo**

☒ **Site photos**

Field Crew: TSS

Date: 10-12-11

N ↑


W LADUE ESTATES DR
LADUE ESTATES DR
E LADUE ESTATES DR
S LADUE ESTATES DR
9
10
35
36
63
58
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12
37
38
65
60
13
14
39
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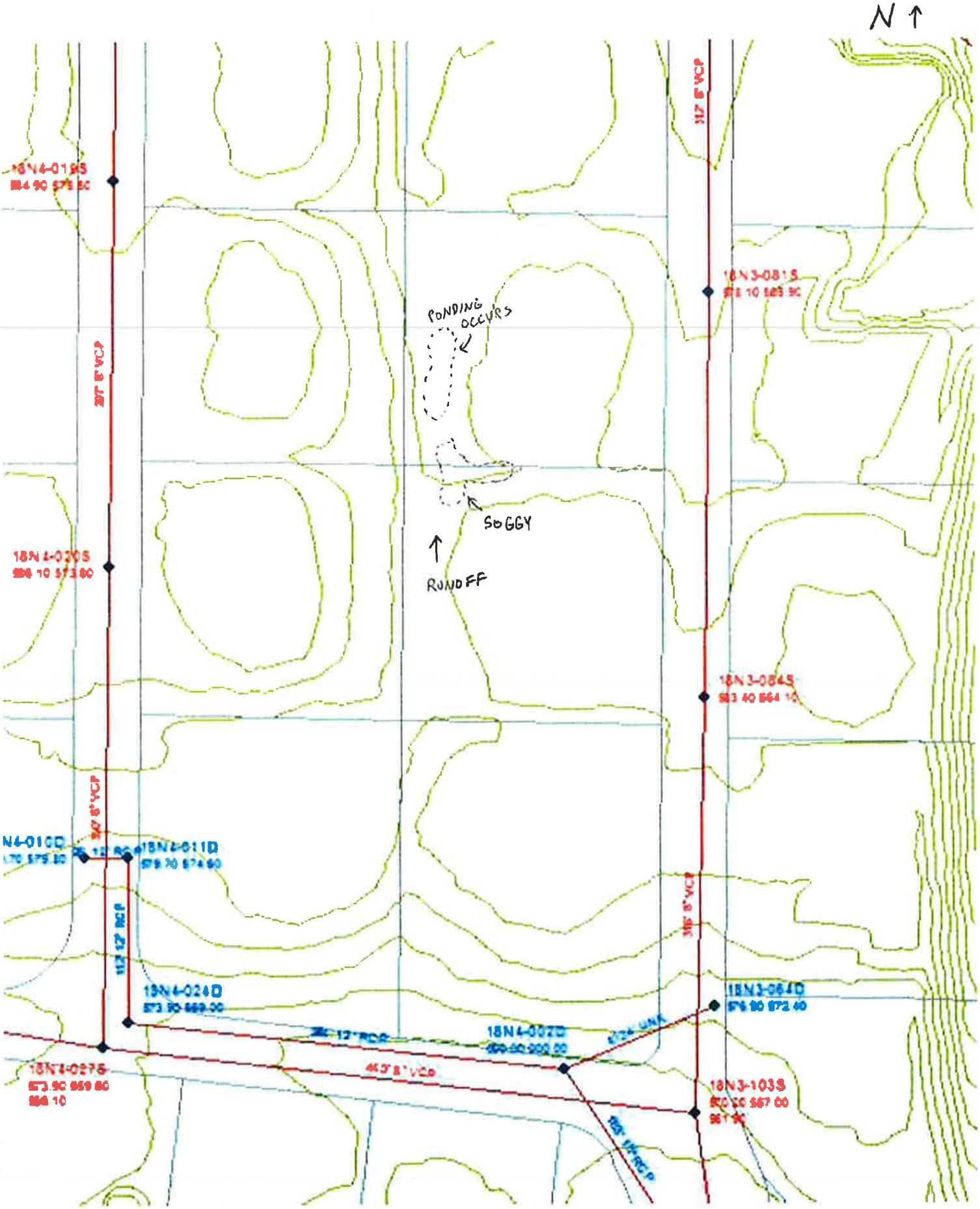
78
253
265
277
289

N


N
PONDING OCCURS
SOGGY
RUNOFF
18N4-019S
18N3-081S
18N4-020S
18N3-084S
18N4-010D
18N4-011D
18N4-024D
18N3-064D
18N4-002D
18N4-027S
18N3-103S

B/T LOT 71 and 73

BACKYARD B/T LOT 71 and 73

B/T LOT 71 and 73

B/T LOT 71 and 73

FACING NORTH IN BACKYARD LOT 71

FACING SOUTH IN BACKYARD LOT 73

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: East of Spoede b/t Ladue and HWY 40

Street Address: 2 Spoede Acres

MSD Map No. 18N3 **Complaint Reference:** ☒ **1999 Master Plan** 4-6

☒ **2010 Survey Response** 28

Original Description: ☒ **Erosion** ☒ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

Storm water has entered home through leaks in walls or floor

The rear and west side of home seem to always become river when there is significant rainfall which has eroded yard.

Creek erosion behind homes.

Site Description and Observations (include creek or tributary name, if known):

Yard on west side of Lot 2 has been damaged from runoff. Backyard has been eroded from runoff from adjacent yards. An area inlet exists in backyard, but runoff does not drain properly.

Backyard of Lot 1 has same issue in which adjacent runoff drains into yard. Home owner has installed a drain to alleviate problem.

Lot 3 had no evidence of erosion in backyard.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

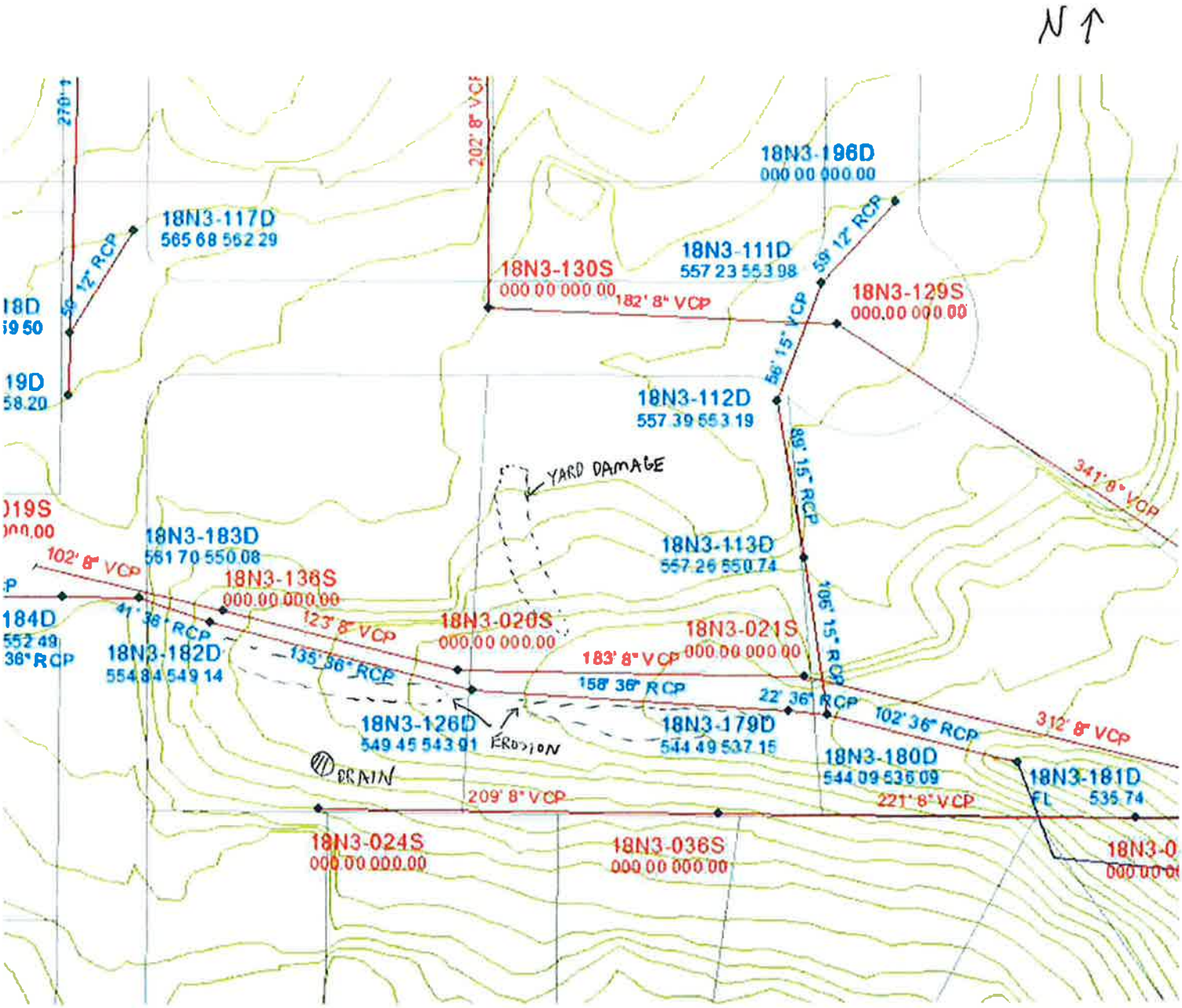
Field Crew: TJS

Date: 10-12-11

N ↑

OAK PARK CT
S SPOEDE RD
SPOEDE VIEW CT
W WHITE BRIDGE
SPOEDE ACRES ST
OAK PARK DR
CHAMINADE DR

N ↑


N
18N3-196D
000 00 000 00
18N3-117D
565 68 562 29
18N3-111D
557 23 553 98
18N3-130S
000 00 000 00
182' 8" VCP
18N3-129S
000.00 000.00
18N3-112D
557 39 553 19
YARD DAMAGE
341' 8" VCP
18N3-183D
561 70 550 08
18N3-113D
557 26 550 74
102' 8" VCP
18N3-136S
000.00 000.00
123' 8" VCP
18N3-020S
000.00 000.00
18N3-021S
000.00 000.00
183' 8" VCP
158' 36" RCP
22' 36" RCP
102' 36" RCP
312' 8" VCP
18N3-182D
554 84 549 14
135' 36" RCP
18N3-126D
549 45 543 91
ERROSION
18N3-179D
544 49 537 15
18N3-180D
544 09 535 09
18N3-181D
535 74
DRAIN
209' 8" VCP
221' 8" VCP
18N3-024S
000 00 000.00
18N3-036S
000 00 000 00

FRONT YARD B/T LOT 1 and 2

YARD DAMAGE WEST SIDE LOT 2

FRONT YARD B/T LOT 1 and 2

B/T LOT 1 and 2

BACKYARD LOT 2

(LOT 2)
BACKYARD FACING WEST

BACKYARD LOT 2

BACKYARD FACING EAST
(LOT 2)

BACKYARD LOT 1 (FACING EAST)

BACKYARD LOT 1 (FACING SOUTH)

BACKYARD (LOT 2) FACING NORTH

BACKYARD LOT 1 (FACING SOUTH)

BACKYARD LOT 3

BACKYARD LOT 3

BACKYARD LOT 3

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: East of Spoede b/t Ladue and HWY 40

Street Address: 10677 Spoede View Ct.

MSD Map No. 18 N 3 **Complaint Reference:** ☒ **1999 Master Plan** 4-7

☐ **2010 Survey Response** _____

Original Description: ☒ **Erosion** ☐ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

Creek erosion behind 10667, possible related to undersized culvert under Ladue Rd.

Site Description and Observations (include creek or tributary name, if known):

Creek erosion is evident behind 10677. Creek erosion was also evident along east side of creek downstream of headwall. Erosion along sides of headwall.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

Field Crew: TSS

Date: 10-12-11

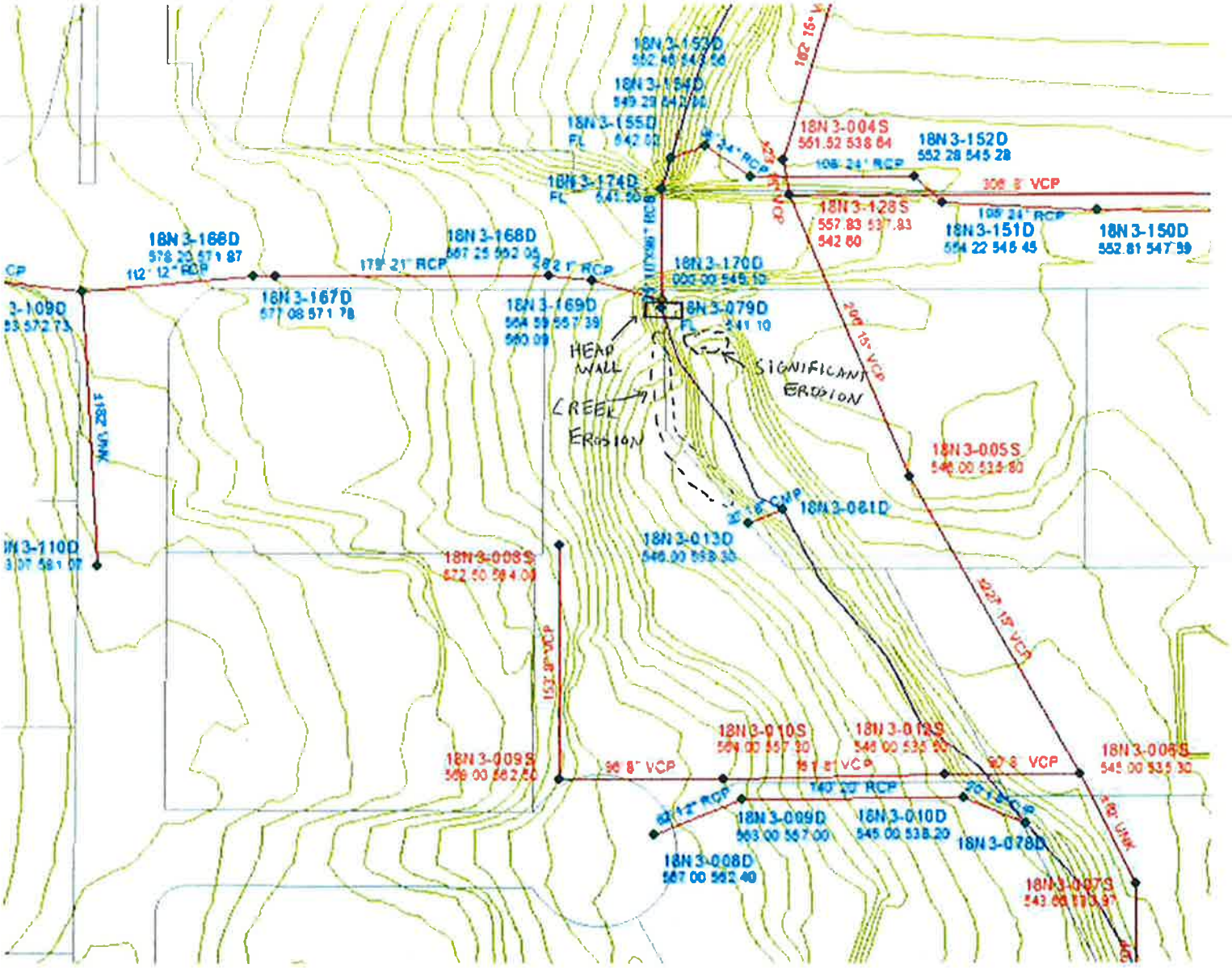
N ↑

141
131
131
125
331
10825
10801
10801
N SPOEDE RD
10675
BRODSKY GIR
RABBI ALVAN D RUBIN DR
LADUE RD
LADUE RD
1
1
10694
10656
10622
2
15
10677
2
26
23
25
SPOEDE VIEW CT
S SPOEDE RD
W WHITE BRIDGE LN
10469
44
10651
37
3
105
WHITE
110
7
6
10530
10500
111
119
120
8
5
115
44

N ↑

N Spoede Rd
AB
AB
Ladue Rd
S Spoede Rd
Spoede View Ct
Spoede View Ct

N ↑


18N3-153D
18N3-154D
18N3-155D
18N3-174D
18N3-004S
18N3-152D
18N3-128S
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18N3-150D
18N3-166D
18N3-168D
18N3-167D
18N3-169D
18N3-170D
18N3-079D
18N3-081D
18N3-013D
18N3-005S
18N3-008S
18N3-009S
18N3-010S
18N3-012S
18N3-006S
18N3-009D
18N3-010D
18N3-078D
18N3-008D
18N3-007S
HEAP WALL
CREEK EROSION
SIGNIFICANT EROSION

LOOKING DOWN ALONG CREEK BANK

FACING SOUTHWEST AT CREEK BANK

BEHIND 10677 FENCE

LOOKING DOWN ALONG CREEK BANK

FACING SOUTHWEST AT CREEK BANK

CULVERT UNDER LADUE RD

FACING SOUTHWEST AT CREEK BANK

FACING SOUTHWEST AT CREEK BANK

SIGNIFICANT EROSION SOUTH EAST OF CULVERT

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: EAST OF SPOEDE B/T OLIVE and LADUE

Street Address: 10671 Country View Dr.

MSD Map No. 17N3 **Complaint Reference:** ☒ **1999 Master Plan** 3-20

☒ **2010 Survey Response** 12

Original Description: ☒ **Erosion** ☒ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

Runoff from homes above causing significant erosion of hillside and ponding in yard.

Site Description and Observations (include creek or tributary name, if known):

Insufficient drainage path for runoff in homeowner's back yard from After discussion with home owner, flooding and ponding occurs after each rainfall event. Home owner installed 6 drains in attempt to relieve problem. Original swale has been disturbed by subsequent development. Swale is no longer functional. Homeowner experiences no flooding into house.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

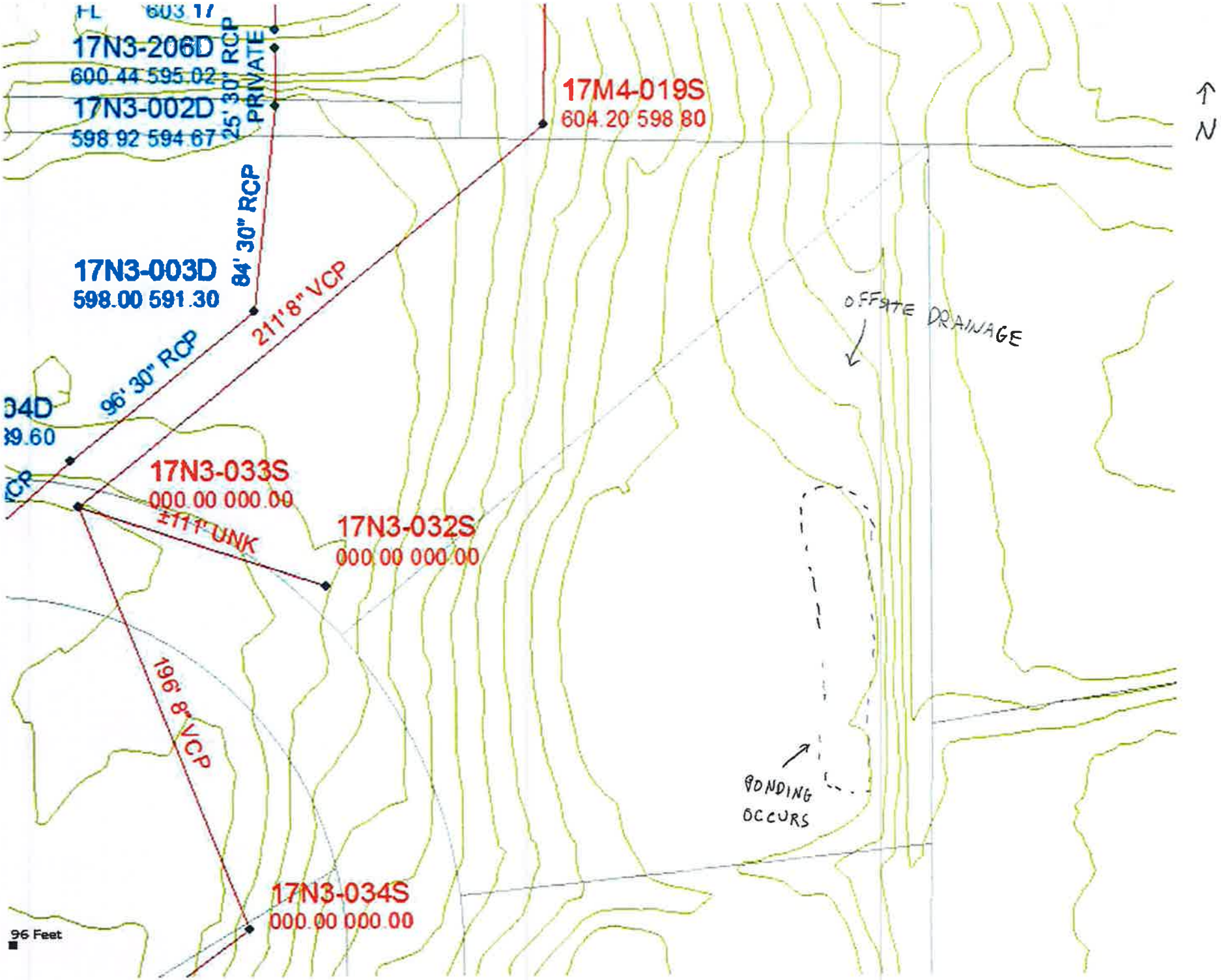
Field Crew: SR/TJS

Date: 9-29-11

N ↑

N SP
HUNTINGTON LN
WINDSOR TERRACE LN
KINGSBRIDGE ESTATES DR
N SPOEDE RD
COUNTRY VIEW DR
COUNTRY VIEW DR
26
18
10
35
17
9
3
21
25
10707
28
10707
10703
10701
10721
10706
10702
10700
10706
425
510
10677
10671
10611
10600
10687
10695
10680
10621
10663
10688
10672
10694
10635
10651
10664
420
10656
412
10648
10640
100 m

N


FL 603.17
17N3-206D
600.44 595.02
17N3-002D
598.92 594.67
25' 30" RCP
PRIVATE
17M4-019S
604.20 598.80
N
84' 30" RCP
17N3-003D
598.00 591.30
211'8" VCP
96' 30" RCP
OFFSITE DRAINAGE
04D
9.60
17N3-033S
000.00 000.00
±111' UNK
17N3-032S
000.00 000.00
196' 8" VCP
PONDING
OCCURS
17N3-034S
000.00 000.00
96 Feet

BACKYARD

BACKYARD

BACKYARD

BACKYARD (ALONG BERM)

BACKYARD

NORTH SIDE OF HOUSE

BACKYARD (ALONG BERM)

BACKYARD

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: West of Spoede b/t Ladue and HWY 40

Street Address: 3 Oak Park Court

MSD Map No. 18N3 **Complaint Reference:** ☒ **1999 Master Plan** 1-8

☐ **2010 Survey Response** _____

Original Description: ☐ **Erosion** ☒ **Flooding** ☒ **Inadequate Sewer Capacity** ☐ **Other**

Dead end street has poorly constructed inlet and paved flume at south end which are easily clogged and cannot properly channel stormwater runoff. Side yard #3 is headwater for small creek and is poorly drained.

Site Description and Observations (include creek or tributary name, if known):

Curb and gutter upstream of grate inlet covered with debris and leaves. Grate inlet was completely covered when arriving at site. Runoff from street flows through the inlet or can flow through paved flume. Grate inlet discharges to side yard of #3, where rip rap has been placed leading to creek. Appears to drain properly.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

Field Crew: TJS

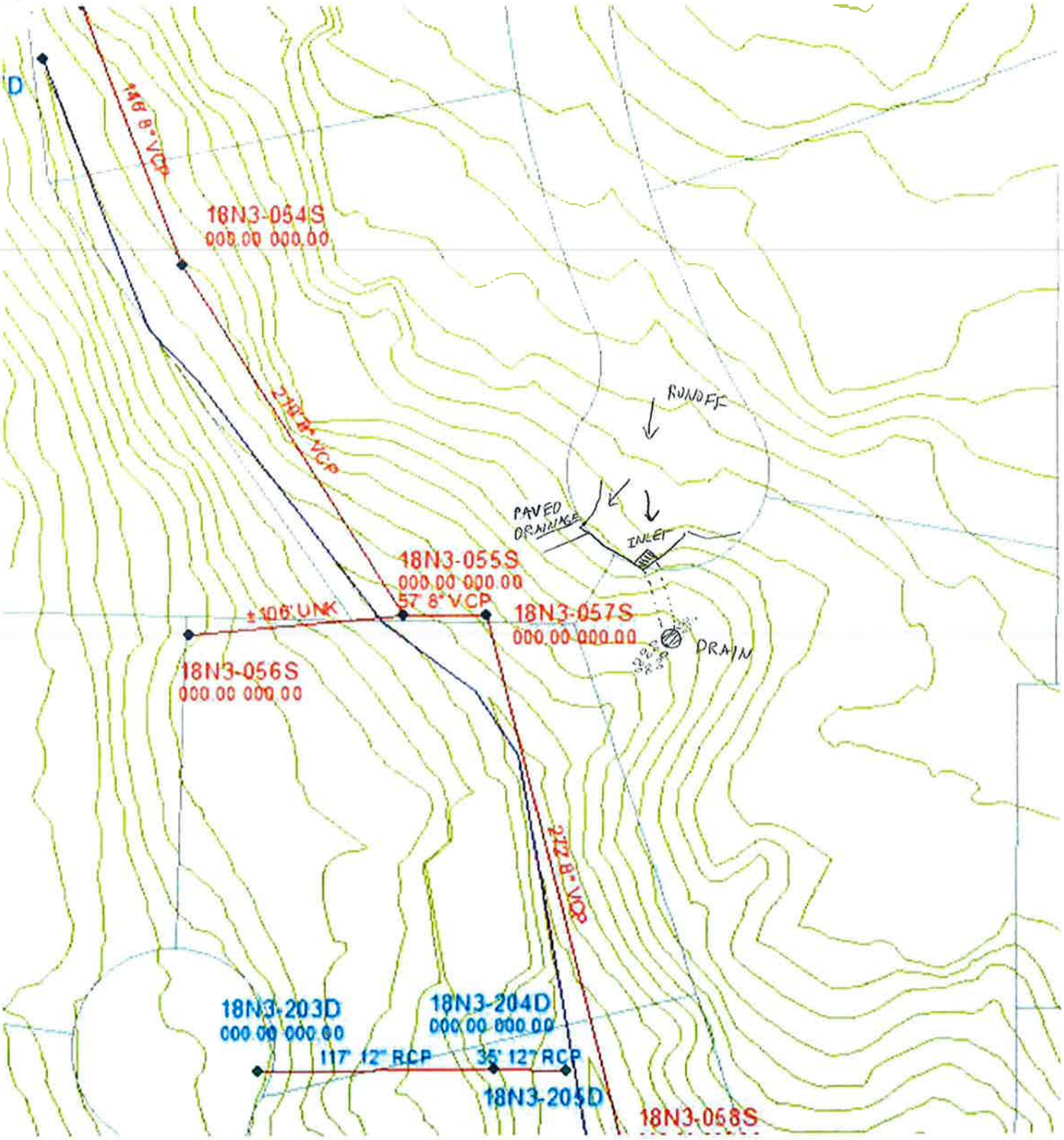
Date: 10-12-11

N ↑

LADUE RD
LADUE RD
OAK PARK CT
OAK PARK DR
OAK PARK DR
S SPOEDE RD
S SPOEDE RD
SPOEDE VIEW CT
10901
10801
10801
10694
10860
10900
5
1
1
15
2
4
26
25
44
40
41
105
110
111
39
42
119
120
38
43
44
123
37
1
2
36
17
291
294
2
3
35
18
297

N ↑

N↑


D
146' 8" VCP
18N3-054S
000.00 000.00
210' 8" VCP
RUNOFF
PAVED DRAINAGE
INLET
18N3-055S
000.00 000.00
57' 8" VCP
±106' UNK
18N3-057S
000.00 000.00
DRAIN
18N3-056S
000.00 000.00
272' 8" VCP
18N3-203D
000.00 000.00
18N3-204D
000.00 000.00
117' 12" RCP
35' 12" RCP
18N3-205D
18N3-058S

FACING SOUTH DOWN OAK PARK

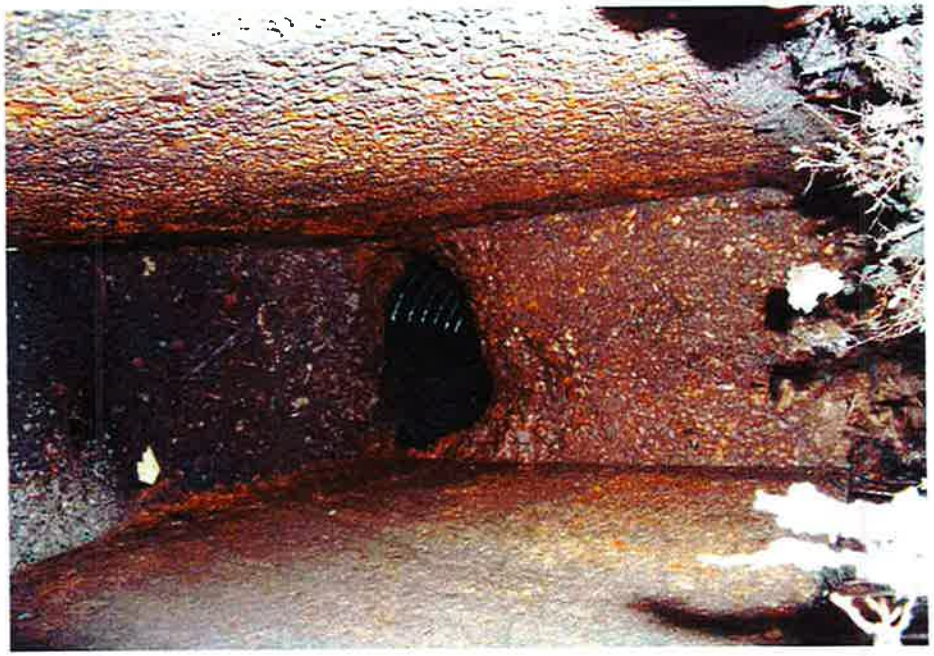
GRATE INLET

FACING NORTH UP OAK PARK

CULDESAC

CURB AND GUTTER FILLED WITH LEAVES

BURIED DISCHARGE PIPE



INSIDE INLET

GRATE INLET

DISCHARGE DRAIN

OTHER SIDE CURB AND GUTTER

DISCHARGE DRAIN

OTHER SIDE CURB AND GUTTER

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: East of Spoede b/t Ladue and HWY 40

Street Address: 12-17 Chaminade Dr.

MSD Map No. 18 M 4 **Complaint Reference:** ☐ **1999 Master Plan** _____

☒ **2010 Survey Response** 7

Original Description: ☒ **Erosion** ☐ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

Erosion may soon damage a pedestrian bridge.
Creek erosion has damaged concrete banks of the creek and pedestrian bridge that services the adjacent high school.

Site Description and Observations (include creek or tributary name, if known):

Creek retaining wall upstream of bridge has collapsed. Retaining wall downstream of bridge is cracked and eroded at bottom. Significant creek erosion along upstream and downstream banks, (tree roots exposed) Concrete slabs appear to have been placed under bridge to protect bridge piers.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

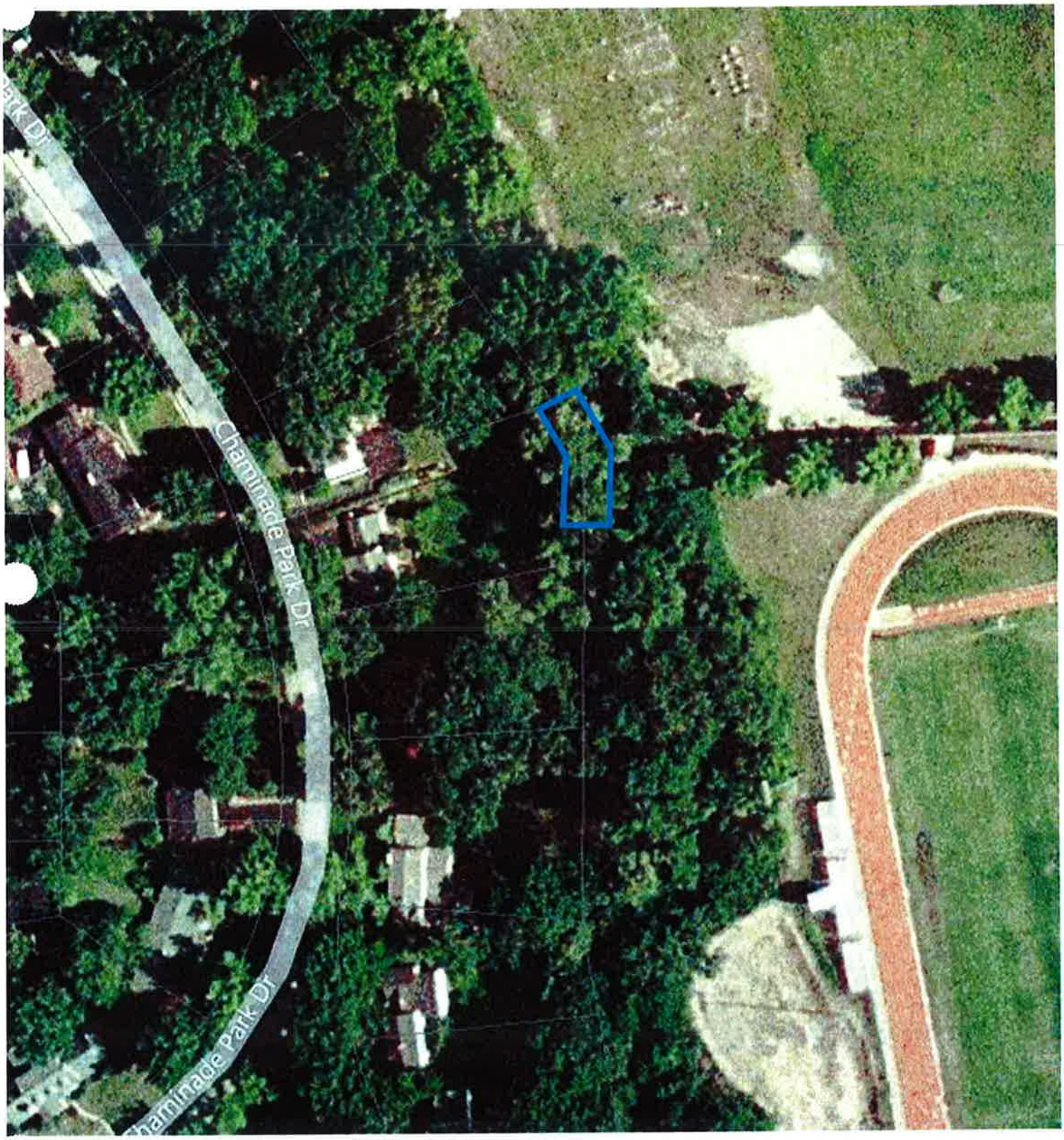
Field Crew: TJS

Date: 10-12-11

N ↑

OAK PARK DR
S SPOEDE RD
CHAMINADE DR
NOTRE DAME DR
CHAMINADE DR

N ↑



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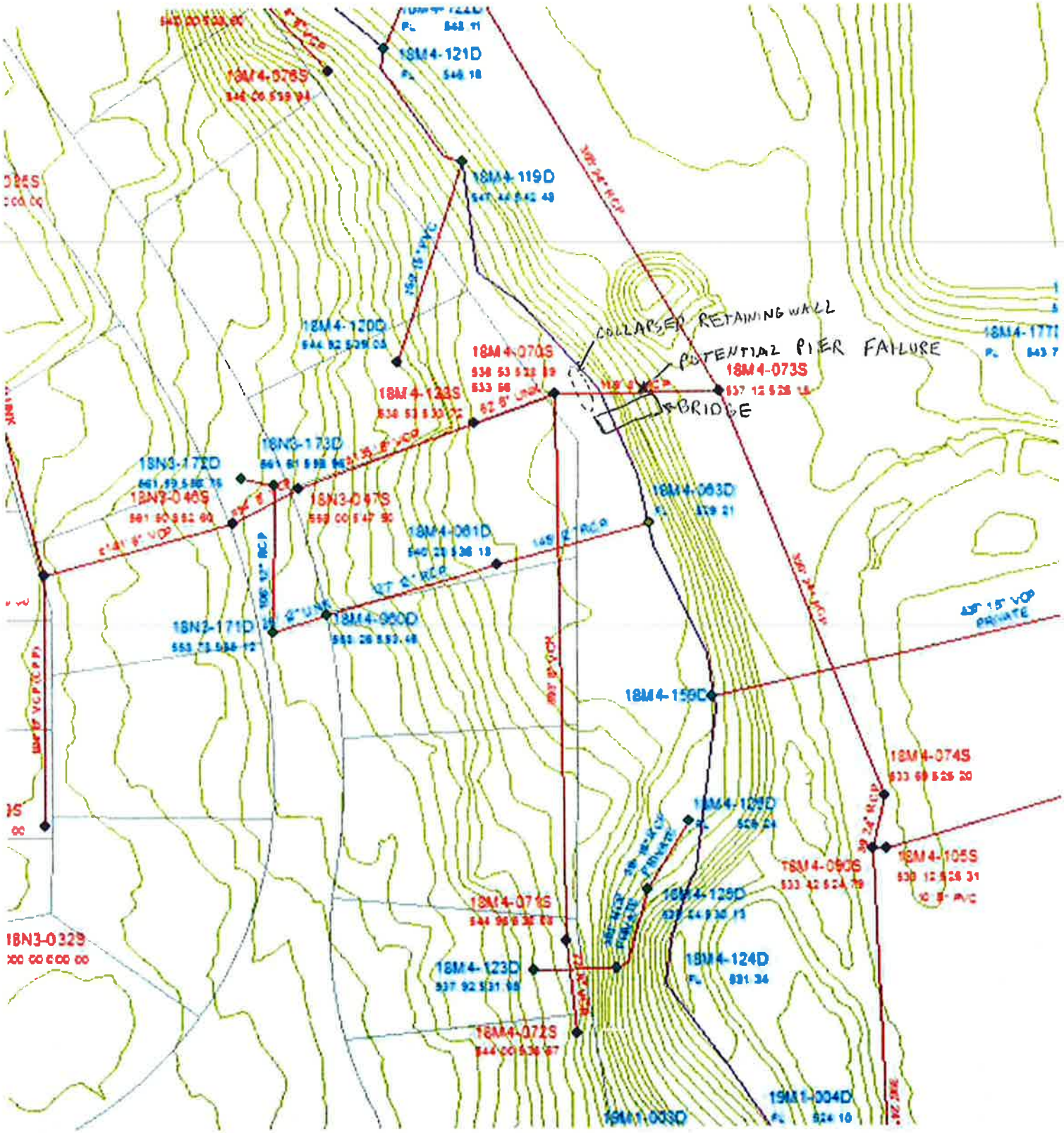

18M4-121D
18M4-119D
18M4-120D
18M4-070S
18M4-073S
18M4-123S
COLLAPSED RETAINING WALL
POTENTIAL PIER FAILURE
BRIDGE
18M4-177I
18N3-173D
18N3-172D
18N3-046S
18N3-047S
18M4-063D
18M4-061D
18N2-171D
18M4-060D
18M4-159D
18M4-074S
18M4-105S
18M4-071S
18M4-123D
18M4-124D
18M4-072S
18N3-032S
19M1-004D
19M1-003D

DOWNSTREAM OF BRIDGE

UPSTREAM CREEK

UPSTREAM OF BRIDGE

UPSTREAM CREEK

BRIDGE PIERS EXPOSED

BRIDGE PIERS

UPSTREAM

UPSTREAM

DOWNSTREAM

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: WEST OF SPOEDE B/T OLIVE and LADUE

Street Address: 77 Colonial Hills Dr.

MSD Map No. 17 N3 **Complaint Reference:** ☐ **1999 Master Plan** _____

☒ **2010 Survey Response** 9

Original Description: ☒ **Erosion** ☒ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

Flooding in yard.
Ponding water in yard.
Bank erosion damaging lawn, trees, and fence.
Runoff from neighbor's drain pipes flows onto yard.

Site Description and Observations (include creek or tributary name, if known):

Home owner's yard has visible erosion damage. Present gully erosion along property line. Significant channel erosion on downstream side of culvert. Verified neighbor's drainage pipes flowing onto yard. Location of damage is > 100 ft from house. Marshy and soft ground conditions visible after a week with no rainfall.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

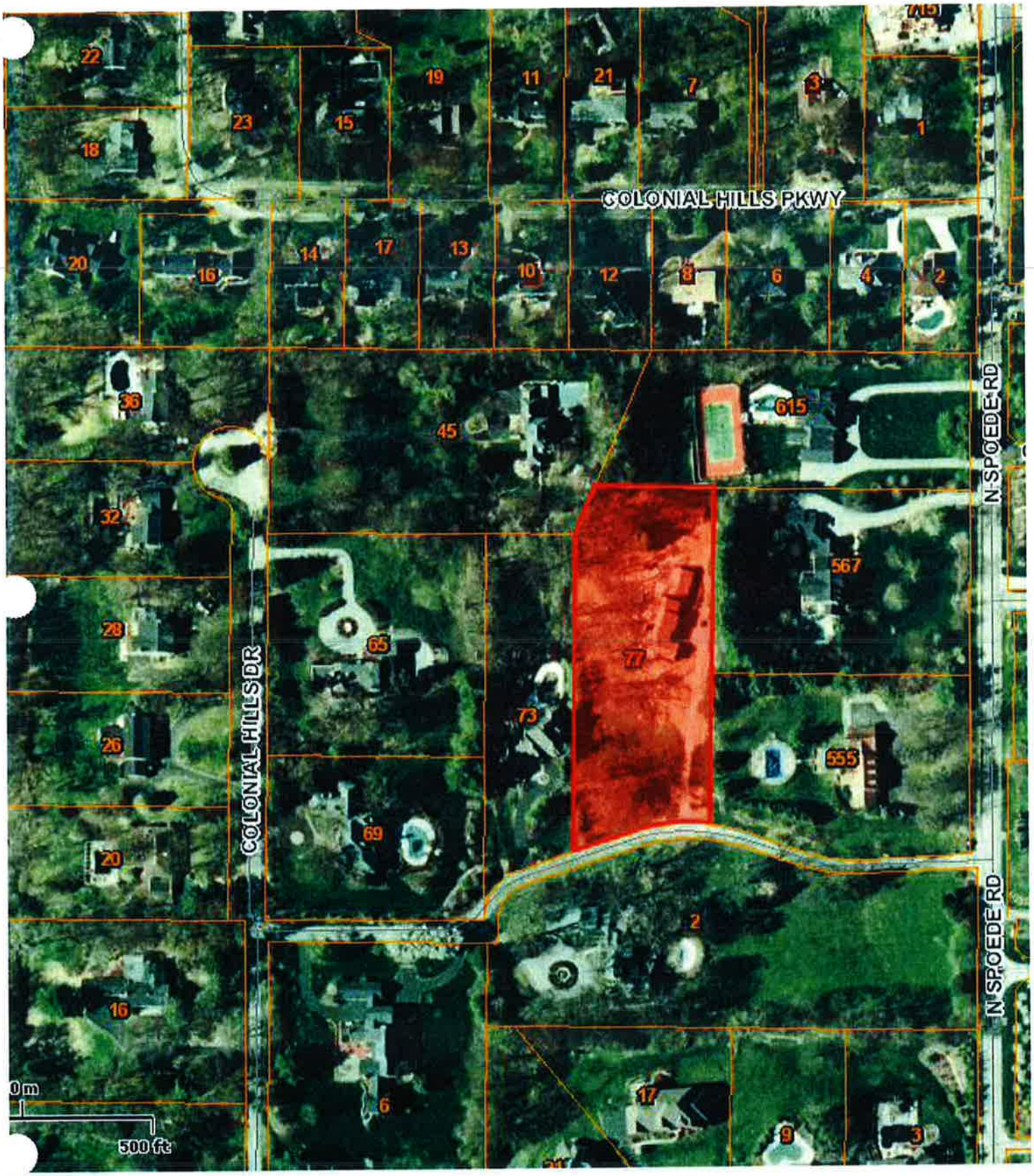
☒ **Aerial photo**

☒ **Site photos**

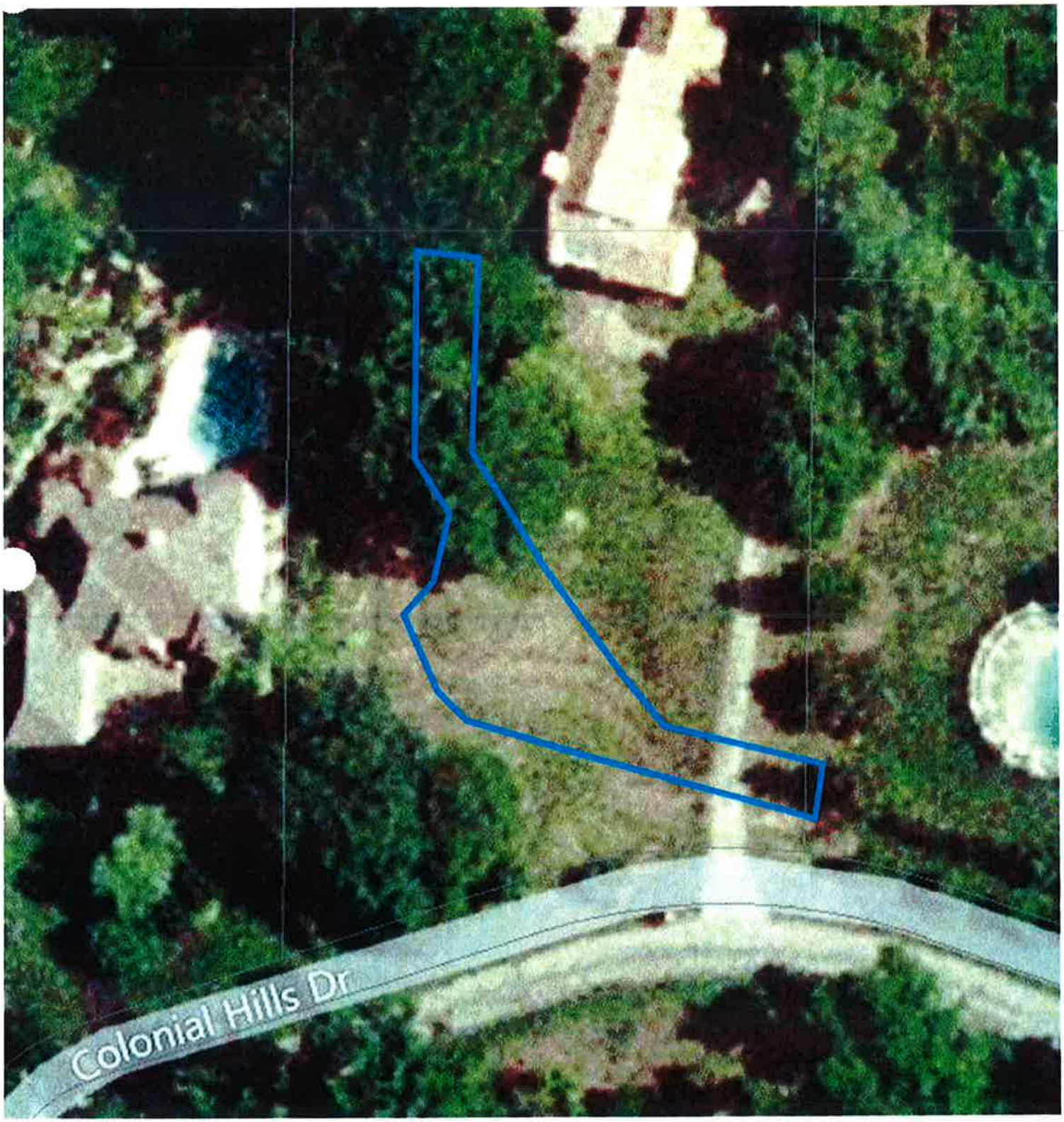
Field Crew: SR / TJS

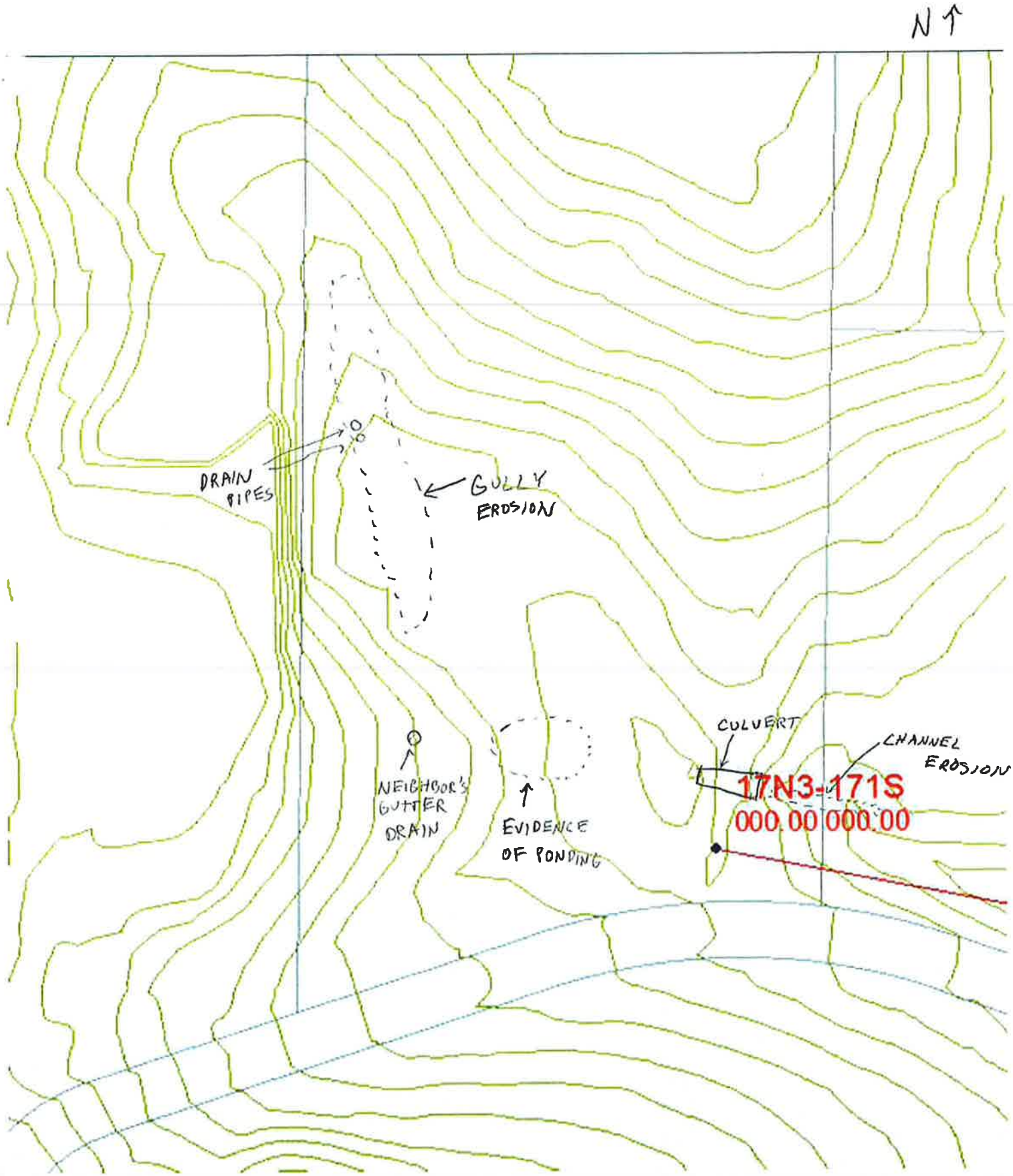
Date: 9-29-11

N ↑


COLONIAL HILLS PKWY
COLONIAL HILLS DR
N SPOEDE RD
N SPOEDE RD
22
23
15
19
11
21
7
3
1
18
20
16
14
17
13
10
12
8
6
4
2
36
45
615
32
567
28
65
77
73
26
555
69
20
2
16
6
17
9
3
0 m
500 ft

N ↑




N
DRAIN PIPES
GULLY EROSION
NEIGHBOR'S GUTTER DRAIN
EVIDENCE OF PONDING
CULVERT
CHANNEL EROSION
17N3-171S
000.00 000.00

HOME OWNER'S LOT

DOWNSTREAM SIDE OF CULVERT

UPSTREAM SIDE OF CULVERT

UPSTREAM SIDE OF CULVERT

DOWNSTREAM OF CULVERT

NEIGHBOR'S DRAINAGE

DOWNSTREAM SIDE CULVERT

UPSTREAM CULVERT (MARSHY GROUND)

SWALE ALONG TREE LINE

NEIGHBOR'S DRAIN PIPES

SWALE ALONG TREE LINE

SWALE ALONG TREE LINE

SWALE ALONG TREE LINE

LOOKING DOWNSTREAM OF SWALE

SWALE ALONG TREE LINE

LOOKING AT SOUTHWEST CORNER OF HOME

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: West of Spoede b/t Olive and Ladue

Street Address: 859 Larkin Ave.

MSD Map No. 17N2 **Complaint Reference:** ☐ **1999 Master Plan** _____

☒ **2010 Survey Response** 21

Original Description: ☒ **Erosion** ☒ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

Water has entered through home.
Ponding water remains in yard after rainfall.
Bank erosion has damaged lawn, trees, or fence.
There are no storm water sewers to handle runoff on Larkin Ave.
Ditches have been naturally backfilled over the years

Site Description and Observations (include creek or tributary name, if known):

Culvert under driveway has become backfilled. Evidence of erosion in front yard. Looks like home owner attempted to excavate some of lawn to prevent flooding. Runoff has created new drainage path along south side of property rather than following the existing drainage path along Larkin that has been backfilled.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

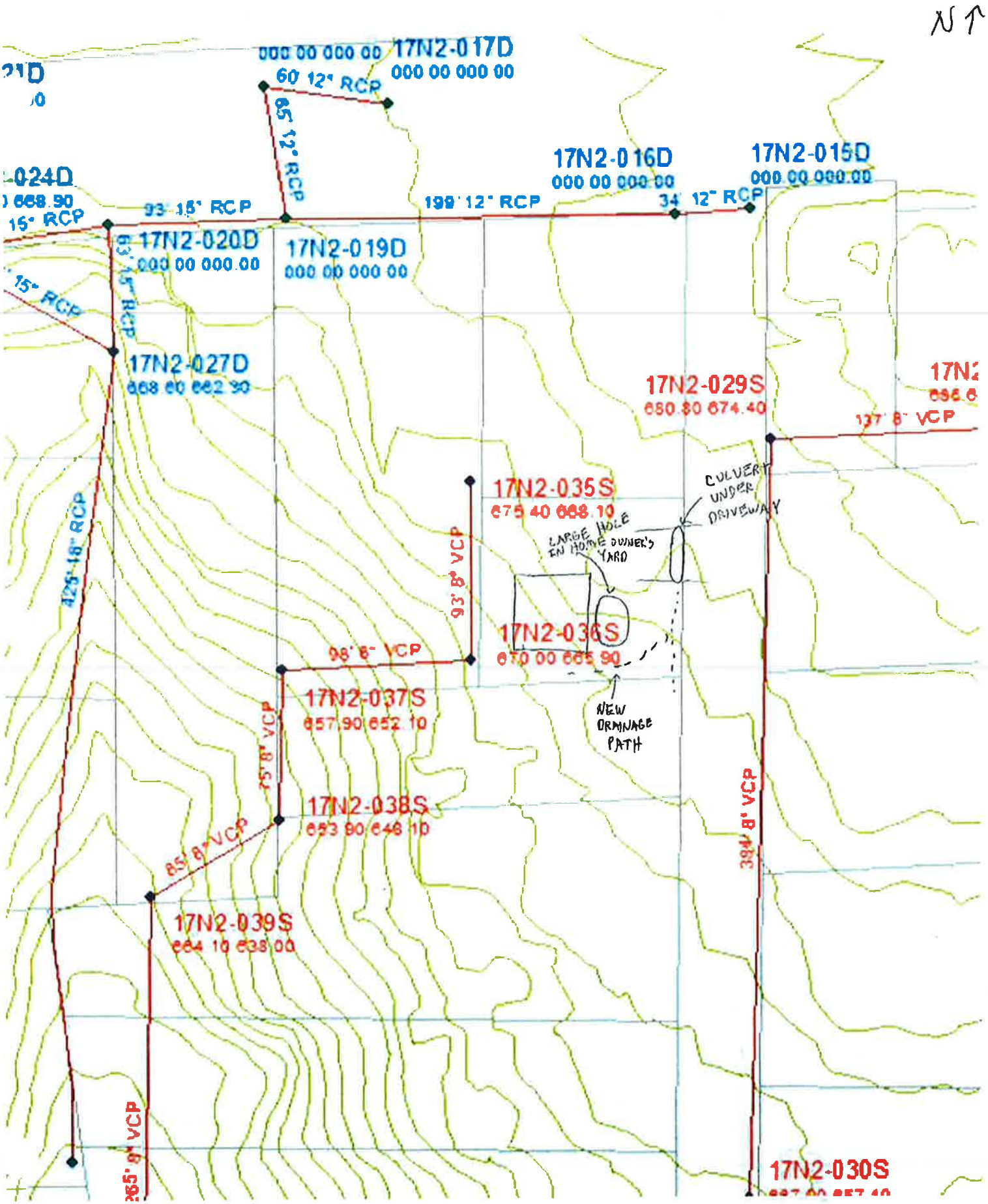
Field Crew: TJS

Date: 10-4-11

10839
N BAR
0827
OLIVE BLVD
SONA LN
SONA LN
LARKIN AVE
LARKIN AVE
AVE
1
2
2
3
4
5
10842
10838
10830
10830
10838
10842
859
855
847
843
839
835
868
10820
10816
10812
10800
862
862
10800
856
851
850
841
838
833
832

N ↑

Olive Blvd
340
Olive Blvd
Larkin Ave
Larkin Ave
N


N
17N2-017D
000 00 000 00
60' 12" RCP
85' 12" RCP
17N2-016D
000 00 000 00
17N2-015D
000 00 000 00
199' 12" RCP
34' 12" RCP
93' 15" RCP
17N2-020D
000 00 000 00
17N2-019D
000 00 000 00
17N2-027D
17N2-029S
680 80 674 40
137' 8" VCP
17N2-035S
CULVERT UNDER DRIVEWAY
LARGE HOLE IN HOME OWNER'S YARD
93' 8" VCP
17N2-036S
98' 8" VCP
17N2-037S
657 90 652 10
NEW DRAINAGE PATH
25' 8" VCP
17N2-038S
653 90 646 10
85' 8" VCP
17N2-039S
384' 8" VCP
17N2-030S

DRIVEWAY CULVERT (FILLED IN)

FRONT YARD

FRONT YARD

FRONT YARD

NEW DRAINAGE PATH

FRONT YARD

FRONT YARD

NEXT PROPERTY SOUTH

LARGE HOLE IN HOME OWNER'S YARD

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: East of Spoede b/t Olive and Ladue

Street Address: 3-6 Middlebrook Ln

MSD Map No. 18N2 **Complaint Reference:** ☐ **1999 Master Plan** _____

☒ **2010 Survey Response** 22

Original Description: ☒ **Erosion** ☐ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

Erosion threatens the bridge that carries Middlebrook Ln over the creek.

Site Description and Observations (include creek or tributary name, if known):

Evidence of bank washout on both south and north side of bridge. Street runoff from Middlebrook Ln. has washed away dirt around culvert, exposing tree roots.

North side of culvert opening full of debris (tree limbs).
Riprap has been layed in an attempt to slow runoff.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

☒ **Site photos**

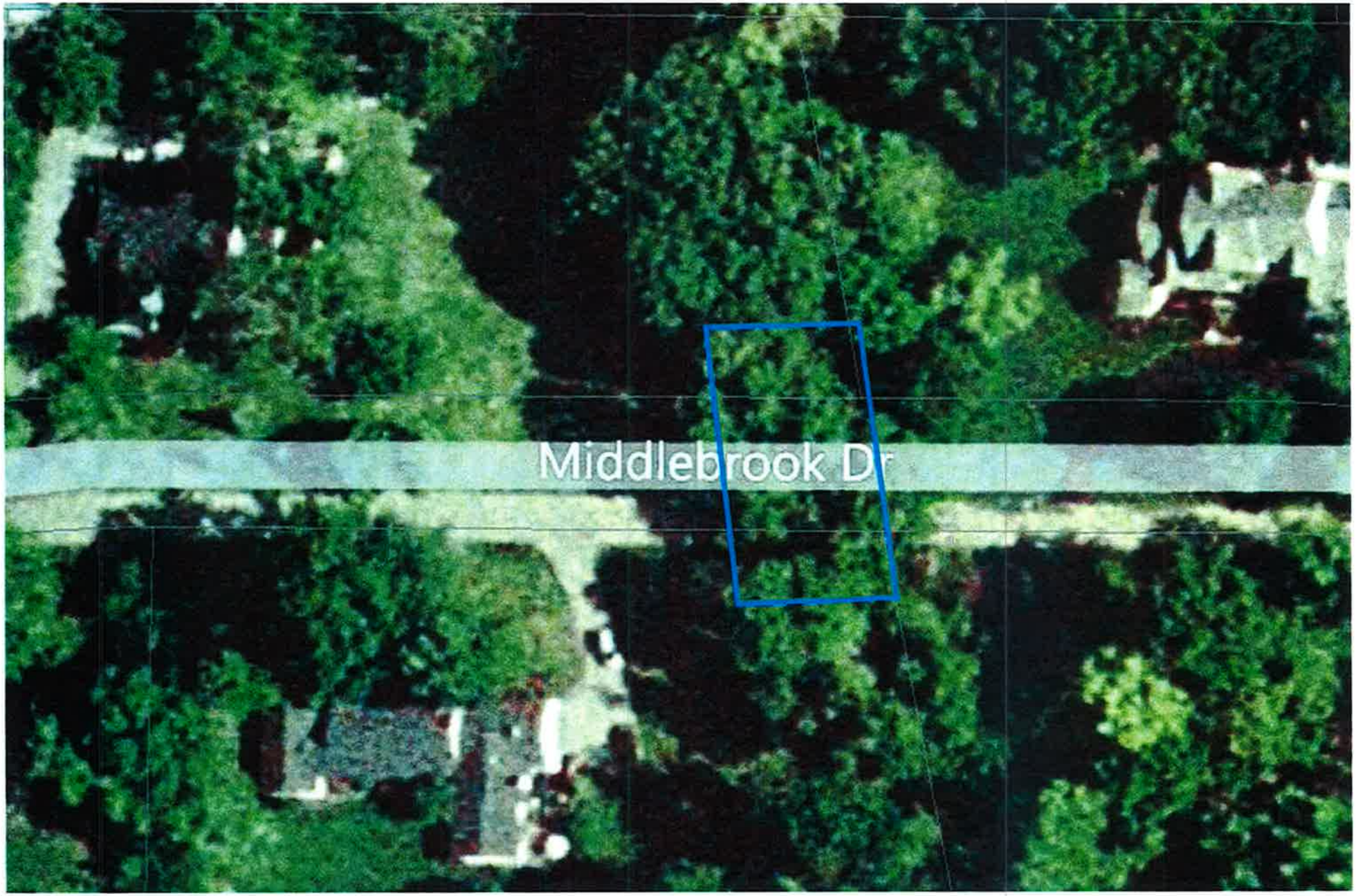
Field Crew: TJS

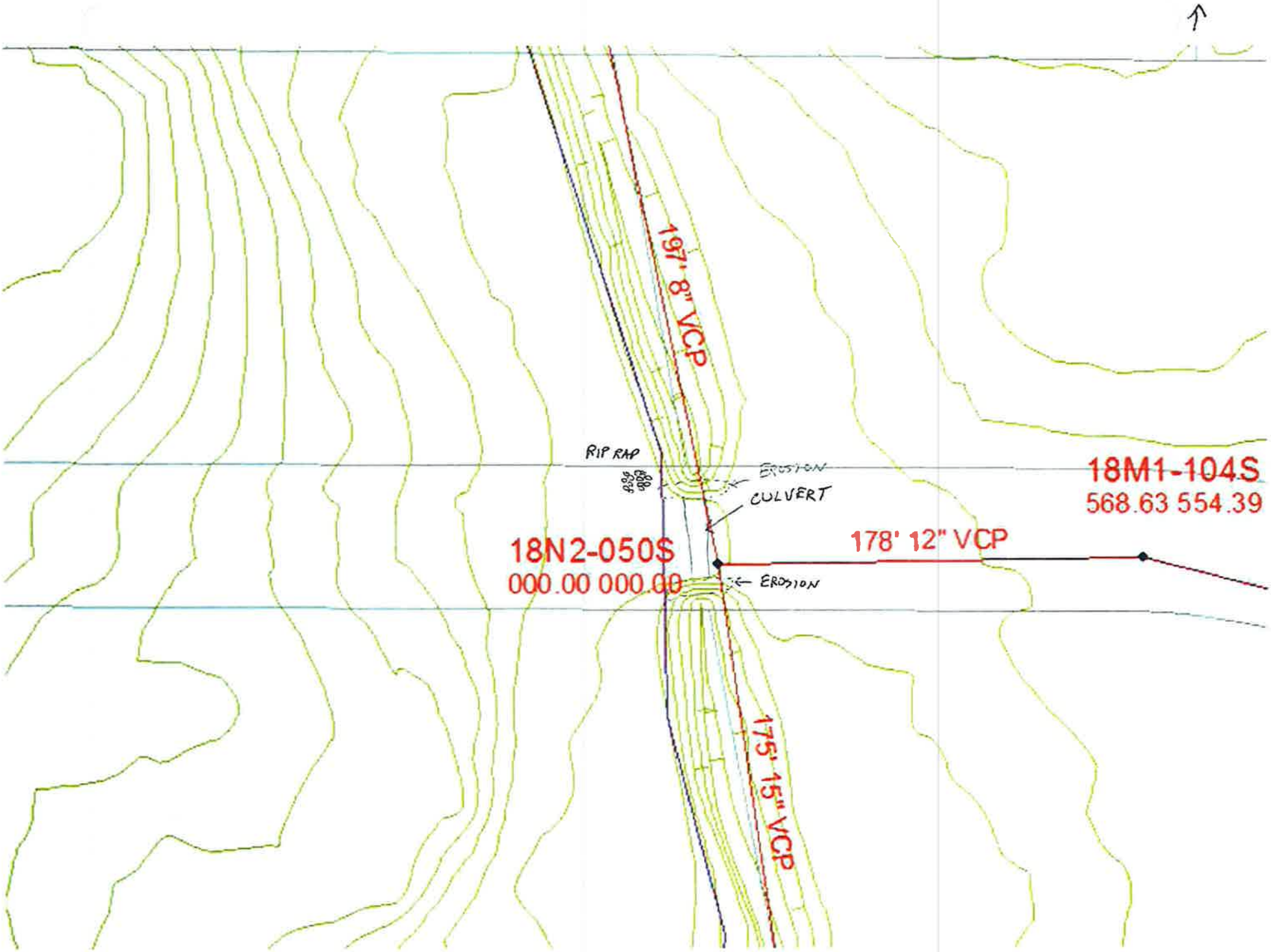
Date: 10-4-11

N ↑

N SPOEDE RD
SHERWYN LN
MIDDLEBROOK LN
ALDEN LN
412
10648
10640

N ↑




197' 8" VCP
RIP RAP
EROSION
CULVERT
18M1-104S
568.63 554.39
178' 12" VCP
18N2-050S
000.00 000.00
EROSION
175' 15" VCP

NORTH SIDE

NORTH SIDE

LOOKING EAST AT BRIDGE

NORTH SIDE

UPSTREAM SIDE CULVERT

SOUTH SIDE

LOOKING WEST (RUNOFF FROM MIDDLEBROOK)

SOUTH SIDE

SOUTH SIDE

SOUTH SIDE

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: West of Spoede b/t Olive and Ladue

Street Address: 10835 Rondelay Dr.

MSD Map No. 18N2 **Complaint Reference:** ☐ **1999 Master Plan** _____

☒ **2010 Survey Response** 25

Original Description: ☒ **Erosion** ☒ **Flooding** ☐ **Inadequate Sewer Capacity** ☐ **Other**

Ponding water remains in yard after rainfall.
Bank erosion has damaged my lawn, trees, or fence.

Site Description and Observations (include creek or tributary name, if known):

Channel erosion upstream of MSD inlet damaging home owner's backyard. After discussion with home owner, erosion and flooding is an issue after each rain event. Runoff upstream has high velocities causing severe channel erosion. Home owner was experiencing flooding from street, but has installed two drains to help alleviate problem. Street has been overlayed with asphalt causing runoff to spill over street curb.

Attached (w/ the problem area highlighted): ☒ **MSD facilities map**

☒ **Aerial photo**

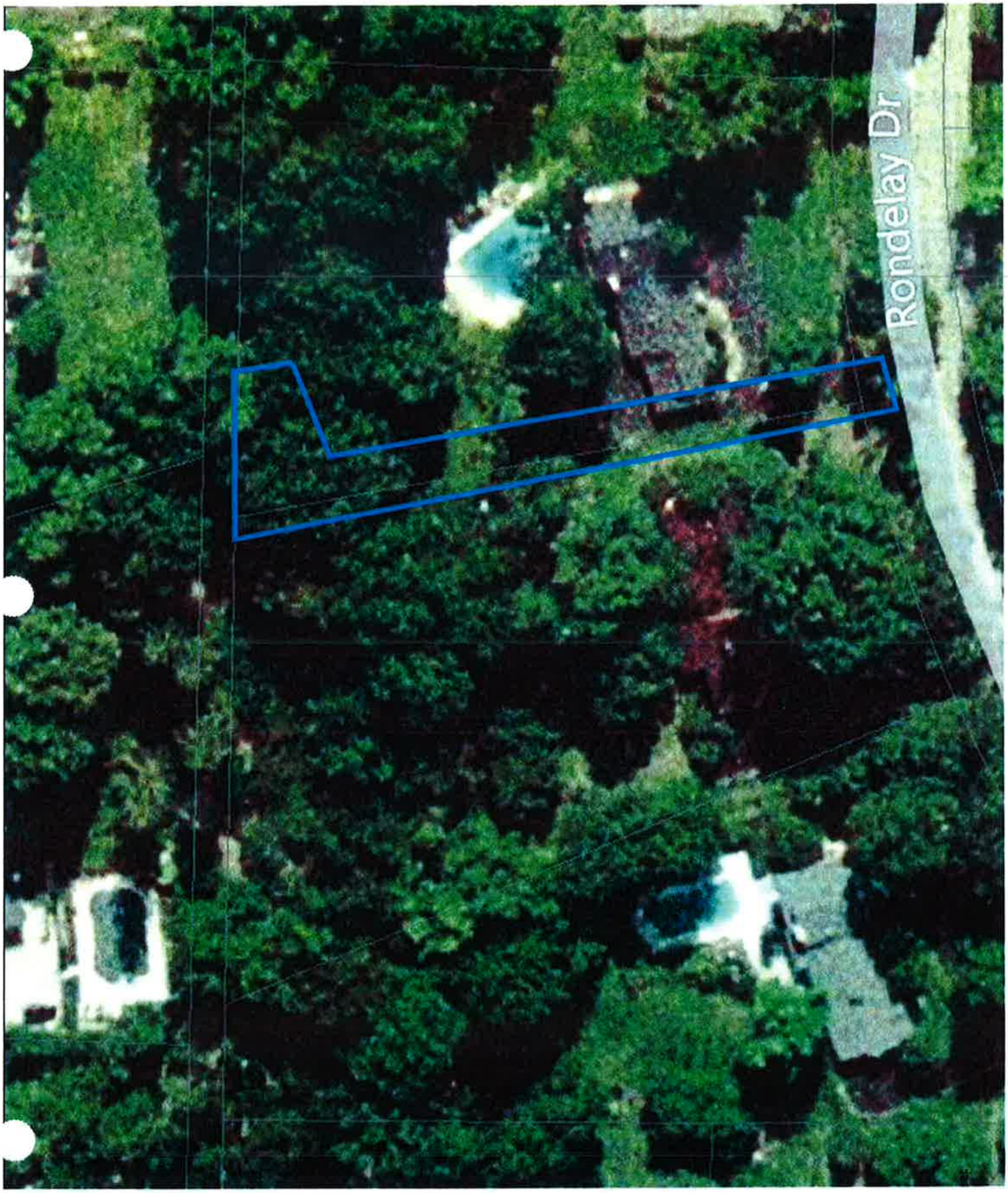
☒ **Site photos**

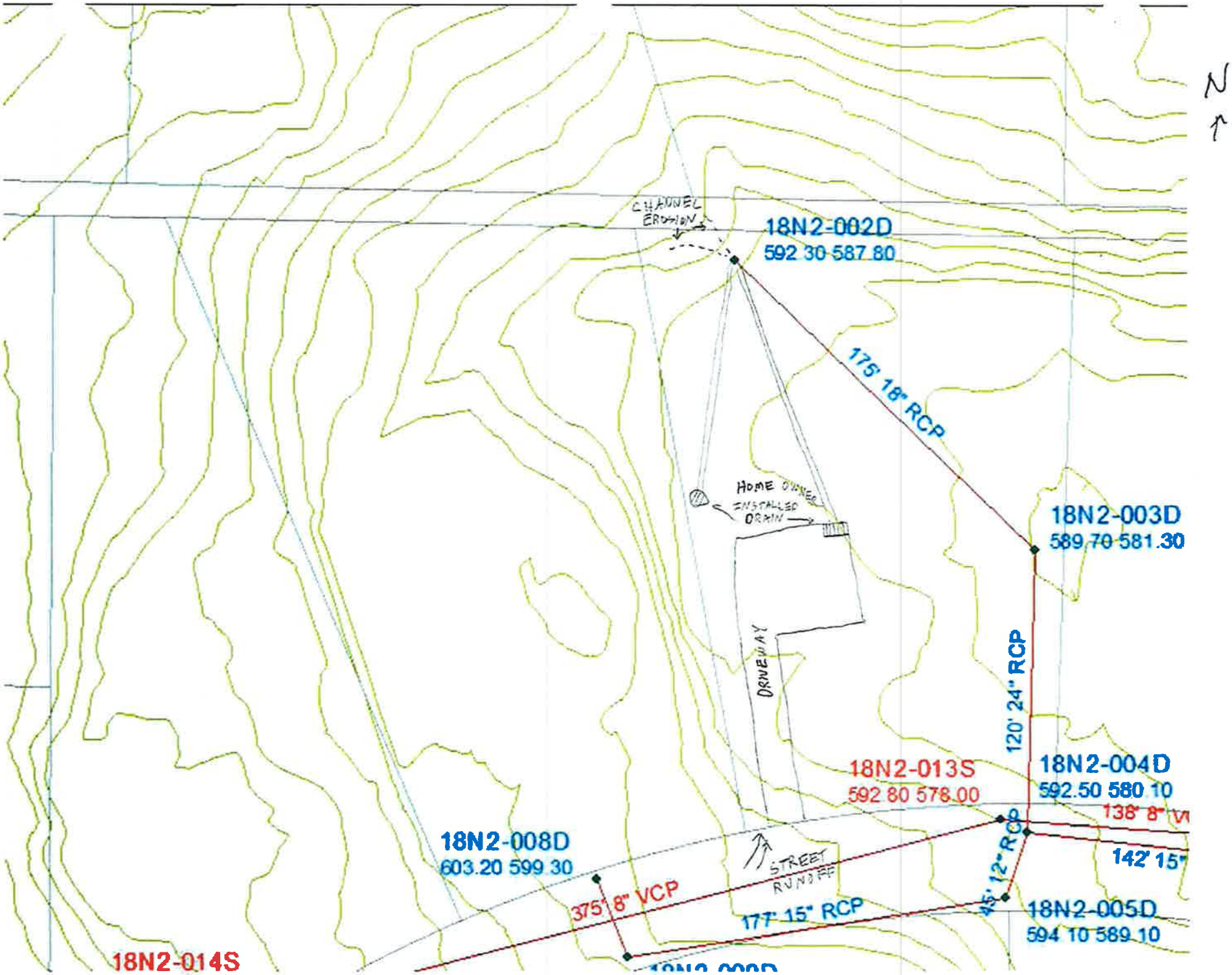
Field Crew: TJS

Date: 10-4-11

N
MIDDLEBROOK LN
N SPOEDE RD
SPOEDE LN
ALDEN L
RONDELAY CT
RONDELAY DR
CHILTON
PRIVATE RD
10835
10847
10823
10811
10921
10909
10859
10918
10910
10900
10866
10854
10842
10824
211
212
229
149
141

2 ←




N
CHANNEL EROSION
18N2-002D
592 30 587 80
175' 18" RCP
HOME OWNER INSTALLED DRAIN
18N2-003D
589 70 581.30
DRIVEWAY
120' 24" RCP
18N2-013S
592 80 578.00
18N2-004D
592.50 580 10
138' 8"
142' 15"
45' 12" RCP
STREET RUNOFF
18N2-008D
603.20 599 30
375' 8" VCP
177' 15" RCP
18N2-005D
594 10 589 10
18N2-014S

WEST SIDE PROPERTY

Area Inlet in NW Corner of Yard

WEST SIDE OF PROPERTY

DRAIN

DRIVEWAY DRAIN

DRIVEWAY

AREA INLET

DRIVEWAY

LOOKING WEST UP RONDELAY DR.

DRIVEWAY

City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: EAST OF SPOEDE B/T LADUE and Olive

Street Address: 12, 13 Chilton Ln.

MSD Map No. 18M1, 18N2 **Complaint Reference:** ☒ Other ☐ 1999 Master Plan ☐ 2010 Survey Response

Original Description: ☐ Erosion ☐ Flooding ☐ Inadequate Sewer Capacity ☒ Other

the downstream end of drainage culvert under Chilton Lane has collesped. This is located on the south side of Chilton Lane between house #12 and #13.

Site Description and Observations (include creek or tributary name, if known):

Erosion threatening roadway, no headwalls, active erosion on south side of street at culvert, pipe outlet is damaged, large tree branches / trunks in stream, pipe is CMP (24"?)

Attached (w/ the problem area highlighted): ☒ MSD facilities map ☒ Aerial photo ☒ Site photos

Field Crew: SR

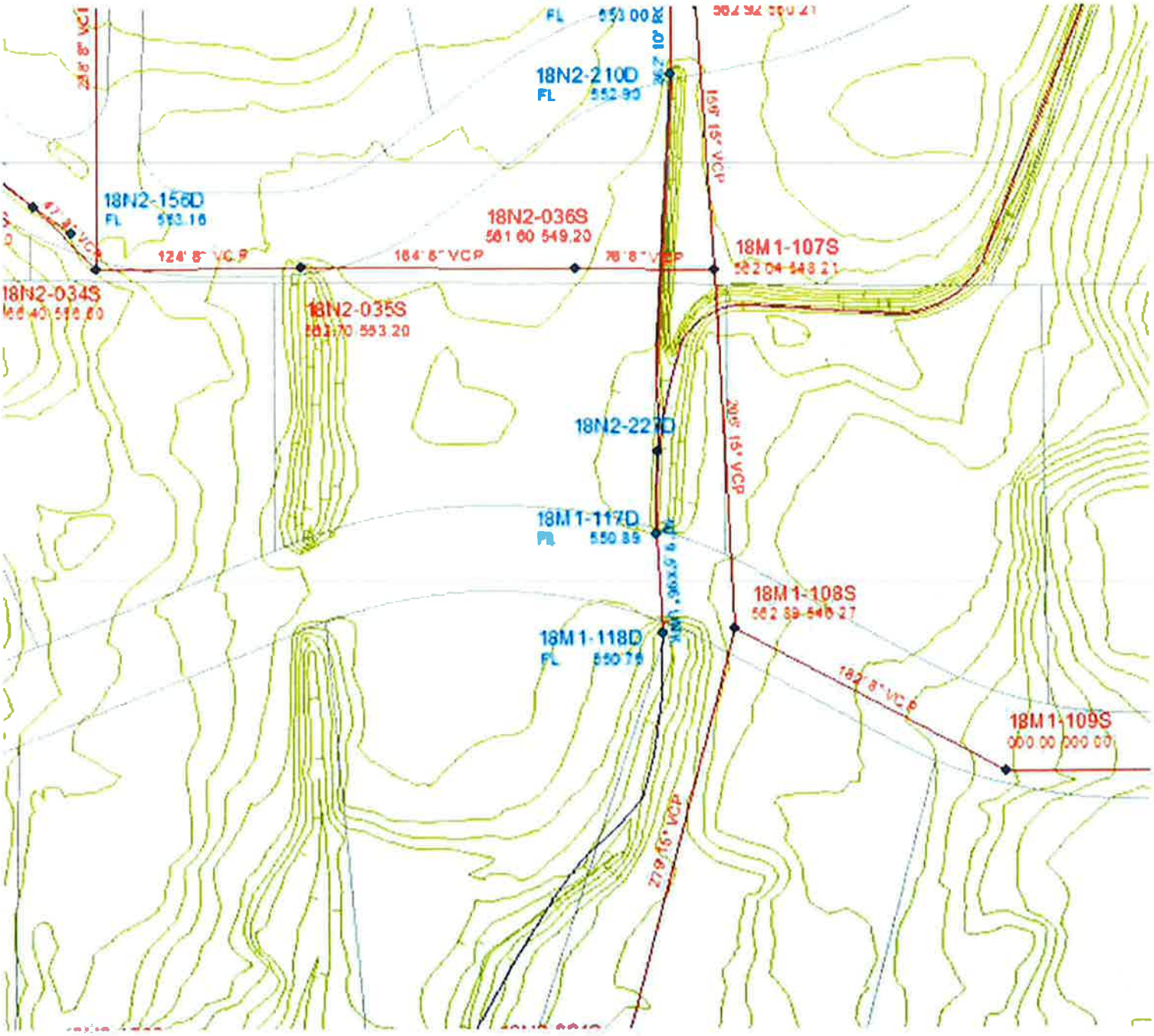
Date: 11-21-11

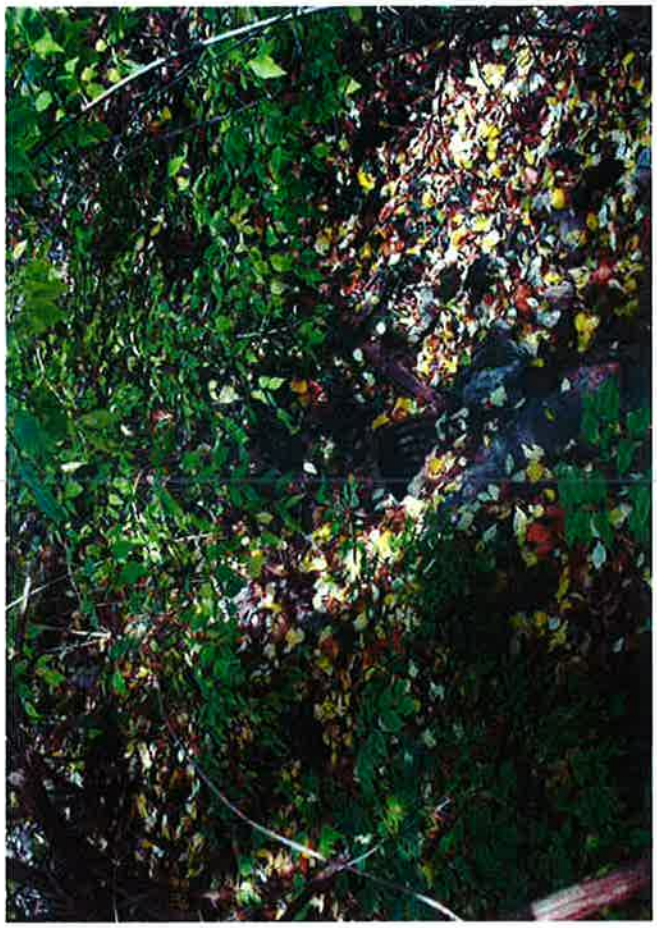
N ↑

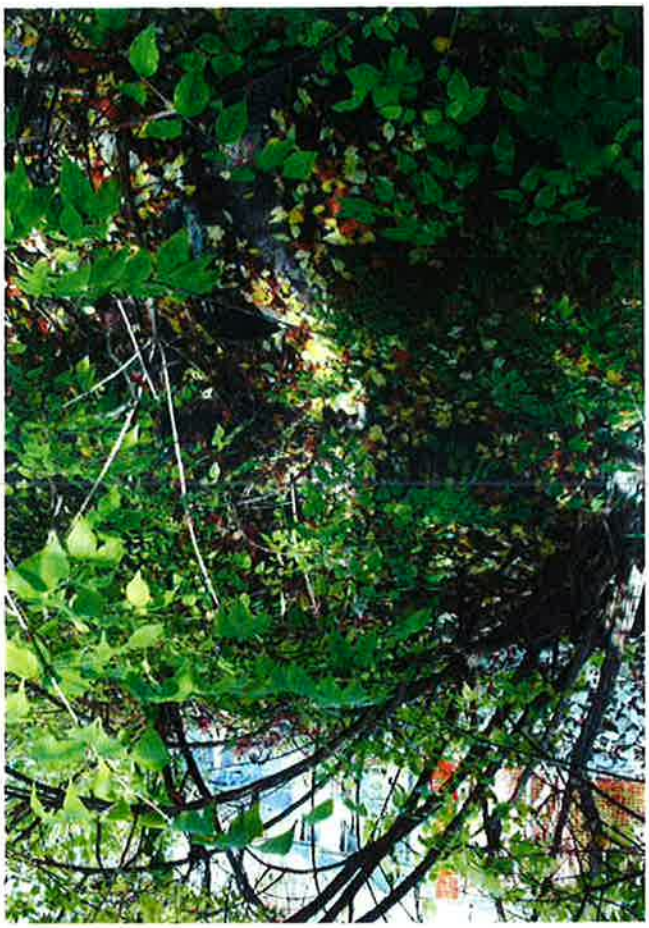
SPOEDE LN
SHERWYN LN
MIDDLEBROOK LN
N SPOEDE RD
ALDEN LN
CHILTON LN
COUNTRY FAIR LN
PRIVATE RD
SHAROUE LN
BRODSKY CIR
RABBI ALVAN D RUBIN DR
LADUE RD
LADUE RD
LADUE RD
OAK PARK CT
E BRIDGE LN

N ↑

N ↑


18N2-210D
FL 552.90
18N2-156D
FL 553.16
18N2-036S
561.60 549.20
18M1-107S
18N2-034S
18N2-035S
18N2-222D
18M1-117D
FL 550.89
18M1-108S
18M1-118D
FL 550.79
18M1-109S
000.00 000.00
124' 8" VCP
164' 8" VCP
182' 8" VCP
279' 15" VCP





City of Creve Coeur Stormwater Master Plan Update
Problem/Project Review Sheet

Location: TEALWOOD SUBDIVISON - EAST OF LINDBERGH BTWN LADUE & OLIVE

Street Address: #47 TEALWOOD NORTH

MSD Map No. 17 M 3 **Complaint Reference:** [X] **1999 Master Plan** 5-4

[ ] **2010 Survey Response** _____

Original Description: [X] **Erosion** [X] **Flooding** [ ] **Inadequate Sewer Capacity** [ ] **Other**

creek flooding and erosion - damaging driveway retaining wall heavy ~~water~~ volume in creek passing through area causing flooding & serious erosion

Site Description and Observations (include creek or tributary name, if known): slight erosion at culvert headwall and outlet - timber bracing on upstream side - resident says it was put there to help shore up the headwall - according to resident no flooding problems - washout on right-descending bank (looking downstream) about 60' upstream of culvert, ~~banks~~ banks generally well vegetated except for washout area

Attached (w/ the problem area highlighted): [X] **MSD facilities map**

[X] **Aerial photo**

[X] **Site photos**

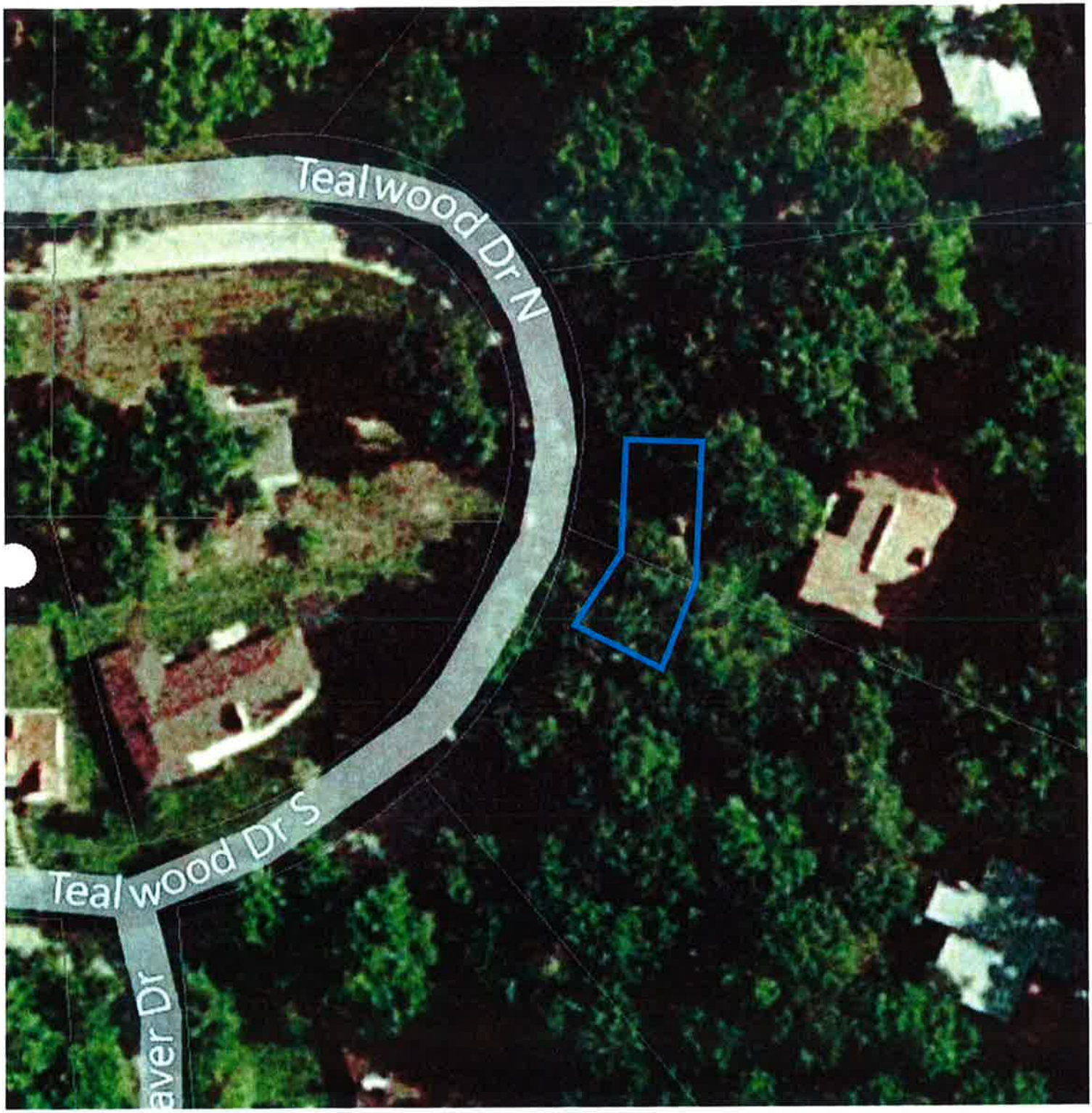
Field Crew: SR/TJS

Date: 9/29/11

N ↑

LINDBERGH BLVD
PRIVATE RD
TEALWOOD DR
TEALWOOD DR
TEALWOOD DR
TEALWOOD DR

N ↑



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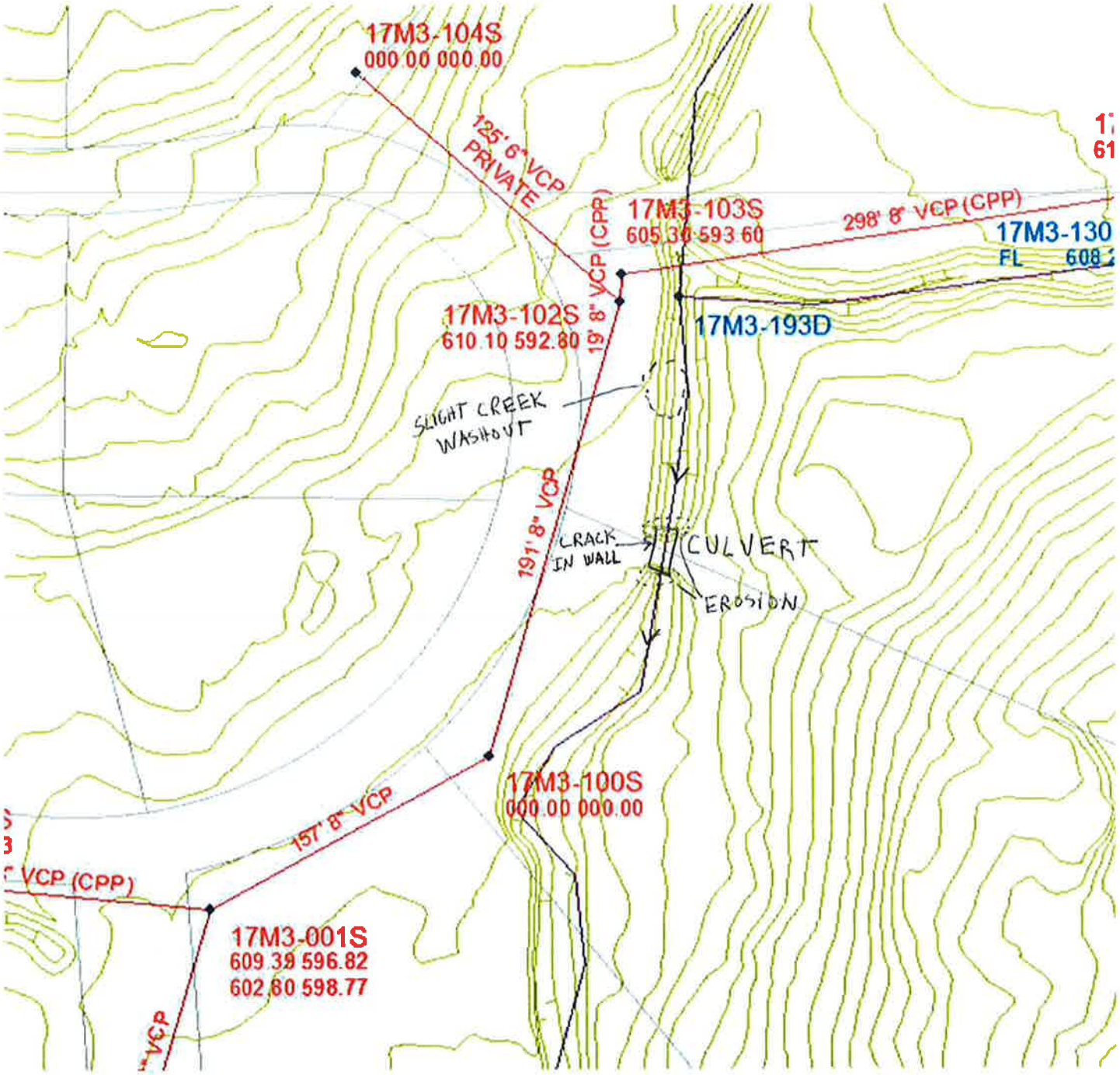
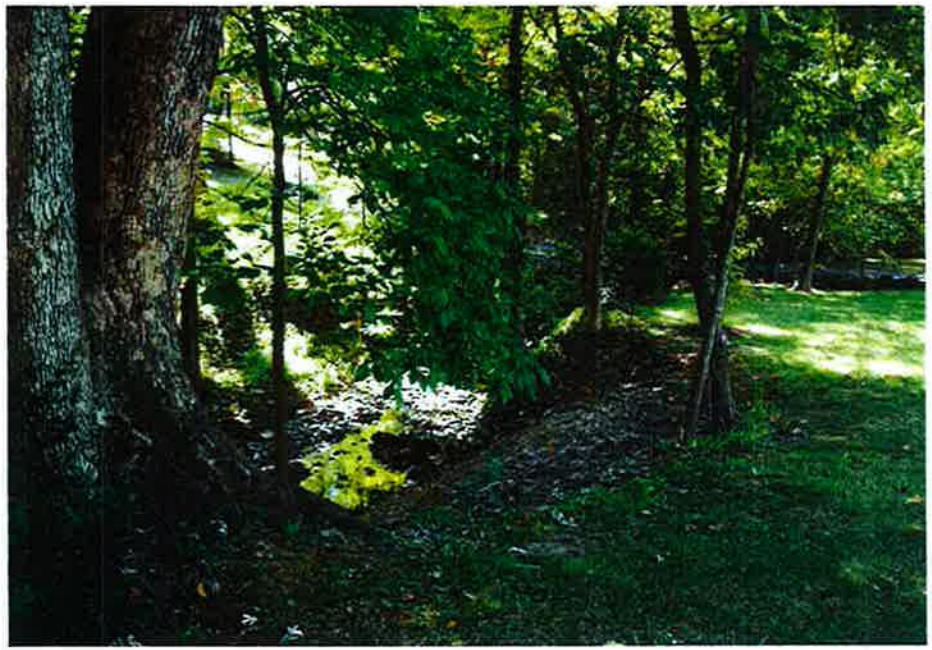

17M3-104S
000.00 000.00
125' 6" VCP
PRIVATE
17M3-103S
605.30 593.60
298' 8" VCP (CPP)
17M3-130
FL 608
17M3-102S
610.10 592.80
19' 8" VCP (CPP)
17M3-193D
SLIGHT CREEK
WASHOUT
191' 8" VCP
CRACK
IN WALL
CULVERT
EROSION
17M3-100S
000.00 000.00
157' 8" VCP
VCP (CPP)
17M3-001S
609.39 596.82
602.80 598.77

UPSTREAM

SHOT FROM DOWNSTREAM SIDE



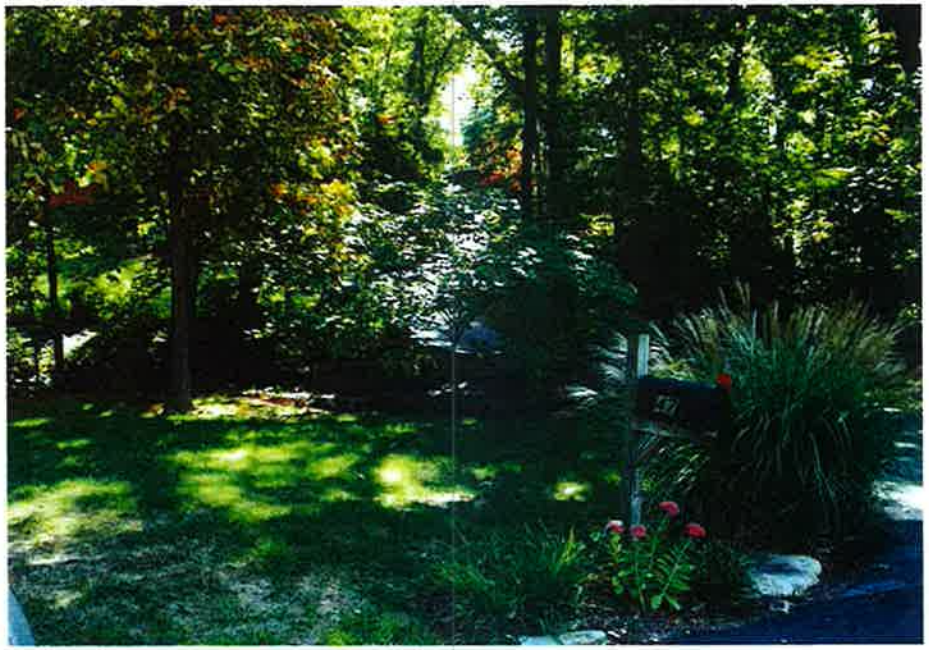
UPSTREAM BANK WASHOUT

UPSTREAM BRACING

CRACK/BRACING ON UPSTREAM SIDE

UPSTREAM

DOWNSTREAM WASHOUT



OVERVIEW

BANK UPSTREAM

CREEK DOWNSTREAM

Appendix B

Supplemental References to Smith Creek Problem Area SC-1

Alternative CRE2-2 - Grade Controls, Natural Slope Stabilization, and Backyard Drainage System

Alternative CRE2-2 utilizes the natural slope stabilization and backyard drainage system described in Alternative CRE2-1, but substitutes a rip rap grade control structure to stabilize the ravine bottom. This alternative has an estimated cost of $6,330,000.

Alternative CRE2-3 - Backyard Drainage System

This option includes only the backyard drainage component of the other two alternatives. It will prevent further deterioration of the properties but will not repair past damage. This solution entails the installation of a system of swales, inlets, and pipes to convey runoff to the existing natural channel. Its estimated cost is $1,921,000.

Problem Area CRE3 - Smith Creek between Mason and Ladue Roads

Problem CRE3 is a flooding problem that impacts eight (8) houses. These homes are in the 100-year flood plain, and flooding occurs during the 100-year storm. The 100-year flow is 2,770 cfs. Figure 5-5 shows the location of problem CRE3.

Alternative CRE3-1 - Widen Channel, Stabilize Banks with Gabion Baskets

Alternative CRE3-1 involves widening the channel to increase its capacity. The modified channel would be 10' H x 43.5' W with gabion baskets forming the side walls. The gabions would step up in five two-foot increments with one foot horizontal offsets. This option also requires the replacement of the Mason Road bridge. Problem mitigation using this alternative will cost $3,704,000.

Alternative CRE3-2 - Floodproofing

This option mitigates the flooding by floodproofing the eight affected properties. Because flood elevations are not excessive, a variety of methods may be applicable at this site. These include constructing an earth berm, replacing windows with glass block, or installing floodproof doors. This alternative has an estimated cost of $335,000.

Alternative CRE3-3 - Increase Bankfull Storage (Benching)

This alternative increases the conveyance of the stream by "benching" the floodplain. Benching allows the baseflow to remain in the main channel, while increasing the flow area for less frequent storm events. It requires large amounts of excavation and extensive restoration of the new flow area. In addition to "benching," the Mason Road bridge would need to be removed and replaced. This would increase downstream water surface elevations in the Bellerive Country Club. The estimated cost of this option is $3,411,000.

Replacing the Mason Road crossing and a bridge downstream in Bellerive Country Club was modeled as a potential alternative. Although this did lower water surface elevations in the

FLOODPROOF EIGHT HOMES

PROBLEM DESCRIPTION: CRE-03

INFREQUENT FLOODING AFFECTS EIGHT HOMES ON SMITH CREEK BETWEEN MASON AND LADUE ROADS.

0 500

Scale In Feet

METROPOLITAN ST.LOUIS SEWER DISTRICT
STORMWATER SYSTEM MASTER IMPROVEMENT PLAN

Horner & Shifrin, Inc.
Engineers/Architects/Planners
Surveyors/Construction Managers
5200 Oakland Ave. St. Louis MO 63110

FIGURE NO. 5-5

affected area, the drop was not significant enough to prevent flooding of habitable structures. Therefore, this is not a viable solution. A reinforced concrete channel was considered but rejected due to aesthetic and permitting concerns. Also, replacing a natural channel with concrete generally increases velocities and may cause a rise in downstream water surface elevations. Upstream detention was considered but also rejected because no suitable sites were available for the required size basin.

Problem Area CRE4 - Smith Creek at Royal Gate Drive

Problem CRE4 is a localized erosion problem that threatens a home at #147 Royal Gate Drive. This property is at a bend of the creek approximately 300' downstream of a section of a rectangular reinforced concrete channel. The house is between twenty-five (25) and one-hundred (100) feet from the north bank of Smith Creek which is a moderate erosion risk. Flooding is not a concern at this location. Figure 5-6 shows the location of problem CRE4.

Alternative CRE4-1 - Gabion Bank Protection

Erosion along the 100-foot north bank will be controlled by placing stone gabion baskets. The gabions will be six (6) feet high and step up in two three-foot increments with one foot horizontal offsets. This method of construction allows for placing of material around trees and reducing the impacts to existing vegetation. The height of the gabions is one (1) foot above the 15-year flow event. This is a technically feasible alternative with an estimated cost of $43,000.

Alternative CRE4-2 - Dumped Rip-Rap Bank Protection

Alternative CRE4-2 provides dumped stone rip-rap to solve this erosion problem. Rip-Rap will be placed on a 1.5:1 side slope and will extend twelve (12) feet from the bottom of the bank. It will be eighteen (18) inches thick, and significant removal of vegetation will be required for construction. Construction will affect existing backyards, and the cost will be $24,000.

Alternative CRE4-3 - Biostabilization

Alternative CRE4-3 utilizes biostabilization to mitigate this erosion site. A variety of biostabilization methods may be applicable at this location including, but not limited to: live staking, joint planting, live facines, living crib wall, brush layering, vegetated geogrid, or composite revetment. These natural methods of bank stabilization, used exclusively or in combination, are aesthetically pleasing and environmentally sensitive. Construction is labor intensive. The estimated cost of this alternative is $26,000.

Concrete lining was a considered component but was rejected due to aesthetic and government permitting concerns. Also, replacing a natural channel with concrete generally increases velocities and may cause a rise in downstream water surface elevations.

HORNER & SHIFRIN, INC.
ENGINEERS ■ ARCHITECTS ■ PLANNERS

5200 Oakland Ave.• St. Louis MO 63110
(314) 531-4321 • Fax: (314) 531-6966

141 Market Place, Ste. 208 • Fairview Heights IL 62208
(618) 397-1065 • Fax: (618) 397-1056

www.hornershifrin.com

MEMORANDUM
(DRAFT)

TO:	Mark Perkins, City of Creve Coeur	DATE:	March 4, 2004
FROM:	Craig Lingle	H&S JOB NO:	04.012
SUBJECT:	Findings for Hydraulic Study of Bridge Replacement - Mason Road at Smith Creek		
CC:	L. Ebel		

Background Information

The City of Creve Coeur retained Horner & Shifrin to perform a hydraulic study for the Mason Road bridge across Smith Creek, a tributary to Creve Coeur Creek, on February 18, 2004. The objective of this study was to determine potential downstream impacts from the removal and subsequent replacement of this bridge. This memorandum summarizes the findings from this study.

The hydraulic modeling for this study was based on the model previously developed for the Creve Coeur Creek watershed by Horner & Shifrin for MSD, as part of the region-wide Stormwater System Master Improvement Plan (SSMIP). The Creve Coeur Creek watershed model was originally developed using the XP-SWMM EXTRAN block software – a dynamic stormwater program that models unsteady flow using cross-section data and hydraulic structure information. A more recent version of that software (XP-SWMM2000, Version 8.52) was used for this study.

The original Creve Coeur watershed model was imported into the newer XPSWMM software version, and a test run was made to generate results to compare with the corresponding prior results documented in the SSMIP Creve Coeur Creek Watershed Study. As we've previously observed with other projects, the newer version of XPSWMM provides results which do differ slightly from results generated from model runs using earlier versions. The following table shows the comparative results.

Table 1: Comparative Results between XPSWMM Versions for Mason Road Bridge at Smith Creek

	Previous SSMIP XPSWMM Result	Current XPSWMM2000, Version 8.52 Result
100-yr Max. Water Surface El.	483.64	482.90
100-yr Peak Flow (cfs)	2,770	2,767

Review of Table 1 reveals that for the Mason Road bridge, the predicted peak flow values are similar; but the peak water surface values differ by 0.74 ft. As previously indicated, such inconsistencies have been noted on other projects, and discussed with both the software manufacturer and MSD. XPSWMM suggests changing some parameter settings within their software, to make the newer version results more closely match the old models. For this study, however, since we're only comparing water surfaces within the model (rather than with earlier model results) no settings were changed.

It should also be noted that, in contrast with the flow resulting from the XPSWMM dynamic model (2,770 cfs), the FEMA Flood Insurance Study for St. Louis County lists the 100-yr peak storm flow for Smith Creek, through the Ladue/Mason Road reach, as 5,000 cfs. Though a substantial difference exists between the peak flows predicted by these two models, once again we have observed similar degrees of magnitude difference for other watersheds. As part of their review of the upland hydrology for the Howard Bend Levee District, FEMA has previously accepted MSD's Creve Coeur watershed model. Therefore, it is anticipated that FEMA acceptance of the results from use of the XPSWMM2000 model, as a basis for future hydraulic analyses associated with the subsequent design of the Mason Road bridge, should not be an issue.

MSD's SSMIP Creve Coeur Creek Watershed Study lists the Mason Road bridge area as one of the problem areas which were analyzed in detail. Problem Area CRE3 – Smith Creek between Mason and Ladue Roads – was scrutinized due to "flooding that impacts 8 homes in the 100-yr floodplain". Attachment A, included with this memorandum, contains copies of pages from the Watershed Study which describe this problem area and potential solutions. Apparently, the removal of the Mason Road bridge was considered as an option to alleviate upstream flooding; but the report did not include detailed results of that evaluation, nor did it focus on downstream impacts of bridge removal. Model files associated with that specific analysis could not be retrieved from MSD quickly enough to be used in this study.

Field Reconnaissance Observations

During a field trip to the Mason Road bridge, the bridge opening was measured by H&S personnel to make sure the actual dimensions matched the data in the XPSWMM model. The bridge opening measured approximately 28 ft. wide X 11 ft. deep, which does match the model cross-section data. Also, the golf course bridge immediately downstream from Mason Road was measured. This bridge opening also matched the model dimensions. Photos of the Mason Road Bridge were also taken. While at the bridge site, other observations were made as follows:

- Some active erosion, apparently originating from local runoff, was noticeable, which could impact the northeast wing wall of the bridge if allowed to continue unabated.
- There was no visible sign of deposition or scour within the creek channel at the bridge. This, coupled with the apparent lack of downward movement by the channel (no change in bridge depth), indicates that there has been relative stability in the creek channel at the bridge since the MSD SSMIP study.

- Mason Road is not built up on a causeway through the floodplain, and is not much higher than the creek banks. Overbank flow can readily overtop the road. (The SSMIP indicates that Mason Road floods during a 10-yr frequency storm event).

Modeling and Analysis Results

The Creve Coeur Creek model was updated for this study by "virtually" removing the existing Mason Road bridge from the model cross section. Figure 1 shows the cross section with the bridge removed. The resulting water surfaces are compared in the following table.

Table 2: Comparison of Smith Creek 100-yr Elevations With and Without the Mason Road Bridge

Model Node	Distance From Mason Road	Water Elevation with Mason Rd. Bridge	Water Elevation without Mason Rd. Bridge	Water Elevation Change
SC9365 Ladue (upstream)	+2900	489.76	489.74	-0.02
SC9335 Ladue (downstream)	+2870	487.74	487.71	-0.03
SC9050	+2585	485.57	485.52	-0.05
SC8610	+2145	485.18	485.12	-0.06
SC8175	+1710	484.51	484.41	-0.10
SC7675	+1210	483.96	483.8	-0.16
SC6933	+468	483.15	482.84	-0.31
SC6465 Mason Rd (upstream)	0	482.9	482.5	-0.40
SC6444 Mason Rd (downstream)	0	482.01	482.15	+0.14
SC6432	-12	482.28	482.26	-0.02
SC6306 Golf Course bridge (up)	-138	482.28	482.23	-0.05
SC6294 Golf Course bridge (down)	-150	482.25	482.23	-0.02
SC6006	-438	481.91	481.89	-0.02

The above analysis results indicate that the Mason Road bridge causes up to a 0.4 ft increase in upstream water surfaces during a 100-yr storm, compared with a natural channel. Further, with the bridge removed, the reduction in upstream water levels occurs fairly close to the bridge vicinity. At 1,710 ft. upstream of the bridge site, the resulting water elevation reduction is 0.1 ft.

The model results show also that the attenuation of flow behind the Mason Road bridge isn't enough to cause higher water surfaces downstream when the bridge is removed. Downstream modeled water surfaces are essentially unchanged by bridge removal.

Apparently the bridge is acting as a constriction, but not much of one. Even with the bridge removed, the model shows the stream still overtops its banks in that vicinity. Peak modeled

flows through the bridge and adjacent reaches remain essentially the same, whether the bridge is present or not.

In addition, the model results show that the golf course bridge is not acting as a "backup" constriction when the Mason Road bridge is removed. All stream elevations downstream of Mason Road (including upstream of the golf course bridge) remain the same, or are slightly lower, when the Mason Road bridge is removed.

A larger bridge opening was also analyzed for comparative purposes. A bridge with a rectangular 60 ft. W X 11 ft. H opening was inserted into the model (typical bank-to-bank width for Smith Creek in this area is 60 ft, per the XPSWMM model and field observations). This is shown in Figure 2. Similar results were obtained as with the "no bridge" option (i.e., some upstream reduction in water surface elevations in comparison to the existing bridge, and no resulting increase in downstream elevations). The average velocity through the 60-ft bridge section was only 4 ft/s during a 100-yr storm, which indicates that such an opening would be prone to sediment and debris deposition during normal flow periods.

Of the two options analyzed, the "no bridge" option resulted in the greater reduction in water surface upstream of the bridge site. The "natural" cross-section (in place of the bridge) functioned better hydraulically with the adjacent model cross-sections in moving the water through the study reach. The rectangular cross-section used for the 60-ft bridge option was not as hydraulically "efficient".

Due to the results obtained from the model runs for the 100-yr storms, no other greater recurrence interval storm frequencies were analyzed for this study.

Conclusions

The Creve Coeur Creek XPSWMM model shows that there should be no significant concern during a 100-yr storm (and therefore, by extrapolation, during storms of greater frequency) about increased downstream water levels potentially resulting from removal of the Mason Road bridge on Smith Creek. Upstream of the bridge site, during a modeled 100-yr storm, the water surface would decrease by as much as 0.4 ft. in the vicinity of the bridge.

A replacement bridge could potentially be designed to have a hydraulic performance similar to the "natural" channel inserted in the "no bridge" option, i.e. to optimize the water elevation drop upstream of the bridge. To achieve this, a detailed hydraulic analysis would need to be performed as part of the bridge preliminary design.

Creve Coeur Stormwater Committee - Gene Rovak, Chairman
Chamblee Ct. Flooding

I. Background:
The City staff and the Stormwater Committee were asked to look into possible solutions to flooding (as occurred in August 1996) of homes between Chamblee Lane and Smith Creek.

Solutions examined in the MSD Stormwater System Master Improvement Plan for Creve Coeur Watershed included methods to prevent flooding by increasing stream capacity, projected to cost between $3.4 M and $3.7M as well as floodproofing the individual homes at a combined cost of approximately $335K. The creek improvements would require additional improvements to the Mason Road bridge, which belongs to St. Louis County. MSD does not have funds for this type of improvement, and the City of Creve Coeur has no authority over of St. Louis County regarding the bridge. Individual home floodproofing, besides matters of cost, would have significant effects on aesthetics and accessibility for the homeowners.

Because the flooding was shallow in the August 1996 flood, and appears the same according to FEMA Flood Insurance Rate Maps (FIRM's), a berm constructed to serve as a levee should protect these homes from up to a 100-year flood. The berm would vary from one foot to three feet high, with the greatest portion about 18 inches high. This height would match the 100-year flood elevation but would not provide freeboard (additional height for a margin of safety). Therefore the nominal level of protection would be approximately 50-year flood frequency. The earth berm would be sloped at a maximum of 3:1 (horizontal to vertical), and have approximately a four-foot wide top. This would require a total width of 10 to 22 feet wide, and would be grass covered or planted with shrubs.

In the areas of greatest height requirement, an alternate to the berm might be preferred, consisting of a low floodwall, which would require very little width. It would be constructed much the same as a concrete retaining wall, and could be faced with brick or other material for aesthetics. Cost for a 4-foot wall (without allowance for facing) would range from $100 to $200 per lineal foot.

Stormwater inlets and drainpipes would be required, to collect rainfall on the protected yards and convey it under the berm or wall, into the creek. One-way valves would be needed to prevent high water in the creek from flowing backwards into the yards.

2. Meeting with Residents:
An on-site meeting was held in September 1st with homeowners in the affected area. The purpose of the meeting was to describe the above approach to flood prevention and get their impressions, objections and opinions. In general the response was favorable. Some homeowners wanted to know if the proposal would work without 100% participation The answer is that while it could be made to work, it would be more expensive on a per-house basis, and it might be impractical for houses at certain locations. There were concerns with aesthetics, and the amount of space that would either be lost to or hidden by the berm. Nearly everyone agreed that they would want see the actual location of the berm to have a better idea of its effects on their property.

3. Recommended preliminary investigation
(As a result of the meeting, and discussion at the subsequent stormwater committee meeting, it was decided to conduct a preliminary investigation of the berm alignment and design.)

a. Topographic / elevation survey:
To further refine the design requirements for the flood protection, obtain an on-ground survey which incorporates horizontal control, and reference to MSD benchmarks, and which includes the following:

(1) Locate and mark (flag in field) the horizontal alignment of the floodway*.
(2) Shoot ground elevations at 200' (+/-) intervals along the floodway, 20 feet either side, and 50' towards the houses, as well as the distance to, and first floor elevation of each house.
(3) In addition to ground shots at regular intervals, locate high and low points (ridges and swales) and breaks in grade, and any existing drainage structures or sewers.
(4) Provide scaled contour drawings, one at 1" = 20' or larger and one at 1"=200' for overlaying the MSD Topographic and Facility Maps (18P)

b. Preliminary layout / design (this could be performed in-house at Public Works, or by the A/E which provides the survey; in-house work will allow the flexibility to try several variations):
(1) Cut sections across the floodway alignment (minimum of one typical section behind each house).
(2) Begin with a trial alignment based upon 2h:1v from a toe of slope placed along the floodway limit and extending to the 100-year flood elevation*. provide a 4' level top and extend downward at 3h:1v to existing ground.
(3) Where the height of berm exceeds 3', provide an alternate floodwall (for planning purposes, allow for a low retaining wall, such as 9" cast concrete extending 30" below grade, with, a 3' wide toe).
(4) Based on field surveyed low points, determine locations for stormwater discharge pipes.

c. Field Layout - mark the following in the field for residents to examine:
(1) Creekside toe flags;
(2) centerline of top - gradestake showing depth of fill
(3) house-side toe flags;
(4) locations of stormwater pipes

* Floodway established by scale from FEMA FIRM Panel 161 of 420 (Map Number 29189C0161H) 100-year flood elevations established by interpolation of flood contours on the same map.

4. Other considerations:

a. Modifications / refinements:
Based on resident's comments, we can look at the effects of:
(1) additional protection level (e.g. requiring the berm to be about 5' closer to the house per foot of height);
(2) substitution of wall for portions of the berm;
(3) relocation, addition or consolidation of stormwater pipes
(4) any other concepts or additions.

b.. Concept Agreement:
Everything above addresses only technical issues. If this project is to go forward, there need to be established some common understandings.

(1) The Council will need to become involved to establish ground rules for city/homeowner cost participation. The total amount, if any, that the City will pay for, and the degree of homeowner cost contributions to either the basic plan or any refinements, needs to be established early in the project.

(2) Residents and city officials must understand and accept the fact that this approach does not remove these homes from the 100-year floodplain. Given the relatively shallow depth of flooding, this approach is practical compared to the extremely high per-house cost of the alternates required to remove the area from flood zones. However, if this project is constructed, flood insurance will still be necessary.

Appendix C

Supplemental References to Fernridge Creek Problem Area FC-1

- SSSMIP Extract
- Memo- Fernridge Creek - Detention Basin and Channel Modification
- Memo- Fernridge Creek - Culvert Modification
- Follow-up to Culvert Modification Memo
- Fernridge Creek Conceptual Design Report
- Letter Regarding Footbridge Reconstruction

Appendix C

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Alternative CRE7-2 - Concrete Retaining Walls

Alternative CRE7-2 mitigates the erosion problem by lining the sides of the creek with twelve-foot high retaining walls. The creek bed would be left in its natural state. The natural bottom keeps velocities from increasing significantly and prevents negative downstream impacts. This option has an estimated cost of $2,765,000.

Dumped rip rap and biostabilization methods were considered for this reach but rejected because the required side slopes for installation would severely impact the adjacent properties. A concrete channel was also a considered alternative but eliminated due to government permitting concerns. Also, replacing a natural channel with concrete generally increases velocities and may cause a rise in downstream water surface elevations.

Problem Area CRE8 - Fernridge Creek between Dartagnan Court and Bellerive Estates Drive

This reach of Fernridge Creek runs for approximately 1,300 feet through a residential area. Four (4) homes on the north side of the creek are between twenty-five (25) and one hundred (100) feet from the bank, presenting a moderate erosion risk. Downcutting in the main channel also threatens a 48" storm sewer outfall at Gascogne Court. Flooding from the 100-year event affects thirty (30) homes. 100-year flows are 1,530 cfs. Figure 5-10 shows the location of problem CRE8.

Alternative CRE8-1 - Increase Bankfull Storage (benching)

Alternative CRE8-1 increases the conveyance of the stream by "benching" the flood plain. Benching allows the base flow to remain in the main channel, while increasing the flow area for less frequent storm events. It requires large amounts of excavation and extensive restoration of the new flow area. The estimated cost for this alternative is $4,611,000.

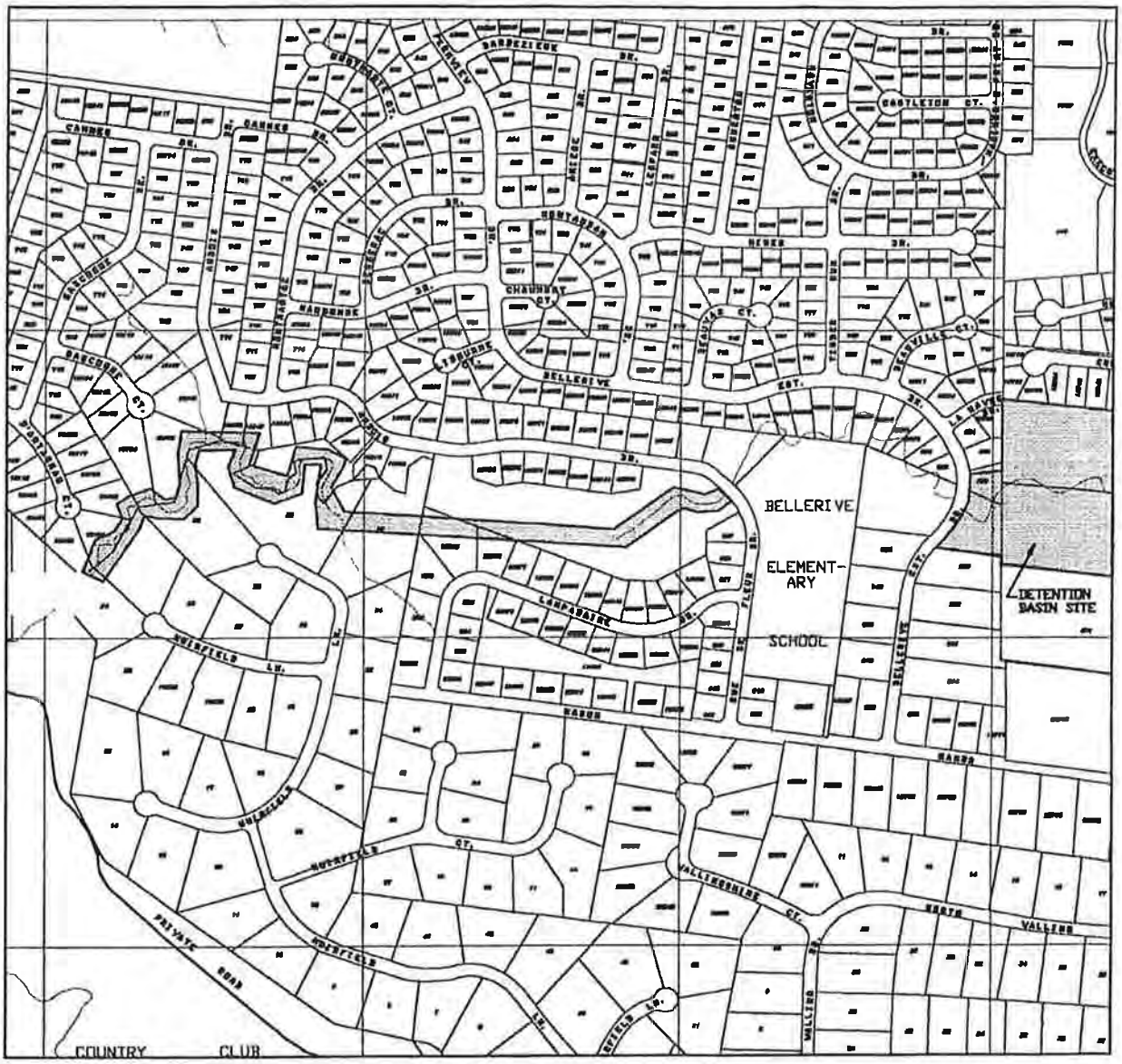
Alternative CRE8-2 - Create Upstream Detention

This alternative will control flooding by constructing a detention basin to store runoff. The basin will be designed to release the water at a rate that will not surcharge the reach between Dartagnan Court and Bellerive Estates Drive for a 100-year, 24-hour storm. It will have a capacity of approximately 60 acre-feet and be constructed on two lots just east of Bellerive Estates. This solution has an estimated cost of $1,614,000.

Alternative CRE8-3 - Gabion Bank Protection

Erosion along the affected properties banks will be controlled by placing stone gabion baskets. The gabions will be nine (9) feet high behind the properties at 13052 and 13046 Ambois Drive and step up in three three-foot increments with one foot horizontal offsets. The properties at 12986 and 13006 Ambois will be protected by six (6) feet high gabions that will step up in two three-foot increments with one foot horizontal offsets. This method of construction allows for placing of material around trees and minimizing the impacts to existing vegetation. The height of the gabions is one (1) foot above the 15-year flow event. This is a technically feasible alternative with an estimated cost of $152,000.

DETENTION BASIN, FLOODPROOFING, AND NATURAL BIOSTABILIZATION



PROBLEM DESCRIPTION: CRE-08

INFREQUENT FLOODING AFFECTS THIRTY HOMES ON FERNRIDGE CREEK BETWEEN DARTAGNAN COURT AND BELLERIVE ESTATES DRIVE. CREEK EROSION ON THIS SAME REACH IS THREATENING FOUR HOMES ON AMBOIS DRIVE.

0 500

Scale In Feet

METROPOLITAN ST.LOUIS SEWER DISTRICT
STORMWATER SYSTEM MASTER IMPROVEMENT PLAN

Horner & Shifrin, Inc.
Engineers/Architects/Planners
Surveyors/Construction Managers
5200 Oakland Ave. St. Louis MO 63110

FIGURE NO. 5-10

Alternative CRE8-4 - Dumped Rip-Rap Bank Protection

Alternative CRE8-4 provides dumped stone rip-rap to solve this erosion problem. Rip-Rap will be placed on a 1.5:1 side slope and will extend thirteen and one-half (13.5) feet from the bottom of the bank. It will be eighteen (18) inches thick, and significant removal of vegetation will be required for construction. Construction will impact existing backyards, and the cost will be $59,000.

Alternative CRE8-5 - Biostabilization

Alternative CRE8-5 utilizes biostabilization to mitigate this erosion site. A variety of biostabilization methods may be applicable at this location including, but not limited to: live staking, joint planting, live facines, living crib wall, brush layering, vegetated geogrid, or composite revetment. These natural methods of bank stabilization, used exclusively or in combination, are aesthetically pleasing and environmentally sensitive. Construction is labor intensive. The estimated cost of this alternative is $75,000.

Alternative CRE8-6 - Floodproofing

This alternative mitigates the flooding problem by floodproofing the affected properties. Because flood elevations are not excessive for twenty-two of the thirty flooded homes, those residences could benefit form a variety of potential methods. These include constructing an earth berm, replacing basement windows with glass block, or installing floodproof doors. Floodproofing a total of twenty-two homes has an estimated cost of $922,000.

Concrete lining was a considered component but was rejected due to aesthetic and government permitting concerns. Also, replacing a natural channel with concrete generally increases velocities and may cause a rise in downstream water surface elevations.

Problem Area CRE9 - 384 Dungate Drive

Severe headcutting is occurring in a gully behind this residence. The headcutting is caused by downcutting in the downstream receiving channel. High risk erosion is currently threatening a privacy fence. The headcutting is working its way towards the homes on Dungate and Branchport Drives. If this process is not arrested at this time, several houses on these streets will be threatened by erosion in the near future. Figure 5-11 shows the location of problem CRE9.

Alternative CRE9-1 - Grade Control & Restoration of Slope

Alternative CRE9-1 mitigates this erosion problem by stabilizing the stream bed of the receiving channel with rip rap grade control structures and repairing the gully behind 384 Dungate Drive. The gully repair entails filling and reshaping the slope, and then stabilizing the slope using geotextiles and erosion control matting. The estimated cost of this solution is $34,000.

Appendix C

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MEMORANDUM

TO:	Mark Koester	DATE:	August 18, 1998
FROM:	Gene Rovak	H&S JOB NO:	9476C
SUBJECT:	Problem Area CRE 08 - Creve Coeur Watershed - Fernridge Creek		

INTRODUCTION

As described in the draft report for the Creve Coeur Watershed, the problem area referenced above is located on a reach of Fernridge Creek that runs through a residential area between Dartagnan Court and Bellerive Estates Drive in the City of Creve Coeur. Two problems occur at this site; one is an erosion problem that affects four (4) homes and the other is an infrequent flooding problem that occurs during the 100-year storm and affects thirty (30) homes. An analysis of the flooding problem was part of an MSD report (dated November 14, 1996) titled "Fernridge and Smith Creek Study". In that report and the draft report for the Creve Coeur Watershed, the recommended solution for the flooding problem is to construct an eighty acre-foot detention basin on two lots on Mason Road upstream of the flooded properties. In response to a request by the District and the City of Creve Coeur, the problem area has been analyzed further to determine if partial solutions are available to mitigate the flooding problem. This memorandum summarizes the results of that analysis.

METHODOLOGY

A total of nine alternatives were considered as potential solutions to the flooding problem, they are: (1-4) detention only; 80 acre-feet, 60 acre-feet, 40 acre-feet, and 20 acre-feet; (5) benching of the flood plain only; and (6-9) detention plus benching; 80 acre-feet + benching, 60 acre-feet + benching, 40 acre-feet + benching, and 20 acre-feet + benching.

All of the alternatives were analyzed for 100- and 50-year storm events using the XP-SWMM model developed for the Creve Coeur Watershed. By comparing the model's calculated water surface elevations to the residence's first floor sill elevations, it was determined what level of protection each alternative provided. In addition, cost estimates were done for all of the alternatives using the same unit prices as those utilized in the Creve Coeur Watershed draft report.

RESULTS

None of the proposed alternatives alone would eliminate flooding for all of the houses. The best that could be achieved was to protect twenty-nine (29) homes using the most expensive option of benching the flood plain combined with eighty acre-feet of storage at a cost of $6,491,000. The least expensive option, constructing a twenty acre-feet detention basin, provided protection for ten (10) homes at a cost of $999,000. Table 1 lists all of the alternatives, how many homes are protected, the cost of the alternative, and the cost per home protected.

Table 1 - Alternative Evaluation/100-yr. protection

Alternative	Homes Protected (100-yr.)	Cost	Cost per Home
20 ac-ft detention	10	$999,000	$99,900
40 ac-ft detention	19	$1,293,000	$68,050
60 ac-ft detention	24	$1,586,000	$66,080
80 ac-ft detention	24	$1,880,000	$78,333
benching only	25	$4,611,000	$184,440
benching + 20 ac-ft detention	26	$5,611,000	$215,800
benching + 40 ac-ft detention	26	$5,904,000	$227,077
benching + 60 ac-ft detention	28	$6,198,000	$221,350
benching + 80 ac-ft detention	29	$6,491,000	$223,825

Based on a cost per home cost of $66,080, the most efficient alternative is construction of a 60 acre-foot detention basin. This option protects twenty-four homes (24) at a total cost of $1,586,000. Once benching the flood plain is added to the project, it becomes much more expensive. This is illustrated by the fact that increasing the level of protection by one more home to a total of twenty-five (25) homes, through the benching only option, raises the total cost to $4,611,000, an increase of $3,025,000. The increase in the per home cost increases to $184,440, a difference of $118,360.

To further assess the benefits of the proposed alternatives, it was also determined what impact they would have on the 50-year flooding event. During a 50-year storm fourteen (14) homes experience flooding. These results of this analysis are summarized in Table 2.

Table 2 - Alternative Evaluation/50-yr. protection

Alternative	Homes Protected (50-yr.)	Cost	Cost per Home
20 ac-ft detention	2	$999,000	$499,500
40 ac-ft detention	7	$1,293,000	$184,700
60 ac-ft detention	10	$1,586,000	$158,600
80 ac-ft detention	10	$1,880,000	$188,000
benching only	14	$4,611,000	$329,400
benching + 20 ac-ft detention	14	$5,611,000	$400,800
benching + 40 ac-ft detention	14	$5,904,000	$421,700
benching + 60 ac-ft detention	14	$6,198,000	$442,700
benching + 80 ac-ft detention	14	$6,491,000	$463,600

For flood mitigation during a 50-year event, the 60 acre-foot detention basin remains the most economical option. This alternative would protect ten (10) homes from a 50-year flood at a total cost of $1,586,000, and a cost per home of $158,600.

The discussion to this point has focused on lowering water surface levels below the first-floor sill elevations listed in the District's 1994 report. However, a third scenario is possible: lowering the water surface levels with one of the nine construction alternatives and then floodproofing all homes with WSELs within one foot of the sill elevations. The results of this analysis are listed in Table 3.

Table 3 - Alternative Evaluation/Floodproofing 100-yr. event

Alternative	Homes Protected	Cost	Homes Protected including floodproofing	Cost	Cost per Home
floodproofing only	-	-	22	$990,000	$45,000
20 ac-ft detention	10	$999,000	23	$1,584,000	$68,900
40 ac-ft detention	19	$1,293,000	26	$1,608,000	$61,800
60 ac-ft detention	24	$1,586,000	27	$1,721,000	$63,700
80 ac-ft detention	24	$1,880,000	27	$2,015,000	$74,600
benching	25	$4,611,000	30	$4,836,000	$161,200
benching + 20 ac-ft detention	26	$5,611,000	30	$5,791,000	$193,000
benching + 40 ac-ft detention	26	$5,904,000	30	$6,084,000	$202,800
benching + 60 ac-ft detention	28	$6,198,000	30	$6,288,000	$209,000
benching + 80 ac-ft detention	29	$6,491,000	30	$6,536,000	$217,900

When floodproofing is included as a potential solution, the most efficient alternative is the "floodproofing only" option which will protect twenty-two (22) homes at a total cost of $990,000, a $45,000 per home average.

According to the XP-SWMM watershed simulation, a total of four homes are subject to frequent flooding by the 15-year storm event. These homes could be protected from flood damage by floodproofing the structures. The cost of this option is $45,000 per home for a total cost of $180,000.

CONCLUSION

If the goal is to protect all of the homes along this reach from flood damage, the least expensive alternative is to bench the floodplain and then floodproof the remaining structures. The cost for this option is $4,836,000, of which $4,611,000 is for benching and $225,000 for floodproofing. The storage effect of the new flood plain lowers the water surface elevations enough to eliminate flooding for twenty-five (25) homes, and reduces the elevations enough to where floodproofing becomes a viable option for the remaining five (5) homes. Protecting all thirty houses using this option would cost $161,200 per home.

When all of the alternatives are considered, the most economical solution on a per home cost basis is the "floodproofing only" option. This option would protect twenty-two (22) homes at a cost of $45,000 per home and a total cost of $990,000.

Appendix C

Supplemental References to Fernridge Creek Problem Area FC-1

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MEMORANDUM

TO:	Mr. Dick Hearnes City of Creve Coeur	DATE:	May 24, 2001
FROM:	Steve Randolph/Gene Rovak	H&S JOB NO:	00.008-10

SUBJECT: Fernridge Creek - culvert modification analysis

INTRODUCTION

This memo is a follow-up to our previous investigations into flooding on Bellerive Estates Drive and Ambois Drive. In this analysis we studied the effect of modifying the culverts at Rue de Fleur and Bellerive Estates to determine whether improved hydraulic properties could reduce flooding. Previous studies have looked at the effects of providing upstream detention, increasing the capacity of the channel, and floodproofing.

METHODOLOGY

To study the effects of improved hydraulic properties we used a steady state HEC-RAS model. In the original HEC-2 simulations, the two creek crossings were modeled using the special bridge approach. Upon importing the original Fernridge HEC-2 into HEC-RAS, we ran our first simulations keeping the special bridge configuration and the WSPRO bridge modeling approach. This technique presents more alternatives in modifying the hydraulic properties of bridges such as wing wall lengths and angles. However, we were not able to change other parameters that would affect the entrance and exit loss coefficients. To allow even greater flexibility we eliminated the special bridge configuration and edited the model to include the actual dimensions of the culverts. Using this method gave us more options that reduced the exit and entrance loss coefficients, such as beveling the culvert entrance.

The most recent version of HEC-RAS also enables the user to perform unsteady flow analysis. An unsteady flow study is needed to test downstream effects of our improvements and we made several attempts to run the unsteady analysis with HEC-RAS. However, the output was unstable even with the shortest time step so to more reliably predict downstream effects we decided to use the XP-SWMM software that was used in the previous reports. This model also has the capability of modifying loss coefficients as was done in HEC-RAS.

ANALYSIS

We tried several culvert modifications to get the best hydraulic properties practicable. The column titled "best practical" represents the best reduction in entrance losses that could be achieved; it corresponds to FHWA culvert chart #13, with offset wingwalls and a beveled edge at the top of the inlet pipe. More specifically the wingwalls are flared 18.4 degrees and the inlet bevel is equal to 0.083 times the diameter of the inlet pipe. This configuration reduces the entrance loss coefficient from 1.0 to 0.2. The exit loss coefficient remains at 1.0 because it is not practical to reduce these losses without the construction of large downstream channel with a warped transitions. The column titled "theoretical" represents a hypothetical configuration with entrance and exit loss coefficients equal to zero. Table 1 lists the water surface elevations for the 100-year storm event.

Table 1 - 100-year Water Surface Elevations

cross section	existing	theoretical	best practical
4630	485.78	485.78	485.78
4679	485.65	485.65	485.65
Rue de Fleur			
4761	490.71	489.74	490.31
4796	491.00	490.49	490.75
5125	491.00	490.49	490.75
5350	491.10	490.62	490.86
5575	491.22	490.79	491.00
5800	491.62	491.36	491.48
5859	491.84	491.62	491.72
Bellerive Estates			
5911	494.17	490.96	494.03
5960	494.27	494.37	494.17
6100	494.58	494.65	494.49

As you can see, the effects of the improvements is minimal. The greatest reduction that can be reasonably expected is 0.4', immediately upstream of the Rue de Fleur culvert. This benefit rapidly diminishes as you go upstream. At the next cross-section (a distance of 35 feet), the water surface elevation (WSEL) reduction is only 0.25'. Reductions in WSEL of this magnitude will have no effect on the flooding of homes along Ambois and Bellerive Estates. Although the theoretical model shows that WSEL's will be slightly higher 50' upstream of the Bellerive Estates culvert, this effect is an anomaly as it could not worsen the situation but it reinforces the idea that there is no benefit to improving the culvert's hydraulic properties in this critical flooding area.

Even though there is no positive benefit to improving the hydraulic properties of the two culverts, there was potential for negative effects downstream from the greater volumes passing through the culvert. Table 2 shows the results of the unsteady flow analysis.

Table 2 - 100-year XP-SWMM output			
Address	low-sill elevation	existing SWMM	modified SWMM
13006 Ambois	480.20	480.90	480.94
13001 Ambois	480.29	482.26	482.32
12995 Ambois	480.37	482.26	482.32
12987 Ambois	482.03	482.29	482.34
12986 Ambois	483.49	482.59	482.63
12978 Ambois	484.21	482.59	482.63
12970 Ambois	487.30	482.89	482.94
12958 Ambois	483.43	483.19	483.26
12950 Ambois	484.24	483.19	483.26
12944 Ambois	484.21	484.39	484.45
12936 Ambois	488.55	484.79	484.85
12935 Ambois	490.60	484.70	484.73
12927 Ambois	489.02	484.70	484.73
12936 Bellerive Estates	491.21	487.16	487.13
12930 Bellerive Estates	488.78	487.16	487.13
12924 Bellerive Estates	487.18	487.16	487.13
12918 Bellerive Estates	485.45	487.42	487.41
12912 Bellerive Estates	486.85	487.42	487.41
12906 Bellerive Estates	487.93	487.42	487.41
12900 Bellerive Estates	488.59	487.42	487.41
12832 Bellerive Estates	486.82	487.42	487.41
12824 Bellerive Estates	487.96	478.42	487.41
12816 Bellerive Estates	488.31	488.13	488.15
12808 Bellerive Estates	488.33	488.13	488.15
12800 Bellerive Estates	487.83	488.13	488.15
695 Bellerive Estates	488.54	489.26	489.32
683 Bellerive Estates	488.46	490.25	490.31
694 Bellerive Estates	492.02	493.74	493.65
686 Bellerive Estates	492.58	493.74	493.65
680 Bellerive Estates	493.01	493.97	493.90

Although there is a slight rise in water surface elevations downstream of the two road culverts, the potential improvements would have no effect on flooding. That is, the improvements will cause no additional homes to flood in a 100-year event.

Appendix C

Supplemental References to Fernridge Creek Problem Area FC-1

- SSSMIP Extract
- Memo- Fernridge Creek - Detention Basin and Channel Modification
- Memo- Fernridge Creek - Culvert Modification
- Follow-up to Culvert Modification Memo
- Fernridge Creek Conceptual Design Report
- Letter Regarding Footbridge Reconstruction

HORNER & SHIFRIN, INC.
ENGINEERS ■ ARCHITECTS ■ PLANNERS

5200 Oakland Ave.• St. Louis MO 63110
(314) 531-4321 • Fax: (314) 531-6966

6400 W. Main, 1-L • Belleville IL 62223
(618) 397-1065 • Fax: (618) 397-1056

www.hornershifrin.com

MEMORANDUM

TO:	Mr. Vijay Bhasin City of Creve Coeur	DATE:	July 5, 2001
FROM:	Steve Randolph	H&S JOB NO:	00.008-10
CC:	Craig Lingle/Gene Rovak		
SUBJECT:	Fernridge Creek - culvert modification analysis		

INTRODUCTION

In this analysis we study the effect of modifying the culverts at Rue de Fleur and Bellerive Estates to determine whether improved hydraulic properties could reduce flooding.

METHODOLOGY

To study the effects of improved hydraulic properties we used a steady state HEC-RAS model. In the original HEC-2 simulations, the two creek crossings were modeled using the special bridge approach. Upon importing the original Fernridge HEC-2 into HEC-RAS, we ran our first simulations keeping the special bridge configuration and the WSPRO bridge modeling approach. This technique presents more alternatives in modifying the hydraulic properties of bridges such as wing wall lengths and angles. However, we were not able to change other parameters that would affect the entrance and exit loss coefficients. To allow even greater flexibility we eliminated the special bridge configuration and edited the model to include the actual dimensions of the culverts. Using this method gave us more options that reduced the exit and entrance loss coefficients, such as beveling the culvert entrance. This modeling effort was enhanced by a recent survey performed by Atterbury Engineering that made possible the verification of creek cross sections and culvert dimensions and allowed any necessary adjustments to be made to the model.

The most recent version of HEC-RAS enables the user to perform unsteady flow analysis. An unsteady flow study is needed to test downstream effects of our improvements and we made several attempts to run the unsteady analysis with HEC-RAS. However, the output was unstable even with the shortest time step so to more reliably predict downstream effects we decided to use the XP-SWMM software that was used in MSD's Creve Coeur Watershed study. This model also has the capability of modifying loss coefficients as was done in HEC-RAS.

ANALYSIS

We tried several culvert modifications to get the best hydraulic properties practicable. The column titled "best practical" represents the best reduction in entrance losses that could be achieved; it corresponds to FHWA culvert chart #13, with offset wingwalls and a beveled edge at the top of the inlet pipe. More specifically the wingwalls are flared 18.4 degrees and the inlet bevel is equal to 0.083 times the diameter of the inlet pipe. This configuration reduces the entrance loss coefficient from 1.0 to 0.2. The exit loss coefficient remains at 1.0 because it is not practical to reduce these losses without the construction of large downstream channel with a warped transitions. The column titled "theoretical" represents a hypothetical configuration with entrance and exit loss coefficients equal to zero. Table 1 lists the water surface elevations for the 100-year storm event.

Table 1 - 100-year Water Surface Elevations

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Bellerive Estates			
5911	494.17	490.96	494.03
5960	494.27	494.37	494.17
6100	494.58	494.65	494.49

As you can see, the effects of the improvements is minimal. The greatest reduction that can be reasonably expected is 0.4', immediately upstream of the Rue de Fleur culvert. This benefit rapidly diminishes as you go upstream. At the next cross-section (a distance of 35 feet), the water surface elevation (WSEL) reduction is only 0.25'. Reductions in WSEL of this magnitude will have no effect on the flooding of homes along Ambois and Bellerive Estates. Although the theoretical model shows that WSEL's will be slightly higher 50' upstream of the Bellerive Estates culvert, this effect is an anomaly as it could not worsen the situation but it reinforces the idea that there is no benefit to improving the culvert's hydraulic properties in this critical flooding area.

Even though there is no positive benefit to improving the hydraulic properties of the two culverts, there was potential for negative effects downstream from the greater volumes passing through the culvert. Table 2 shows the results of the unsteady flow analysis.

Table 2 - 100-year XP-SWMM output			
Address	**low-sill elevation**	**existing SWMM**	**modified SWMM**
13006 Ambois	480.20	480.90	480.94
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686 Bellerive Estates	492.58	493.74	493.65
680 Bellerive Estates	493.01	493.97	493.90

Although there is a slight rise in water surface elevations downstream of the two road culverts, the potential improvements would have no effect on flooding. That is, the improvements will cause no additional homes to flood in a 100-year event.

CONSTRUCTION AND COST INFORMATION

Entrance improvements

To decrease losses at the entrance, a chamfered edge would have to be added at the top of both culverts. This could be done by attaching a pre-formed concrete section to the culvert face with anchor bolts similar to that shown in Figure 1. Also, wingwalls will have to be constructed for the Bellerive Estates culvert. The Rue de Fleur culvert already has wingwalls.

Costs for the chamfered edges at both the Rue de Fleur and Bellerive Estates culverts is nominally estimated at $4,000 each based on material quantities and contingencies. This is a very rough estimate since this type of construction is not included in standard unit costs. Small, custom jobs like these can be labor intensive and cost considerably more than expected. The wingwalls for the Bellerive Estates culvert are estimated to cost approximately $6,500.

Exit improvements

To reduce the exit losses at the culverts, it would be necessary to construct a reinforced concrete channel with warped transitions as shown in Figure 2. The channel would extend about 100' downstream from the culverts. Estimated costs for these improvements would be approximately $96,000 for the Rue de Fleur culvert and $89,000 for the Bellerive Estates culvert. This only includes the reinforced concrete sections. It is likely that additional downstream improvements in the natural stream sections would also be required to match the configuration of the concrete channel.

CONCLUSION

The high cost of the exit improvements ($185,000 for both culverts) coupled with negligible benefits eliminates them from serious consideration. Similarly, even though the upstream improvements cost comparatively less (nominally estimated at $14,500), the hydraulic benefits they provide will only result in minimal reductions in water surface elevations (WSEL). The greatest reduction that can be reasonably expected is .0.4' (about 4 ¾"), immediately upstream of the Rue de Fleur culvert. This benefit rapidly diminishes as you go upstream. At the next cross-section (a distance of 35 feet), the WSEL reduction is only 0.25' (3 inches). Immediately upstream of the Bellerive Estates culvert there is a decrease of only 0.14' (about 1 ¾"). Reductions in WSEL of this magnitude will have no effect on the flooding of homes along Ambois and Bellerive Estates. That is, the model indicates that all of the houses that currently flood will do so even if the proposed improvements are constructed. They will also be unable to prevent flooding on Bellerive Estates Drive. Therefore, it is our recommendation that culvert modification is not a viable option for flood reduction at this location.

Appendix C

Supplemental References to Fernridge Creek Problem Area FC-1

- SSSMIP Extract
- Memo- Fernridge Creek - Detention Basin and Channel Modification
- Memo- Fernridge Creek - Culvert Modification
- Follow-up to Culvert Modification Memo
- Fernridge Creek Conceptual Design Report
- Letter Regarding Footbridge Reconstruction

CONCEPTUAL DESIGN REPORT
FERNRIDGE CREEK DRAINAGE PROJECT

The Draft Conceptual Design Report for the Fernridge Creek Drainage Project was submitted to the City of Creve Coeur during a meeting of the Stormwater Committee on April 6, 2000. A copy of the text of that report is included at the back of this submittal.

The Draft Report addressed methods of alleviating flooding along Fernridge Creek, and proposed streambank stabilization options for areas of the creek with erosional problems or potential problems. The options reviewed for alleviating flooding along the creek included increased conveyance (by building a berm or channelizing the stream), stormwater detention along the creek through benching of the floodplain, upstream stormwater detention, floodproofing of individual homes, and property buyouts. The option to increase conveyance was determined to be not feasible due to probable downstream impacts. The option of detention through benching along the stream was found to be very expensive and not as effective as the other options. Upstream detention was found to be a viable option, but very expensive to construct, and it would require that the City purchase a large property. From an economic standpoint, floodproofing of individual homes appeared to be least costly of all options, but it would be the most intrusive to those affected homeowners. Property buyouts may be feasible, but the homes most affected by flooding are spread out along the creek. It is felt that the buyouts would be costly, and would result in the City owning several small parcels of land which would require maintenance while providing little beneficial use.

Work related to Fernridge Creek which has been done since submittal of the Draft Report consisted of three efforts: obtaining input from local residents concerning their perceived problems with Fernridge Creek; analyzing the requirements for reducing the impact of 15-yr storm flooding along the creek; and providing a prioritization to the stormwater mitigation methods recommended in the Draft Conceptual Design Report. These three areas of work are documented and summarized herein.

1.0 PUBLIC MEETING

On May 16, 2000, a public meeting was held at the Bellerive Elementary School. The intent of the meeting was to inform the people living near Fernridge Creek about the project, and to obtain input from local residents on their concerns about the creek. Representatives of the City of Creve Coeur and Horner & Shifrin attended the meeting, presented project information and answered questions. A copy of the list of meeting attendees is included with this document. Public response was solicited through questionnaires provided to all meeting participants. Subsequent to the meeting, six questionnaires were submitted to the City. Copies of these are

included at the end of this report. An analysis of the questionnaires provides the following conclusions:

- All respondees who indicated flooding problems during the August, 1996 storm were among those listed as affected in MSD's report about that storm event.
- Typical concerns are about creek widening, and erosion which is already affecting properties or approaching property lines.

The responses included no new flooding problems. None of the areas of erosion described in the questionnaires posed a near-term threat to structures. Therefore, the analysis and recommendations provided in the Draft Conceptual Design Report are not affected by findings resulting from the public meeting.

2.0 ANALYSIS OF 15-YEAR STORM

The draft report included analyses of flooding due to 50-yr and 100-yr storms. To provide some indication of what would be required to alleviate flooding due to storms of shorter return frequencies, a 15-yr storm was modeled. This effort included adjusting output from the proposed BJC Basin in Millenium Park, and considering the amount of upstream storage that might be needed to prevent flooding during a 15-yr storm. A summary of the water surface elevations is included in Figure 1. The findings are as follows:

- Of the 4 houses reported to be flooded by a 15 year storm in the MSD SSMIP report, all are still shown to be flooded after the proposed BJC Basin at Millenium Park is built.
- To alleviate flooding due to a 15-year storm, some 40 acre feet of upstream detention would need to be built. The cost of this is provided in the draft report, provided with this document.

3.0 PRIORITIZATION OF RECOMMENDED ALTERNATIVES

After submittal of the draft report, it was felt that some guidance was needed as to phasing of the recommended mitigation methods based on a prioritization system. To determine an order for implementation we ranked the recommended strategies with the MSD SSMIP prioritization procedure: a simple benefit point/cost ratio. How this system applies to the individual Fernridge Creek recommendations is as follows:

Strategy: Floodproof 14 homes from creek overbank flooding

Category	# of lots	Pts.	Ext.
Frequent basement flooding	4	200	800
Infrequent basement flooding	10	30	300
Total			1100

Estimated Cost = $677,000
BP/C ratio = 1100/677 = **1.62**

Strategy: Install backflow protection for 10 homes

Category	# of lots	Pts.	Ext.
Infrequent basement flooding	10	30	300
Total			300

Estimated Cost = $120,000
BP/C ratio = 300/120 = **2.50**

Strategy: Modular block retaining wall

Category	# of lots	Pts.	Ext.
Moderate erosion risk – habitable structure	4	50	200
High erosion risk – yard erosion (per lot)	4	10	40
Total			240

Estimated Cost = $66,000
BP/C ratio = 240/66 = **3.64**

Strategy: Repair south bank behind Bellerive Estates School

Category	# of lots	Pts.	Ext.
Moderate erosion risk – school building	1	50	50
High erosion risk – yard erosion (per lot)	1	10	10
Total			60

Estimated Cost = $30,000
BP/C ratio = 40/30 = **1.33**

Strategy: Remove rubble & rehab banks downstream of Bellerive Estates Dr.

Category	# of lots	Pts.	Ext.
High erosion risk – yard erosion (per lot)	4	10	40
Total			40

Estimated Cost = $30,000
BP/C ratio = 40/30 = **1.33**

Strategy: Replace storm sewer outfalls on Bellerive Estates Dr.

Category	# of lots	Pts.	Ext.
High erosion risk – yard erosion (per lot)	4	10	40
Miscellaneous - reduction in maintenance	-	50*	50
Total			90

Estimated Cost = $80,000
BP/C ratio = 90/80 = **1.12**

*Note: 50 points were awarded to this project because it is assumed that the City will have a reduction in maintenance costs associated with filling sinkholes over the current deteriorated pipe.

Strategy: Thinning of the tree canopy*

Category	# of lots	Pts.	Ext.
Total			

Estimated Cost = $15,000
BP/C ratio = xxx/15 = **x.xx**

*Note: This strategy is not ranked because it does not fit into any of the established criteria. However, implementation of this strategy is an integral part of any of the biostabilization recommendations.

Strategy: Repair tributary channel and stabilize Gascogne Dr. outfall

Category	# of lots	Pts.	Ext.
Moderate erosion risk – habitable structure	5	50	250
Total			250*

Estimated Cost = $68,000
BP/C ratio = 125/68 = **1.84**

*NOTE: This recommendation is a preventative strategy. It is being ranked with a method instituted by the City of Maryland Heights that assigns points to a project when clear consequences are predictable and then discounts them by 50% to account for the future nature of the problems.

The following table lists the recommendations from highest to lowest rank.

RANK	STRATEGY	BP/C
1	Modular block retaining wall	3.64
2	Install backflow protection for 10 homes	2.50
3	Repair south bank behind Bellerive Elementary School	2.00
4	Repair tributary channel & stabilize Gascogne Drive outfall	1.84
5	Floodproof 14 homes from creek overbank flooding	1.62
6	Remove rubble and rehab banks downstream of Bellerive Estates Drive	1.33
7	Replace storm sewer outfalls from Bellerive Estates Drive.	1.12
-	Thinning of the tree canopy	N/A

A copy of the MSD benefit point table and a brief description of the prioritization procedure is attached at the end of this report.

QUESTIONNAIRES RECEIVED AFTER THE PUBLIC MEETING

CCL

PUBLIC MEETING

Date: May 16, 2000 Time: 5 - 7 P.M.

Place: Bellerive School Project: Fernridge Creek

ATTENDEES

Name	Address	Phone No.
Ken Dieckhaus	13119 Gascogne Ct	314 576 6793
VIRGINIA OWENS	12924 BELLERIVE	878-8697
Ralph Wasielewski	13105 Dartagnan Ct	314 453-0625
Marilyn Schneider	12800 Bellerive Est Dr	314-434-2041
JACK JURKIEWICZ	695 BELLERIVE EST	314-434-8907
Jennifer Hempstead	12985 Lampadaire	3145422183
[illegible]	12900 Bellerive DR	314-878-8807
[illegible]	13016 [illegible]	314-878-9126
Joe Duever	871 Mason Rd	
BOB BALK	13001 AMBOIS	314 8789363
Fran Balk	13001 Ambois	314 8789363
Sue Kroeger	11525 Lakeshore	314-997-[illegible]
Jack Berrin	547 Falaise	314-434-5727

Sheet ____ of Sheet ____

Fernridge Creek Stormwater Project Public Meeting Questionnaire

Name Thomas Whatley

Address 12900 Bellerive Estates DR.

Phone Number/e-mail address 878-8807

Was your home affected by the storm of August, 1996? Yes If so, how (depth of flooding, location, etc.)
3 feet. in walk out basement. Water broke sliding glass door.

Have you been impacted by other storms? No If so, how (frequency, depth of flooding, location, etc.)

Have you made any home improvements to prevent flooding, such as sanitary sewer backflow preventers, sealing up basement windows or other methods?
No

Other than the flooding and erosion problems presented at the public meeting, are there any other problems with Fernridge Creek which you are aware of and/or worried about? (please write on the back if additional space is needed)

If this form is filled out after the public meeting, Please send or deliver to:

Mr. Vijay Bhasin
Director of Public Works
300 N. New Ballas Road
Creve Coeur, MO 63141

Gene Rovak

Fernridge Creek Stormwater Project Public Meeting Questionnaire
(Please Complete During the Public meeting)

Name Family OF Joseph Duever

Address 871 Mason Rd.

Phone Number/e-mail address ~~314 878 3294~~
636 532 7312

Was your home affected by the storm of August, 1996? NO If so, how (depth of flooding, location, etc.)
Pasture Flooded No Sweat

Have you been impacted by other storms? _____ If so, how (frequency, depth of flooding, location, etc.)
"

Have you made any home improvements to prevent flooding, such as sanitary sewer backflow preventers or floodproofing of your property?
NO

Other than the flooding and erosion problems presented at the public meeting, are there any other problems with Fernridge Creek which you are aware of and/or worried about? (please write on the back if additional space is needed)

We worry how your decisions at City Hall will put more water in our creek.
Or that we will loose control of our farm - (that you will take our property rights)

If this form is filled out after the public meeting, Please send or deliver to:

Mr. Vijay Bhasin
Director of Public Works
300 N. New Ballas Road
Creve Coeur, MO 63141

We don't wish to sell the home place & 9 acres till after Mom & Dad pass away - Please give us that

RECEIVED
MAY 23 2000
C. C. Public Works

Fernridge Creek Stormwater Project Public Meeting Questionnaire
(Please Complete During the Public meeting)

Name VIRGINIA OWENS

Address 12924 BELLERIVE ESTATES

Phone Number/e-mail address 314-878-8697

Was your home affected by the storm of August, 1996? YES If so, how (depth of flooding, location, etc.)

My basement was flooded with about 3 inches of dirty, muddy water from the basement sewer. Outside all my flowers washed away with the top soil and to show how swift the water ~~water~~ flowed 3 garbage cans filled ~~next~~ with firewood standing next

Have you been impacted by other storms? ✓ If so, how (frequency, depth of flooding, location, etc.)

When a hard rain comes the creek fills rapidly.

Have you made any home improvements to prevent flooding, such as sanitary sewer backflow preventers or floodproofing of your property?

Since I live alone I don't know how to correct this flooding situation. 1. What is a sanitary sewer backflow preventer? 2. How would I floodproof my property?

Other than the flooding and erosion problems presented at the public meeting, are there any other problems with Fernridge Creek which you are aware of and/or worried about? (please write on the back if additional space is needed)

Everytime it rains the bank of the creek washes away and the creek is only 15 feet from my property line. The creek is quickly becoming wider & deeper

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Mr. Vijay Bhasin
Director of Public Works
300 N. New Ballas Road
Creve Coeur, MO 63141

Gene Rovak

Fernridge Creek Stormwater Project Public Meeting Questionnaire
(Please Complete During the Public meeting)

Name Mr. and Mrs. Robert Stevens

Address 12824 Bellerive Est. Dr, Creve Coeur, MO. 63141

Phone Number/e-mail address 314-878-1068, E-Mail nstar007@primary.n

Was your home affected by the storm of August, 1996? YES If so, how (depth of flooding, location, etc.)
Eight - ten inches of water throughout our basement. We back up to the creek. We had water coming in our walk-out basement from outside and sewer back-up from inside.

Have you been impacted by other storms? NO If so, how (frequency, depth of flooding, location, etc.)

Have you made any home improvements to prevent flooding, such as sanitary sewer backflow preventers or floodproofing of your property?
I've only bought flood insurance which is a tremendous burden since it costs more than my home owners insurance.

Other than the flooding and erosion problems presented at the public meeting, are there any other problems with Fernridge Creek which you are aware of and/or worried about? (please write on the back if additional space is needed) JUST:
1. Flooding
2. Erosion of my property on the edge of creek.

If this form is filled out after the public meeting, Please send or deliver to:

Mr. Vijay Bhasin
Director of Public Works
300 N. New Ballas Road
Creve Coeur, MO 63141

Fernridge Creek Stormwater Project Public Meeting Questionnaire
(Please Complete During the Public meeting)

Name Marilyn Schneider

Address 12800 Bellevive Estate Drive

Phone Number/e-mail address 434-2041

Was your home affected by the storm of August, 1996? Yes If so, how (depth of flooding, location, etc.)
All of back yard - running approx 4-5 feet
Basement - 3 ft flooding of entire area - mainly coming from storm sewer

Have you been impacted by other storms? Yes If so, how (frequency, depth of flooding, location, etc.)
not in hanger. Backyard flood to within twenty feet of patio door x2

Have you made any home improvements to prevent flooding, such as sanitary sewer backflow preventers or floodproofing of your property?
Placement of sanitary sewer back flow preventers
Have spent ≈ $6000 - 7000 rocking bank & placement of dirt adjacent to creek (Rocking suggested by MSD)

Other than the flooding and erosion problems presented at the public meeting, are there any other problems with Fernridge Creek which you are aware of and/or worried about? (please write on the back if additional space is needed)

If this form is filled out after the public meeting, Please send or deliver to:

Mr. Vijay Bhasin
Director of Public Works
300 N. New Ballas Road
Creve Coeur, MO 63141

Fernridge Creek Stormwater Project Public Meeting Questionnaire

Name Ralph Wasielewski

Address 13105 Dartagnan Ct.

Phone Number/e-mail address 453-0625

Was your home affected by the storm of August, 1996? No If so, how (depth of flooding, location, etc.)

Home was not affected but my property was effected.

Have you been impacted by other storms? Yes If so, how (frequency, depth of flooding, location, etc.)

More storms cause creek to leave its banks than previous years.

Have you made any home improvements to prevent flooding, such as sanitary sewer backflow preventers, sealing up basement windows or other methods?

No

Other than the flooding and erosion problems presented at the public meeting, are there any other problems with Fernridge Creek which you are aware of and/or worried about? (please write on the back if additional space is needed)

The creek should be clear water! Sediment in water content is causing accelerated erosion.

If this form is filled out after the public meeting, Please send or deliver to:

Mr. Vijay Bhasin
Director of Public Works
300 N. New Ballas Road
Creve Coeur, MO 63141

NOTE: I appose any plan that changes elevations along the project area. Peticularly those changes that increas

Fernridge Creek Stormwater Project Public Meeting Questionnaire

Name JACK JURKIEWICZ

Address 695 BELLERIVE ESTATES DR.

Phone Number/e-mail address 434-8907

Was your home affected by the storm of August, 1996? ✓ If so, how (depth of flooding, location, etc.)

AS MUCH AS TWO FEET ON LOWER LEVEL OF HOUSE

Have you been impacted by other storms? ✓ If so, how (frequency, depth of flooding, location, etc.)

DURING ABOUT 38 YEARS IN THE HOUSE WE HAVE WATER IN THE LOWER LEVEL ABOUT TEN TIMES MAINLY COMING UP THRU THE SEWERS, TOILETS, SHOWERS

Have you made any home improvements to prevent flooding, such as sanitary sewer backflow preventers, sealing up basement windows or other methods?

YES, SEALED WALLS AND INSTALLED DRAIN GUTTERS AND SUMP PUMP

Other than the flooding and erosion problems presented at the public meeting, are there any other problems with Fernridge Creek which you are aware of and/or worried about? (please write on the back if additional space is needed)

EROSION PRIMARILY & NEW DEVELOPMENTS WITHOUT PROPER WATER DISPOSAL

If this form is filled out after the public meeting, Please send or deliver to:

Mr. Vijay Bhasin
Director of Public Works
300 N. New Ballas Road
Creve Coeur, MO 63141

MSD BENEFIT POINT TABLE

Metropolitan St. Louis Sewer District
Stormwater System Master Improvement Plan
Creve Coeur Creek Watershed
Benefit Points

	Points	Units
Frequent Structural Flooding (15 Year Flood)		
Habitable first floor	300	Unit
Basements	200	Unit
Miscellaneous structures including patios/decks, pools, sheds, tennis courts, etc.	50	Unit
Yard flooding	10	Lot
Industrial building	300	2500 sf
Frequent Roadway Flooding (15 Year Flood)		
Emergency access restricted to any habitable structure	200	Lot
Traffic obstruction on arterial streets	50	250 ft
Traffic obstruction on collector streets	25	250 ft
Traffic obstruction on residential streets	10	250 ft
Infrequent Structural Flooding (100 Year Flood)		
Habitable first floor	45	Unit
Basements	30	Unit
Miscellaneous structures including patios/decks, pools, sheds, tennis courts, etc.	7	Unit
Yard flooding	2	Lot
Industrial building	45	2500 sf
Infrequent Roadway Flooding (100 Year Flood)		
Emergency access restricted to any habitable structure	30	Lot
Traffic obstruction on arterial streets	7	250 ft
Traffic obstruction on collector streets	4	250 ft
Traffic obstruction on residential streets	2	250 ft
High Risk Structural Erosion (within 25 feet of structure)		
Habitable structures	200	Unit
Miscellaneous structures including patios/decks, pools, sheds, tennis courts, etc.	100	Unit
Industrial buildings	200	2500 sf
High Risk Roadway Erosion (within 25 feet of structure)		
Arterial	100	250 ft
Collector	50	250 ft
Residential	25	250 ft
Low Risk Structural Erosion (greater than 100 feet from structure)		
Yard Erosion	10	Lot
Moderate Risk Structural Erosion (within 26 to 100 feet of structure)		
Habitable structures	50	Unit
Miscellaneous structures including patios/decks, pools, sheds, tennis courts, etc.	25	Unit
Industrial buildings	50	2500 sf
Moderate Risk Roadway Erosion (within 26 to 100 feet of structure)		
Arterial	25	250 ft
Collector	13	250 ft
Residential	6	250 ft

The table on the following pages is part of a ranking system developed for the Metropolitan St. Louis Sewer District to prioritize stormwater projects. This method ranks projects in an equitable and cost-effective way that minimizes subjective factors. It is easily understood by the community, therefore eliminating the perception that socio-political factors can influence the actual implementation of projects.

The procedure, a simple benefit point/cost ratio, was chosen after reviewing several prioritization plans used throughout the country. Benefits are determined by applying a point system to decide the total number of benefit points per project. This system divides the benefits into two general categories: (1) Stormwater Problems Resolved and (2) Secondary Benefits of Stormwater Projects. This system can readily incorporate additional criteria or changes in the point allocations as deemed necessary to reflect the value judgments of a particular community.

The problems are ranked by dividing the benefit points by the cost of the project (in thousands of dollars) to produce a benefits per thousand dollars scale. The most cost-effective projects are those with the highest ratio; therefore they are afforded highest priority. There is no inherent limit to the total possible benefit points allowing for maximum differentiation between projects. By using the ratio rather than either the benefit or cost alone, neither large nor small projects are favored.

CONCEPTUAL DESIGN PHASE DRAFT REPORT

Fernridge Creek Drainage Project
City of Creve Coeur

Conceptual Design

Mason road to D'artagnan Court
H & S No. 00.008
Draft Report

April 6, 2000

HORNER & SHIFRIN, INC.
ENGINEERS ■ ARCHITECTS ■ PLANNERS

1.0 PROBLEM STATEMENT AND OBJECTIVE

Fernridge Creek runs through much of the western area of the City of Creve Coeur. The watershed drainage area at the point of joining Smith Creek is about 900 acres, an area that stretches close to I-270 and Royal Valley Drive. The reach of Fernridge Creek being studied for this project runs for approximately 4,300 feet from Mason Road to D'Artagnan Court, first through a commercial area and then through a residential neighborhood. Upstream of the study area the City is developing Millennium Park; north of the new park, BJC Hospital is planning a new expansion. The project location is shown in Figure 1.1.

In the Metropolitan St. Louis Sewer District's Creve Coeur Watershed report two problems were reported at this site; an erosion problem affecting four (4) homes on Ambois Drive, and an infrequent flooding problem during the 100-year storm affecting thirty (30) homes. According to analysis by watershed simulation used in the MSD study, it was determined that four of the homes are also subject to frequent flooding by the 15-year storm event. These homes lie in Fernridge Creek's natural 100-year floodplain, as delineated in FEMA maps.

A field inspection of the site determined that in addition to the reported erosion problems on Ambois Drive, four homes on Bellerive Estates Drive are also threatened in the reach between that street and Rue de Fleur.

Photographs of the problem areas are included in Appendix A.

The objective of this project is to identify, analyze and provide conceptual solutions to the flooding and erosion problems described above. This report is divided into the following sections:

Section 2.0 – Alternative Evaluation Methodology: Specifies the methodologies used to determine existing conditions and analyze proposed improvement strategies.

Section 3.0 – Analysis of the Flooding Problem: Identifies and evaluates the potential solutions to the flooding problems on Fernridge Creek.

Section 4.0 – Analysis of the Erosion Problem: Identifies and evaluates the potential solutions to the erosion problems on Fernridge Creek.

Section 5.0 - Recommendation: Details the combination of improvement strategies recommended for final design and their approximate costs.

Section 6.0 - Implementation Issues: Lists special items needing attention prior to final design and construction of a project.

Section 7.0 – Conclusion: Summarizes the report and lists future tasks.

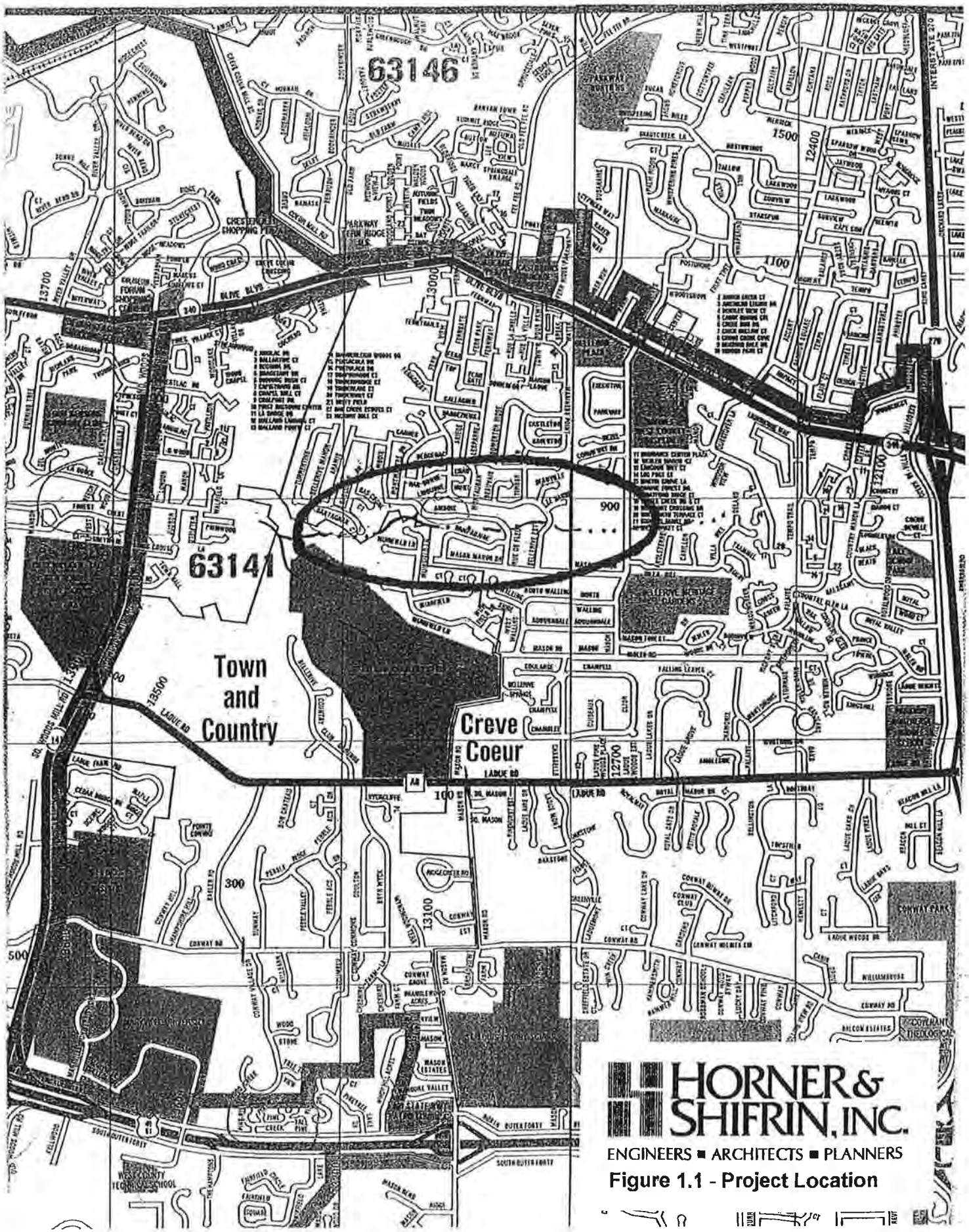

Figure 1.1 - Project Location

2.0 ALTERNATIVE EVALUATION METHODOLOGY

The following guidelines are used to assess the viability of the alternatives: design criteria, physical constraints, social and political acceptability, and technical constraints.

2.1 Design Criteria

A number of design items were considered in analyzing the mitigation strategies. They are as follows:

- The primary design objective is to reduce flooding and improve flow conditions while solving the erosion problem.
- Alternatives shall not increase peak flows and stages without adequate mitigation or other compensation.
- Channel velocities shall not be increased beyond erosive velocities unless appropriate erosion protection is provided.
- Alternatives that disturb the channel banks or adjacent property shall provide restoration to their present condition and be consistent with the character and setting of the area.

Existing flow quantities, velocities, and water surface elevations were calculated using the Storm Water Management Model (SWMM) computer simulation developed for the Creve Coeur Creek Watershed for the Metropolitan St. Louis Sewer District. This model was prepared as part of the District's Stormwater System Master Improvement Plan (SSMIP), a comprehensive look at the drainage problems in MSD's jurisdictional area.

2.2 Physical Constraints

Physical constraints are typically site related items such as size or slope that may constrain or limit a specific alternative at that site. For example the proximity of structures along the north bank of the channel behind houses on Bellerive Estates Drive may limit the amount of side slope that usable for restoration of the stream bank.

2.3 Social and Political Constraints

Drainage systems serve people, not just property. This fact gives rise to subjective constraints requiring solutions that may not be warranted strictly on the basis of their cost-effectiveness. For example, a working hydraulic solution may not be practical if it destroys the aesthetic values of the neighborhood, or worse, if it presents a safety hazard. Without proper citizen consideration, it may be difficult to secure public support for a solution even among the potential beneficiaries.

In addition, the government permitting process requires mitigation strategies acceptable to the proper regulatory agencies. These include the Metropolitan St. Louis Sewer District, the State of Missouri - Department of Natural Resources, and the U.S. Army Corps of Engineers.

2.3 Technical Constraints

Constraints in the design of drainage facilities involve many restrictions in addition to those described above. Examples include local soil conditions or potential conflicts with utilities that must remain in their present locations.

3.0 ANALYSIS OF THE FLOODING PROBLEM

3.1 Alternatives

The following alternatives were considered as potential solutions to the flooding problem:

- Providing stormwater detention upstream to lessen the impacts of peak flows through the previously flooded area. Detention sites considered were the new BJC basin, Millennium Park, Minner Nursery, and the Duever Nursery property
- Increased conveyance; this could be done by either constructing a small berm to keep flows in the channel or by benching of the flood plain. The berm would be required around those areas with houses affected by flooding. The benched area would be in the Bellerive Estates Subdivision common ground.
- All of the above with floodproofing
- Floodproofing only

All of the alternatives were analyzed for a standard 24-hr, 100-year storm event using Version 6.2 of the XPSWMM stormwater model developed for MSD's Creve Coeur Watershed Plan. Additionally, rainfall data from a large storm (August, 1996) which approximated a 100-yr storm event was utilized for comparison. For this analysis the model was updated to incorporate changes which occurred in the watershed since the MSD study, including the planning of Millennium Park, further development of the BJC Hospital property, and the development of the Minner Nursery property into residential land use. Representative copies of the stormwater model input files are included in Appendices B and C of this report. Appendix C also has a schematic representation of Fernridge Creek used for stormwater modeling.

Of the thirty homes reported by MSD to have been flooded during the storm in 1996, the model indicates that eighteen were from creek overbank flooding. The other twelve homes were flooded due to ancillary problems related to the flood, such as sanitary sewer backups. By comparing the model's calculated water surface elevations with the first floor sill elevations in the affected homes, the level of protection provided by each alternative was determined. Cost estimates were done for all of the alternatives using the same unit prices as those utilized in the SSMIP Creve Coeur Watershed Study.

3.1.1 Potential Detention Sites - Potential sites for stormwater detention include the new BJC Basin, Millennium Park, and the nursery property along Fernridge Creek, west of Mason Road. Initially it was thought that the Minner Nursery property could be a possible site, but the tributary area to this location was determined to be too small to have any affect on the flooding problem downstream. Therefore it was eliminated from further consideration and model analysis.

Additionally, storage of stormwater in sub-grade pipes at Millennium Park was considered. Based on the required storage amounts reported in the SSMIP, we did a preliminary cost estimate for providing underground storage using corrugated metal pipe. For 40 to 60 acre-feet of storage in 9' diameter pipes, the estimated cost for the pipe alone ranged from $5,000,000 to $8,000,000. This cost placed the alternative well above the potential costs for other alternatives under consideration, and therefore the underground detention was also eliminated from consideration.

The other sites listed above were analyzed in more detail using the XP-SWMM watershed simulation. Those results are provided later in the report.

3.1.2 Floodplain Benching - Benching the floodplain would increase the conveyance of the channel by providing additional flow area for the stream during less frequent storm events. During low-flow (2-year storms or less) the base flow would remain in the main channel. Above the two-year storm flow level a horizontal shelf would be cut into the slope to allow high flow storm events to spread out. The bank would slope again from the shelf to top-of-bank at a 2:1 grade or milder. The toe of the slope in the channel would be stabilized using a rock roll or coir log staked into the stream bed. Additional slope protection would be provided below the shelf by joint staking, or rip rap. Slope protection above the shelf would be by erosion control mat, joint staking and seeding with native plants and wild flowers.

The site of the benching would be the Bellerive Estates Subdivision common ground behind the homes on Ambois Drive. It can be done at this location with little disruption to the residents, and would allow continued use of the property.

3.1.3 Construction of a Berm - An alternative approach to increasing stormwater conveyance would be to construct a berm along the stream to protect the houses affected by flooding. Unlike floodplain benching, this option does not provide a substantially increased flow area for the stream. The resulting flow constriction can cause increased downstream flows and flow velocities, and therefore should be considered in relation to potential deleterious affects downstream. Due to the fact that an erosion control construction project is currently under way on Fernridge Creek downstream of the project area, and there are potential downstream erosion concerns identified within this report, the option of constructing a berm was eliminated.

3.1.4 Floodproofing Methods - Floodproofing of those homes flooded by sewer backups would entail the installation of backflow preventers. Discussions with homeowners indicate that at least one resident has already installed this type of protection on their own. It will need to be determined if any other property owners have also installed these devices. The assumed cost of installing a backflow preventer is $12,000 per home.

Floodproofing of homes affected by creek overbank flooding would require the construction of small berms or the installation of watertight windows or doors. The particular method required to floodproof each home would be determined by an investigation of each individual property that is beyond the scope of this report. The estimated cost of this option is $48,400 per home.

3.2 Evaluation of Alternatives

The following discussion focuses on eliminating flooding of the eighteen homes affected by creek overbank flooding. The homes that flood from sewer backups are discussed in a subsequent section.

The new detention basin proposed for the BJC expansion north of Fernridge Creek was evaluated in two ways; one to examine its affects on downstream conditions as currently configured and the other to determine if flow from a nearby tributary could be routed through it to make it more effective. Our efforts indicate that configuring the basin to include the tributary flow does not significantly alter the function of the basin and provides no additional discharge reduction downstream at the flooding area. Modeling results do indicate that when the new BJC basin is operational, it will lower water surface elevations enough to eliminate flooding for four of the Bellerive Estates properties downstream. The stormwater model output for the watershed updated to include the BJC Basin is included in Appendix D.

Millennium Park was evaluated to see if benching of the stream banks to provide overflow storage could be provided for low-frequency storm events to reduce downstream flooding. The intention was to provide storage for storms greater than the 50-year event in a way that would be compatible with other park uses. It is expected that any use of park property for this purpose would be of a time and duration in which the park would not be utilized by the public. Our analysis shows that to meet these criteria less than 2 acre-feet of storage would be available in the park for overflow storage. Calculation notes are included in Appendix E. This amount is not enough to make a significant difference in the downstream flooding and more storage would still be required from other areas. There is the potential for more stormwater storage in the park (approximately six acre-feet) if benching were allowed above the 2-year storm elevation. However, this option would considerably reduce the effective public use time for the stormwater storage area.

The Duever Nursery property straddles Fernridge Creek between Mason Road and Bellerive Estates Drive. This site could be used for on-line storage to mitigate flooding downstream. A drawing of a representative stormwater basin on this site is included in Appendix F. It has been determined that up to 80 acre-feet of storage could be created at this location. Construction of a 20-, 40-, 60-, and 80 acre-feet basin was considered for this site. In addition we looked at whether or not benching the floodplain in the Bellerive Estates subdivision would provide any additional benefit.

It was determined that none of the proposed alternatives alone or in combination would eliminate flooding for all of the houses. The best that could be achieved was to protect fifteen of the eighteen homes with a sixty acre-feet detention basin at an estimated construction cost of $1,661,000. The least expensive option, constructing a twenty acre-feet detention basin, did not lower downstream water surface elevations appreciably, and therefore provided no additional benefit above that provided by the installation of the new BJC basin. Table 3-1 lists all of the pertinent alternatives, how many homes are protected, the cost of the alternative, and the cost per home protected. Cost estimate work sheets are included in Appendix G. Appendix H includes a table of water surface elevations resulting from each of the alternatives in comparison with the sill elevations of affected houses.

Table 3-1: Stormwater Detention Evaluation/100-yr. protection

Alternative	Homes Protected by This Option	Total Homes Protected	Estimated Cost (Construction Only)	Average Cost per Home	Incremental Cost per Home
BJC basin only	4	4	none	none	none
20 ac-ft detention	0	4	$1,074,000	N/A	N/A
40 ac-ft detention	10	14	$1,368,000	$97,714	$136,800
60 ac-ft detention	1	15	$1,661,000	$110,733	$293,000

Based on a cost per home of $97,714, the most cost effective alternative is construction of a 40 acre-foot detention basin. This option protects fourteen homes at a total cost of $1,368,000. Increasing the size of the detention basin to 60 acre-feet will protect one more home, but at an additional cost of $293,000. Increasing the size of the basin to 80 acre-feet provides no additional protection. Benching of the floodplain also fails to produce any additional benefit.

The discussion to this point has focused on lowering water surface levels below the home's first-floor sill elevations. However, floodproofing of individual homes is another option. The first floodproofing scenario examined was lowering the water surface levels with one of the construction alternatives and then floodproofing all homes with WSELs within one foot of the sill elevations. Floodproofing is less viable when flood levels are greater than one foot because of the increase in hydraulic loading on the structure's foundation and the amount of land needed for a levee or berm. Construction of the 60 acre-feet detention would remove 15 homes from the 100-year flood area and reduce WSELs enough to make floodproofing viable for the three remaining homes. The 40 ac-ft detention basin would not reduce WSELs adequately to allow effective floodproofing of all the affected homes.

Table 3-2 illustrates the possible combinations when floodproofing is included as a potential solution. The 20 ac-ft basin with floodproofing is not listed since it provides essentially the same level of protection as the BJC basin at four times the cost.

Table 3-2: Stormwater Detention & Floodproofing Evaluation/100-yr. protection

Alternative	Homes Protected by This Option	Total Homes Protected	Construction Cost Only	Average Cost per Home	Incremental Cost per Home
BJC basin w/ floodproofing	12	12	$387,200	$32,267	$32,267
40 ac-ft detention w/ floodproofing	3	15	$1,416,400	$94,427	$343,067
60 ac-ft detention w/ floodproofing	3	18	$1,806,200	$100,344	$129,933

The most efficient alternative under this scenario is the "BJC basin w/ floodproofing" option that will protect twelve homes at a total cost of $387,000, a $32,267 per home average. However, this option leaves six homes unprotected from a 100-year flood.

Given the anticipated high costs of purchasing the land needed for additional stormwater detention beyond that provided by the BJC basin, we also explored the possibility of floodproofing homes with flood elevations greater than one foot above their first-floor sill elevations. While this can be done, the solutions will have a greater impact on the use of the properties. Higher berms can affect driveways and access to garages. Also, access to individual homes may have to be altered to provide watertight doors and windows. This option however, is the least expensive. Floodproofing the fourteen homes still affected by creek overbank flooding after the construction of the BJC basin has an estimated cost of $677,600. The actual implementation of this option would need to be determined on a case by case basis for each affected home.

3.2.1 50-year storm protection - Another aspect of the various alternatives is the level of protection provided for less-severe storms of greater frequency. For example, in a 50-year storm event fourteen homes are affected by creek overbank flooding. Table 3-3 lists the benefits provided by the detention alternatives for this storm event.

Table 3-3: Stormwater Detention Evaluation/50-yr. protection

Alternative	Homes Protected by This Option	Total Homes Protected
BJC basin	1	1
20 ac-ft detention	6	7
40 ac-ft detention	3	10
60 ac-ft detention	3	13

Of the fourteen homes affected by a 50-year storm event, none of the detention basin options considered would protect all of the homes.

3.2.2 Preventing Sewer Backups - As stated previously, it is believed that twelve of the thirty homes that experienced flooding in the August 1996 storm did so because of sanitary sewer backups. This was due in part to the hydraulic pressure placed upon the system when neighboring homes had creek water enter their basements. This type of flooding can be controlled through the installation of "backflow preventers", a type of check valve that can be placed on the system at each home. The assumed cost of installing these devices for each home is $12,000. We know of at least two homeowners that have already installed this equipment. The cost of equipping the remaining homes is estimated to be $120,000 if all ten require this device.

3.3 Future Scenario – New Mason Road Bridge

The existing bridge over Fernridge Creek at Mason Road provides a flow constriction which causes a backwater during low frequency storm events. During coordination meetings for this project it was requested that the conceptual design phase include consideration of the downstream effects of replacing the existing Mason Road Bridge with a new structure which would allow increased flow. There was concern that the potentially increased flow resulting from the new bridge cross section would worsen downstream flooding conditions.

In response, the stormwater model was run with a new, wider cross-section in place of the existing bridge. The stormwater model results showed that for a 100-yr, 24-hour storm, only local changes occurred in water surface elevations. The upstream backwater no longer occurred and the downstream effects were limited to within 500 feet downstream of Mason Road. This is well upstream of the houses along Bellerive Estates that were affected by previous flooding. Therefore, the stormwater model shows that opening up the Mason Road Bridge to allow a 100-yr storm to pass would not significantly increase flow in the study area. However, the reduction of upstream backwater could provide a margin for increasing the channel detention time, which in turn, could reduce flooding in the future. A copy of the stormwater model output file is included in Appendix D.

4.0 ANALYSIS OF THE EROSION PROBLEM

In 1997 the Bellerive Estates Subdivision enlisted the services of Intuition and Logic, now part of this project team, to evaluate Fernridge Creek between Rue de Fleur and D'Artagnan Court. Their report was a reconnaissance level investigation that assessed current conditions, the potential for channel incision, and possible future bank erosion problems. In general, that report noted that the main channel had only minor incision and showed a very high lateral stability. The section that follows incorporates their original findings with more recent investigations done as part of the Fernridge Creek Improvement Project.

As stated in the 1997 report, the stream channel downstream of Rue de Fleur has suffered from only minor incision and the highest banks are generally less than 8 feet high. A slight increase in bank height was noted as the stream progresses downstream (from about 6' to 8'), possibly as a result of increasing drainage area. There are no apparent knickpoints that would indicate lateral instability. Generally, there were few signs of lateral migration and there were no significant signs of accelerated bank erosion. Most banks are covered by

trees, and root densities in the bank materials are high. However, the tree canopy is quite dense prohibiting maximum growth potential of vegetative ground cover.

There are a few short reaches, generally less than 50' long, where the channel has worked itself into the valley wall. At these sites, erosion of the high, steep slopes above the creek is a concern. Although lateral movement has not been particularly great, even slight erosion at the toe causes significant material transport from these slopes.

A right-bank tributary enters the channel near the end of the project reach. This tributary has a relatively steep gradient and very steep valley walls. There is a drop of roughly 3' to 4' as the tributary enters the main channel, indicating the potential for headcutting in the tributary and future threats to nearby property.

In the Bellerive Estates Subdivision common ground the creek forms an oxbow between the homes at 13006 and 12986 Ambois Drive. There is severe erosion at the downstream end of the oxbow that currently threatens the house at 13006 Ambois. However, this problem is being addressed by a separate project. Potential solutions to the other problems on Fernridge Creek will incorporate this project into the overall strategy.

The section of stream between Rue de Fleur and Bellerive Estates Drive also shows evidence of minor incision. The north bank is nearly vertical in most places with a height of approximately 5 feet. In the upstream half of this reach residents have tried to arrest the erosion by dumping large concrete slabs. The homes in this reach are greater than 100 feet from the creek and are not immediately threatened by erosion. At the downstream end four homes are within 100 feet of the creek and backyard fences are being threatened. One of these homeowners has protected his yard with grouted rip rap.

There are two storm sewers and outfalls that discharge into Fernridge Creek in this reach. Both are in need of repair. One runs between 12912 and 12918 Bellerive Estates Drive and the other between 12824 and 12832 Bellerive Estates. On the south bank a deep gully has formed caused by uncontrolled drainage from the Bellerive Elementary School.

4.1 Mitigation Strategies for Headcutting in Small Tributary Channels

Unless some repair strategies are implemented, the tributaries will continue to degrade until they reach equilibrium. Some potential repair strategies for this process are:

4.1.1 Replace Side Ditches with Pipe, Swale, and Inlets - Since these are small tributary channels with a limited drainage area, the flows could easily be conveyed in a swale/storm sewer system. The ditches would be replaced by underground storm sewers topped with grassy swales. Area inlets would be spaced as needed in the swale to collect runoff. Outfall protection would be placed where the storm sewer discharges into the creek. The damaged slope would be repaired with compacted backfill and biostabilization methods.

4.1.2 Grade Control - Placing hard points on the tributary channel bottom at regular intervals will prevent any additional downcutting of the stream. Controlling the downcutting will reduce the incision of the banks and allow the deteriorated sections to be restored if desired. They can be constructed of concrete or heavy rip rap.

4.2 Mitigation Strategies for Unstable Stream Banks

Bank stabilization can take two forms: traditional "hard" solutions such as concrete channels and retaining walls or "soft" solutions such as biostabilization.

4.2.1 Biostabilization - This alternative stabilizes the eroding banks using primarily natural material and native vegetation. If necessary, these materials can be combined with geosynthetics depending on soil conditions and stream velocities.

- *advantages:* restores natural appearance and characteristics of creek; preferred method of U.S. Army Corps of Engineers and Missouri Department of Natural Resources; generally well accepted by citizens; less expensive than traditional "hard" solutions

- *disadvantages:* fewer experienced contractors in the St. Louis area; construction can result in a temporary loss of established vegetation; wider channels from sloping of banks reduces quantity of usable land; some methods encroach on the channel reducing the available flow area

Several methods may be applicable on both banks of the stream. Some of these techniques may include:

4.2.1.1 Erosion Control Mat and Joint Staking - This would entail sloping the existing banks back from the toe at a 2:1 slope, covering the new slope with an erosion control mat and joint staking. The toe of the slope in the channel would be stabilized using a rock roll or coir log staked into the stream bed. Joint staking is the process of inserting plant stakes into the soil through the mat. This method would require moving the fences back from the top-of–slope and smaller back yards in the project reach.

4.2.1.2 Composite Revetment - This method would slope the existing bank back from the toe at a 1:1 slope or milder all the way to the top-of-bank. The actual slope would be determined based on soil conditions and space limitations. The toe would be protected by a rock roll and the slope stabilized by alternating rows of geoweb-wrapped rock and joint staked plantings protected by a layer of mulch.

4.2.1.3 Flow Control - This technique would utilize small rock weirs to direct flow towards the center of the channel and protect the bank from further degradation. This method would not repair the existing damage but would protect property from future problems.

4.2.2 Gravity Retaining Walls - This option would stabilize the banks with gravity retaining walls. There are a wide variety of potential gravity walls including, but not limited to: coated-wire gabions, geoweb, interlocking-stone, and vegetated-stone retaining walls.

- *advantages:* provides durable structure that protects property from erosion; wide variety of products to choose from; has been proven effective in other locations

- *disadvantages:* stream is channelized which speeds up flows; although more environmentally friendly than concrete, natural characteristics of creek are suppressed

Grade controls may be needed to prevent undermining of the walls if down cutting occurs in the channel.

5.0 RECOMMENDATION

Based on the feedback received from involved stakeholders, preliminary engineering analysis, and conceptual cost estimates, the recommended strategy for Fernridge Creek is a combination of mitigation methods as follows:

- floodproof fourteen homes from creek overbank flooding
- install backflow prevention for up to ten homes
- mitigate bank erosion behind the homes on Bellerive Estates Drive with a modular block retaining wall
- repair the slope on the south bank at Bellerive School with erosion control mat and joint staking
- remove rubble and stabilize slope downstream of the Bellerive Estates Drive culvert with erosion control mat and joint staking
- arrest downcutting in the tributary channels by constructing grade controls
- thin the tree canopy to allow growth of ground vegetation
- remove and replace storm sewer outfalls from Bellerive Estates Drive

In addition the following are encouraged through a public education program:

- flows from roofdrains should not be discharged over bank tops
- educate residents about the damage caused by the dumping of yard waste and rubble onto creek banks

The following are cost estimates based on the Metropolitan St. Louis Sewer District's *Conceptual Level Unit Costs*, developed for the District's SSMIP. Quantities were based on the length of the improvements and typical improvement sections.

The following table summarizes the opinion of probable cost of each strategy.

Opinion of Probable Cost	
Strategy	Cost
Floodproof fourteen homes from creek overbank flooding	$677,600
Install backflow prevention for ten homes	$120,000
Modular block retaining wall	$66,000
Repair south bank behind school with erosion control mat and joint staking	$30,000
Remove rubble and rehab banks downstream of Bellerive Estates Drive culvert	$30,000
Thinning of the tree canopy	$15,000
Repair tributary channels with grade controls	$68,000
Replace storm sewers on Bellerive Estates Drive	$80,000

The total estimated cost for the recommended strategies is $1,086,600.
Figure 5.1 illustrates the locations of the proposed improvements.

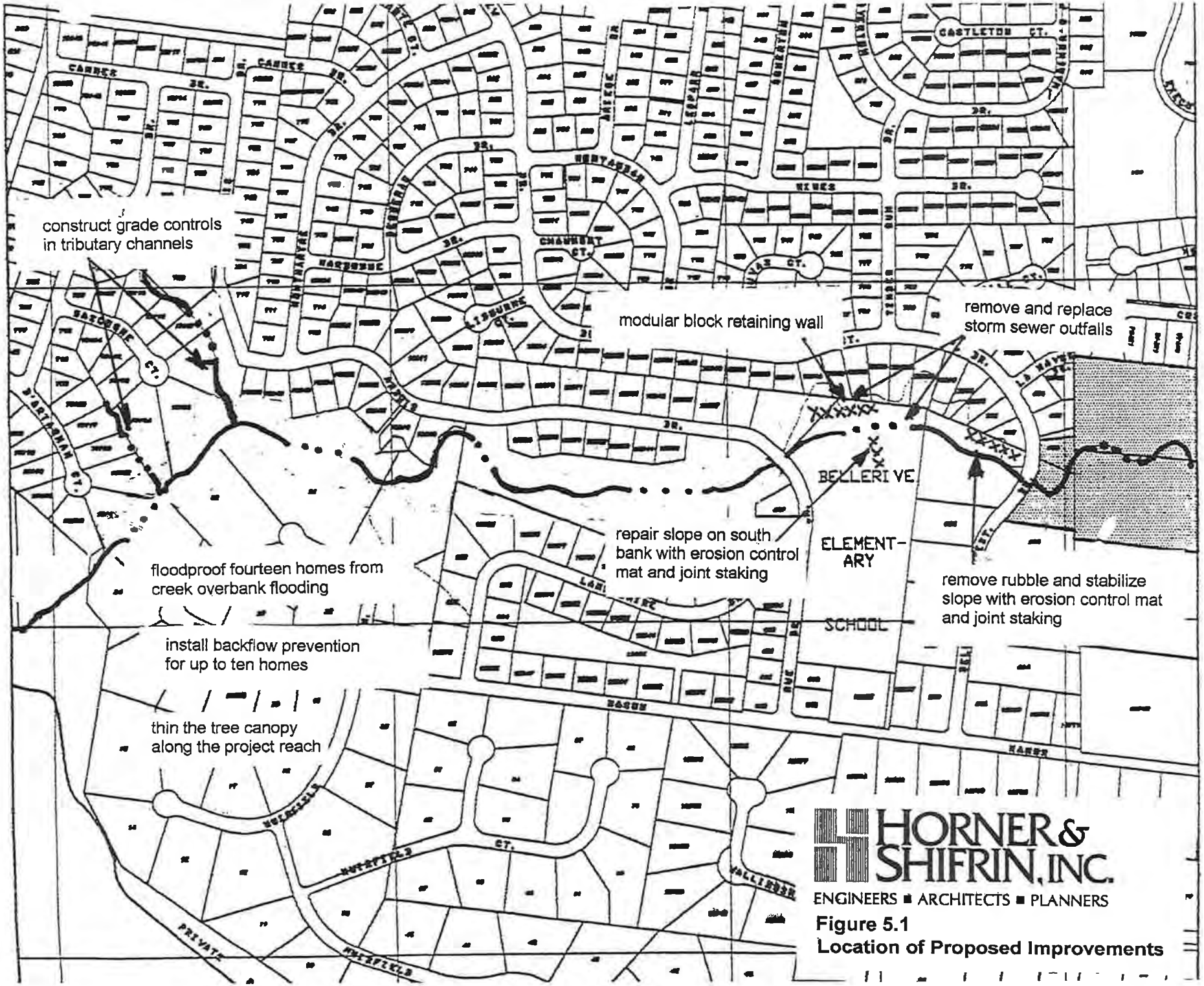

Figure 5.1
Location of Proposed Improvements

6.0 IMPLEMENTATION ISSUES

Implementation issues are special items needing attention prior to design and construction of a project. These special items are non-typical, and may be obstacles to completing the project. Early identification of these items makes the project run smoothly. These items may include: right-of-way, easements, unusual soil conditions, government permits (USACOE 404, for example) or construction access.

Implementation issues for the project for this project include the following:

- special permits for creek stabilization
- modifications to individual properties may limit their use
- acquisition of easements
- utility relocation

To obtain the locations of utilities such as Ameren-U.E., Southwestern Bell, Laclede Gas, County Water, and cable television, plans must be submitted to the respective companies. Known utility locations were considered while developing alternative solutions and preparing this conceptual design report. However, it is the responsibility of the firm performing the actual design of the project to verify all utility information and modify the conceptual design if necessary.

7.0 CONCLUSION

This report is a conceptual analysis of the stormwater problem located along Fernridge Creek between Bellerive Estates Drive and D'Artagnan Court. It provides a working framework for decision makers so that they may meet the challenge of selecting a solution that satisfies residents directly affected by the problem, citizens downstream of the proposed improvements, and the pertinent regulatory agencies overseeing the project.

Once the final project approach has been determined, Horner & Shifrin is ready to assist the City in implementing the next phase of this stormwater project. Work can continue to include the following:

- preparation of preliminary plans, outline specifications and construction cost estimates
- revision of preliminary submittals after review by the City and completion of final design
- preparation of applications and supporting documents for government permits
- preparation of bid documents and attendance at pre-bid conference
- construction phase services including site visits

Pending the review of the material presented in this report, Horner & Shifrin is ready to proceed at the City's direction.

Appendix C

Supplemental References to Fernridge Creek Problem Area FC-1

- SSSMIP Extract
- Memo- Fernridge Creek - Detention Basin and Channel Modification
- Memo- Fernridge Creek - Culvert Modification
- Follow-up to Culvert Modification Memo
- Fernridge Creek Conceptual Design Report
- Letter Regarding Footbridge Reconstruction

October 25, 2001

City of Creve Coeur
Department of Public Works
300 North New Ballas Road
Creve Coeur, MO 63141

Attn: Vijay K. Bhasin
Director of Public Works

Re: Fernridge Creek Improvements: Upstream of Bellerive Estates Drive
H&S Project No. 01P221

Dear Mr. Bhasin:

This letter is in response to your fax dated October 16, 2001 in which you requested that Horner & Shifrin review a proposal submitted by Mr. Clint Ryback regarding the above referenced project. Mr. Ryback is proposing that the City provide financial assistance to replace an existing footbridge on the property at 680 Bellerive Estates with a new structure. The proposal is clear and well-presented. However, we do have the following concerns.

- The bottom of the structure is shown to be 12' above the existing creek bed. This is not above the 100-year flood elevation listed in MSD Stormwater System Improvement Plan Creve Coeur Watershed model.
- There may be liability issues to the City if they participate in this project. Limiting the City's liability may require further structural analysis or engineering of the new bridge.
- In a similar project for the City of Bridgeton, that community is concerned that city participation requires that privately owned footbridges built with city assistance are be subject to the design standards required by the American's with Disability Act.

As you are aware, a previous structure on this property failed during a heavy rainstorm and blocked the Bellerive Estates Culvert worsening the flooding situation in that area. It is our opinion that the best way to prevent this from happening again is to remove the existing footbridge and not replace it. In our estimation the best solution for the City is to purchase the property on the opposite bank eliminating the need for a bridge.

We are pleased to have been of assistance in this matter. Should you have any questions or need additional information, please do not hesitate to contact me at 531-4321.

Sincerely,

Stephen Randolph, P.E.
Project Manager

Appendix D

Applicable MSD Pay Items

Summary Item Listing

MSD PAY ITEMS AS OF MARCH 5, 2011

Item	Item Description	Unit	List Price
3H50000000000A	EXCAVATION CLASS "A"	CY	170
3H50000000000B	EXCAVATION CLASS "B"	CY	32
3H50000000000C	EXCAVATION CLASS "C"	CY	15
4I11a000000000	COMPACTED BACKFILL (TRENCH)	CY	31
4I130000000000	GRANULAR BACKFILL	CY	36
4I140000FRCDRNX	FRENCH DRAIN	LF	65
4I2000060000SC	PIPE SEWER 06 INCH (SANITARY/COMBINED)	LF	40
4I20000600PERFX	PERFORATED PIPE 06 INCH (INCLUDES ROCK, FABRIC)	LF	35
4I20000600WEXCX	PIPE SEWER 06 INCH (INCLUDES EXCAVATION)	LF	58
4I200006DIP052	DUCTILE IRON PIPE SEWER 06 INCH CLASS 52	LF	60
4I200006DIP053	DUCTILE IRON PIPE SEWER 06 INCH CLASS 53	LF	50
4I2000080000FM	FORCE MAIN 08 INCH	LF	55
4I2000080000SC	PIPE SEWER 08 INCH (SANITARY/COMBINED)	LF	65
4I20000800PERFX	PERFORATED PIPE 08 INCH (INCLUDES ROCK, FABRIC)	LF	33
4I200008DIP050	DUCTILE IRON PIPE SEWER 08 INCH CLASS 50	LF	85
4I200008DIP052	DUCTILE IRON PIPE SEWER 08 INCH CLASS 52	LF	75
4I200008DIP053	DUCTILE IRON PIPE SEWER 08 INCH CLASS 53	LF	75
4I2000100000FM	FORCE MAIN 10 INCH	LF	65
4I2000100000SC	PIPE SEWER 10 INCH (SANITARY/COMBINED)	LF	75
4I200010DIP052	DUCTILE IRON PIPE SEWER 10 INCH CLASS 52	LF	100
4I2000120000FM	FORCE MAIN 12 INCH	LF	75
4I2000120000SC	PIPE SEWER 12 INCH (SANITARY/COMBINED)	LF	95
4I2000120000ST	PIPE SEWER 12 INCH (STORM)	LF	50
4I200012000CMP	CORRUGATED METAL PIPE SEWER 12 INCH	LF	45
4I200012000FES	FLARED END SECTION 12 INCH PIPE	EA	1,000
4I20001200PERFX	PERFORATED PIPE 12 INCH (INCLUDES ROCK, FABRIC)	LF	50
4I2000120RCPIV	REINFORCED CONCRETE PIPE SEWER 12 INCH CLASS IV	LF	55
4I200012DIP052	DUCTILE IRON PIPE SEWER 12 INCH CLASS 52	LF	105
4I200012DIP053	DUCTILE IRON PIPE SEWER 12 INCH CLASS 53	LF	105
4I200012RCPIII	REINFORCED CONCRETE PIPE SEWER 12 INCH CLASS III	LF	50
4I200014DIP052	DUCTILE IRON PIPE SEWER 14 INCH CLASS 52	LF	125
4I200014DIP053	DUCTILE IRON PIPE SEWER 14 INCH CLASS 53	LF	120
4I2000150000FM	FORCE MAIN 01.5 INCH	LF	15
4I2000150000SC	PIPE SEWER 15 INCH (SANITARY/COMBINED)	LF	100
4I2000150000ST	PIPE SEWER 15 INCH (STORM)	LF	55
4I200015000CMP	CORRUGATED METAL PIPE SEWER 15 INCH	LF	52
4I200015000FES	FLARED END SECTION 15 INCH PIPE	EA	1,125
4I2000150RCPIV	REINFORCED CONCRETE PIPE SEWER 15 INCH CLASS IV	LF	60
4I200015RCPIII	REINFORCED CONCRETE PIPE SEWER 15 INCH CLASS III	LF	55
4I200016DIP052	DUCTILE IRON PIPE SEWER 16 INCH CLASS 52	LF	140
4I200016DIP053	DUCTILE IRON PIPE SEWER 16 INCH CLASS 53	LF	140
4I2000180000SC	PIPE SEWER 18 INCH (SANITARY/COMBINED)	LF	105
4I2000180000ST	PIPE SEWER 18 INCH (STORM)	LF	60
4I200018000CMP	CORRUGATED METAL PIPE SEWER 18 INCH	LF	60
4I200018000FES	FLARED END SECTION 18 INCH PIPE	EA	1,250
4I2000180RCPIV	REINFORCED CONCRETE PIPE SEWER 18 INCH CLASS IV	LF	65
4I200018DIP050	DUCTILE IRON PIPE SEWER 18 INCH CLASS 50	LF	225
4I200018DIP052	DUCTILE IRON PIPE SEWER 18 INCH CLASS 52	LF	180
4I200018DIP054	DUCTILE IRON PIPE SEWER 18 INCH CLASS 54	LF	135
4I200018RCPIII	REINFORCED CONCRETE PIPE SEWER 18 INCH CLASS III	LF	60
4I200020DIP052	DUCTILE IRON PIPE SEWER 20 INCH CLASS 52	LF	200
4I200020DIP053	DUCTILE IRON PIPE SEWER 20 INCH CLASS 53	LF	190
4I2000210000SC	PIPE SEWER 21 INCH (SANITARY/COMBINED)	LF	110
4I2000210000ST	PIPE SEWER 21 INCH (STORM)	LF	65
4I200021000CMP	CORRUGATED METAL PIPE SEWER 21 INCH	LF	75
4I200021000FES	FLARED END SECTION 21 INCH PIPE	EA	1,375
4I20002100RCPV	REINFORCED CONCRETE PIPE SEWER 21 INCH CLASS V	LF	70
4I200021RCPIII	REINFORCED CONCRETE PIPE SEWER 21 INCH CLASS III	LF	65
4I2000240000FM	FORCE MAIN 24 INCH	LF	275
4I2000240000SC	PIPE SEWER 24 INCH (SANITARY/COMBINED)	LF	115
4I2000240000ST	PIPE SEWER 24 INCH (STORM)	LF	70
4I200024000CMP	CORRUGATED METAL PIPE SEWER 24 INCH	LF	80
4I200024000FES	FLARED END SECTION 24 INCH PIPE	EA	1,500

Summary Item Listing

MSD PAY ITEMS AS OF MARCH 5, 2011

Item	Item Description	Unit	List Price
4I2000240038HE	REINFORCED CONCRETE HORIZONTAL ELLIPTICAL PIPE SEWER 24 INCHES X 38 INCHES	LF	170
4I20002400RCPV	REINFORCED CONCRETE PIPE SEWER 24 INCH CLASS V	LF	75
4I2000240RCPIV	REINFORCED CONCRETE PIPE SEWER 24 INCH CLASS IV	LF	73
4I200024DIP050	DUCTILE IRON PIPE SEWER 24 INCH CLASS 50	LF	270
4I200024DIP052	DUCTILE IRON PIPE SEWER 24 INCH CLASS 52	LF	250
4I200024DIP053	DUCTILE IRON PIPE SEWER 24 INCH CLASS 53	LF	240
4I200024DIP054	DUCTILE IRON PIPE SEWER 24 INCH CLASS 54	LF	265
4I200024RCPIII	REINFORCED CONCRETE PIPE SEWER 24 INCH CLASS III	LF	70
4I2000270000SC	PIPE SEWER 27 INCH (SANITARY/COMBINED)	LF	120
4I200027000FES	FLARED END SECTION 27 INCH PIPE	EA	1,625
4I20002700RCPV	REINFORCED CONCRETE PIPE SEWER 27 INCH CLASS V	LF	90
4I2000270RCPIV	REINFORCED CONCRETE PIPE SEWER 27 INCH CLASS IV	LF	80
4I200027RCPIII	REINFORCED CONCRETE PIPE SEWER 27 INCH CLASS III	LF	75
4I2000290045HE	REINFORCED CONCRETE HORIZONTAL ELLIPTICAL PIPE SEWER 29 INCHES X 45	LF	220
4I2000300000FM	FORCE MAIN 30 INCH	LF	280
4I2000300000SC	PIPE SEWER 30 INCH (SANITARY/COMBINED)	LF	300
4I200030000CMP	CORRUGATED METAL PIPE SEWER 30 INCH	LF	90
4I200030000FES	FLARED END SECTION 30 INCH PIPE	EA	1,750
4I20003000RCPV	REINFORCED CONCRETE PIPE SEWER 30 INCH CLASS V	LF	120
4I2000300RCPIV	REINFORCED CONCRETE PIPE SEWER 30 INCH CLASS IV	LF	100
4I200030DIP052	DUCTILE IRON PIPE SEWER 30 INCH CLASS 52	LF	280
4I200030RCPIII	REINFORCED CONCRETE PIPE SEWER 30 INCH CLASS III	LF	85
4I2000320049HE	REINFORCED CONCRETE HORIZONTAL ELLIPTICAL PIPE SEWER 32 INCHES X 49 INCHES	LF	280
4I200033000FES	FLARED END SECTION 33 INCH PIPE	EA	1,875
4I200033RCPIII	REINFORCED CONCRETE PIPE SEWER 33 INCH CLASS III	LF	95
4I2000340053HE	REINFORCED CONCRETE HORIZONTAL ELLIPTICAL PIPE SEWER 34 INCH BY 53 INCH	LF	240
4I2000360000FM	FORCE MAIN 36 INCH	LF	150
4I2000360000SC	PIPE SEWER 36 INCH (SANITARY/COMBINED)	LF	145
4I200036000CMP	CORRUGATED METAL PIPE SEWER 36 INCH	LF	100
4I200036000FES	FLARED END SECTION 36 INCH PIPE	EA	2,000
4I20003600RCPV	REINFORCED CONCRETE PIPE SEWER 36 INCH CLASS V	LF	109
4I2000360RCPIV	REINFORCED CONCRETE PIPE SEWER 36 INCH CLASS IV	LF	100
4I200036DIP052	DUCTILE IRON PIPE SEWER 36 INCH CLASS 52	LF	210
4I200036RCPIII	REINFORCED CONCRETE PIPE SEWER 36 INCH CLASS III	LF	105
4I2000380060HE	REINFORCED CONCRETE HORIZONTAL ELLIPTICAL PIPE SEWER 38 INCH X 60 INCH	LF	220
4I2000420000FM	FORCE MAIN 42 INCH	LF	310
4I2000420000SC	PIPE SEWER 42 INCH (SANITARY/COMBINED)	LF	175
4I200042000CMP	CORRUGATED METAL PIPE SEWER 42 INCH	LF	120
4I200042000FES	FLARED END SECTION 42 INCH PIPE	EA	2,400
4I20004200RCPV	REINFORCED CONCRETE PIPE SEWER 42 INCH CLASS V	LF	145
4I2000420RCPII	REINFORCED CONCRETE PIPE SEWER 42 INCH CLASS II	LF	125
4I2000420RCPIV	REINFORCED CONCRETE PIPE SEWER 42 INCH CLASS IV	LF	140
4I200042DIP052	DUCTILE IRON PIPE SEWER 42 INCH	LF	250
4I200042RCPIII	REINFORCED CONCRETE PIPE SEWER 42 INCH CLASS III	LF	130
4I2000480000SC	PIPE SEWER 48 INCH (SANITARY/COMBINED)	LF	190
4I200048000CMP	CORRUGATED METAL PIPE SEWER 48 INCH	LF	140
4I200048000FES	FLARED END SECTION 48 INCH PIPE	EA	3,000
4I20004800RCPV	REINFORCED CONCRETE PIPE SEWER 48 INCH CLASS V	LF	188
4I2000480RCPII	REINFORCED CONCRETE PIPE SEWER 48 INCH CLASS II	LF	155
4I2000480RCPIV	REINFORCED CONCRETE PIPE SEWER 48 INCH CLASS IV	LF	170
4I200048DIP052	DUCTILE IRON PIPE SEWER 48 INCH	LF	270
4I200048RCPIII	REINFORCED CONCRETE PIPE SEWER 48 INCH CLASS III	LF	160
4I2000540000SC	PIPE SEWER 54 INCH (SANITARY/COMBINED)	LF	230
4I200054000FES	FLARED END SECTION 54 INCH PIPE	EA	3,600
4I20005400RCPV	REINFORCED CONCRETE PIPE SEWER 54 INCH CLASS V	LF	195
4I2000540RCPII	REINFORCED CONCRETE PIPE SEWER 54 INCH CLASS II	LF	160
4I2000540RCPIV	REINFORCED CONCRETE PIPE SEWER 54 INCH CLASS IV	LF	177
4I200054DIP052	DUCTILE IRON PIPE SEWER 54 INCH CLASS 52	LF	300
4I200054RCPIII	REINFORCED CONCRETE PIPE SEWER 54 INCH CLASS III	LF	165
4I2000600000SC	PIPE SEWER 60 INCH (SANITARY/COMBINED)	LF	350
4I200060000CMP	CORRUGATED METAL PIPE SEWER 60 INCH	LF	180
4I200060000FES	FLARED END SECTION 60 INCH PIPE	EA	4,000
4I20006000RCPV	REINFORCED CONCRETE PIPE SEWER 60 INCH CLASS V	LF	250
4I2000600RCPII	REINFORCED CONCRETE PIPE SEWER 60 INCH CLASS II	LF	230

Summary Item Listing

MSD PAY ITEMS AS OF MARCH 5, 2011

Item	Item Description	Unit	List Price
4I2000600RCPIV	REINFORCED CONCRETE PIPE SEWER 60 INCH CLASS IV	LF	250
4I200060DIP052	DUCTILE IRON PIPE SEWER 60 INCH	LF	330
4I200060RCPIII	REINFORCED CONCRETE PIPE SEWER 60 INCH CLASS III	LF	240
4I200066000FES	FLARED END SECTION 66 INCH PIPE	EA	2,650
4I20006600RCPV	REINFORCED CONCRETE PIPE SEWER 66 INCH CLASS V	LF	275
4I2000660RCPII	REINFORCED CONCRETE PIPE SEWER 66 INCH CLASS II	LF	230
4I2000660RCPIV	REINFORCED CONCRETE PIPE SEWER 66 INCH CLASS IV	LF	270
4I200066RCPIII	REINFORCED CONCRETE PIPE SEWER 66 INCH CLASS III	LF	240
4I20007200RCPV	REINFORCED CONCRETE PIPE SEWER 72 INCH CLASS V	LF	360
4I2000720RCPII	REINFORCED CONCRETE PIPE SEWER 72 INCH CLASS II	LF	315
4I2000720RCPIV	REINFORCED CONCRETE PIPE SEWER 72 INCH CLASS IV	LF	350
4I200072RCPIII	REINFORCED CONCRETE PIPE SEWER 72 INCH CLASS III	LF	340
4I2000780RCPII	REINFORCED CONCRETE PIPE SEWER 78 INCH CLASS II	LF	320
4I2000780RCPIV	REINFORCED CONCRETE PIPE SEWER 78 INCH CLASS IV	LF	380
4I200078RCPIII	REINFORCED CONCRETE PIPE SEWER 78 INCH CLASS III	LF	370
4I200084000FES	FLARED END SECTION 84 INCH PIPE	EA	4,000
4I20008400RCPV	REINFORCED CONCRETE PIPE SEWER 84 INCH CLASS V	LF	450
4I2000840RCPII	REINFORCED CONCRETE PIPE SEWER 84 INCH CLASS II	LF	395
4I2000840RCPIV	REINFORCED CONCRETE PIPE SEWER 84 INCH CLASS IV	LF	432
4I200084RCPIII	REINFORCED CONCRETE PIPE SEWER 84 INCH CLASS III	LF	407
4I2000900000SC	PIPE SEWER 90 INCH (SANITARY/COMBINED)	LF	640
4I20009000RCPV	REINFORCED CONCRETE PIPE SEWER 90 INCH CLASS V	LF	500
4I2000900RCPII	REINFORCED CONCRETE PIPE SEWER 90 INCH CLASS II	LF	435
4I2000900RCPIV	REINFORCED CONCRETE PIPE SEWER 90 INCH CLASS IV	LF	480
4I200090RCPIII	REINFORCED CONCRETE PIPE SEWER 90 INCH CLASS III	LF	460
4I2000960RCPII	REINFORCED CONCRETE PIPE SEWER 96 INCH CLASS II	LF	465
4I2000960RCPIV	REINFORCED CONCRETE PIPE SEWER 96 INCH CLASS IV	LF	530
4I200096RCPIII	REINFORCED CONCRETE PIPE SEWER 96 INCH CLASS III	LF	515
4I20010800RCPV	REINFORCED CONCRETE PIPE SEWER 108 INCH (CLASS V)	LF	575
4I2001440RCPII	REINFORCED CONCRETE PIPE SEWER 144 INCH CLASS II	LF	660
4I600000000000	MANHOLE - STANDARD CONSTRUCTION	LF	195
4I80000000000D	INLET - DOUBLE	EA	2,600
4I80000000000M	INLET - MULTIPLE	EA	3,000
4I80000000002G	INLET - 2 GRATE	EA	1,900
4I80000000003G	INLET - 3 GRATE	EA	2,250
4I80000000004G	INLET - 4 GRATE	EA	2,600
4I8000000000AI	INLET - AREA	EA	1,500
4I8000000000ST	INLET - STREET	EA	1,600
4I800000000DLSX	INLET - DOUBLE (COMPLETE)	EA	5,400
4I800000000TSD	INLET MANHOLE - TOP SECTION (DOUBLE)	EA	1,250
4I800000002GSI	INLET - 2 GRATE WITH SIDE INTAKE	EA	2,000
4I80000000SHALX	SPECIAL SHALLOW INLET	EA	2,300
4I80000000SPECX	INLET - SPECIAL	EA	4,275
4I80000000TRAP	INLET - TRAPPED	EA	2,800
4I80000000TRIP	INLET - TRIPLE	EA	3,000
6F30000000BERMX	BERM	LS	170,080
6F3000000GULLYX	GULLY REPAIR	EA	800
6F4000000000GCX	GRADE CONTROL	SY	135
6F40000000CHANX	GRADE CONTROL CHANNEL	CY	40
6F40000000STRCX	GRADE CONTROL STRUCTURE	EA	2,400
6F500000000BIOX	BANK PROTECTION - BIOSTABILIZATION	SY	45
6F50000000FASCX	FASCINES	LF	65
6F600000000GEOX	COMPOSITE CREEK IMPROV. MATERIALS (GEOWEB, GEOTEXT., & ROCK BLANKET)	LS	2,500
6F60000000AJAXX	AJAX - 24" (INSTALLED)	EA	55
6F60000000GFABX	GEOFABRIC	SY	11
6F60000000GPAVX	GEOWEB PAVING	SY	50
6F6000000REVETX	COMPOSITE REVETMENT	SY	108
6F600000JTSTAKX	JOINT STAKING	SY	13
6F600000LCBBOTX	LOG CRIB WALL-BASE SECTION	LF	260
6F600000LCBCONX	LOG CRIB WALL-BASE CONNECTED TO BEDROCK	LF	210
6F600000LCBTOPX	LOG CRIB WALL-TOP SECTION	LF	200
6F600000LIVCRWX	LIVE CRIB WALL	CY	140
6F600000VEGSWLX	VEGETATED REINFORCED EARTHEN SWALE	SY	35

Summary Item Listing

MSD PAY ITEMS AS OF MARCH 5, 2011

Item	Item Description	Unit	List Price
6F7000000RFILLX	ROCK FILL SLOPE PROTECTION	LS	1
6F7000000RRKEYX	RIPRAP KEY	SY	110
6F7000000VGABX	VEGETATED GABIONS IN PLACE	CY	190
6F900000000VEGX	VEGETATED REINFORCED SOIL SLOPE	SY	70
6I0000000000RBX	REVEGETATION BLANKET	SY	4
6I000000000SLSX	SEEDING & LIVE STAKING	SY	38
6I00000000MITGX	STREAMBANK MITIGATION (404 & 401 PERMIT)	SF	1
6J100000000000X	COMPACTION OF FILL	CY	36
6J110000000000X	ADDITIONAL FILL	CY	19
6J2000000000CSX	CONCRETE SWALE	LS	500
6J200000000ACBX	ARTICULATING CONCRETE BLOCK	SF	10
6J200000000CFGX	CONCRETE FILLED GEOWEB	SY	85
6J200000000ECBX	CHANNEL - CONCRETE EROSION CONTROL BLANKET	SY	105
6J200000CELBLKX	CELLULAR CONCRETE BLOCK LINING	SY	115
6J200000CNCAPRX	R & R CONCRETE APRON	SY	65
6J2000070000SS	CHANNEL REINFORCED CONCRETE SLOPED SIDES 07 INCH	SY	115
6J200007000BOT	CHANNEL REINFORCED CONCRETE BOTTOM 07 INCH	SY	85
6J2000080000SS	CHANNEL REINFORCED CONCRETE SLOPED SIDES 08 INCH	SY	120
6J2000080000VS	CHANNEL REINFORCED CONCRETE VERTICAL SIDES 08 INCH	SY	130
6J200008000BOT	CHANNEL REINFORCED CONCRETE BOTTOM 08 INCH	SY	96
6J2000100000TS	CHANNEL REINF. CONCRETE TRANSITION SIDE 10 INCH	SY	220
6J2000100000VS	CHANNEL REINFORCED CONCRETE VERTICAL SIDES 10 INCH	SY	160
6J200010000BOT	CHANNEL REINFORCED CONCRETE BOTTOM 10 INCH	SY	110
6J2000120000VS	CHANNEL REINFORCED CONCRETE VERTICAL SIDES 12 INCH	SY	200
6J200012000BOT	CHANNEL REINFORCED CONCRETE BOTTOM 12 INCH	SY	124
6J200013000BOT	CHANNEL REINFORCED CONCRETE BOTTOM 13 INCH	SY	104
6J2000140000VS	CHANNEL REINFORCED CONCRETE VERTICAL SIDES 14 INCH	SY	125
6J200014000BOT	CHANNEL REINFORCED CONCRETE BOTTOM 14 INCH	SY	110
6J2000150000VS	CHANNEL REINFORCED CONCRETE VERTICAL SIDES 15 INCH	SY	234
6J200015000BOT	CHANNEL REINFORCED CONCRETE BOTTOM 15 INCH	SY	200
6J2000160000VS	CHANNEL REINFORCED CONCRETE VERTICAL SIDES 16 INCH	SY	150
6J200016000BOT	CHANNEL REINFORCED CONCRETE BOTTOM 16 INCH	SY	120
6J2000180000VS	CHANNEL REINFORCED CONCRETE VERTICAL SIDES 18 INCH	SY	257
6J200018000BOT	CHANNEL REINFORCED CONCRETE BOTTOM 18 INCH	SY	275
6J200021000BOT	CHANNEL REINFORCED CONCRETE BOTTOM 21 INCH	SY	145
6J300003003BOX	BOX CULVERT - REINF. CONCRETE 03 FT. X 03 FT.	LF	189
6J300004002BOX	BOX CULVERT - REINF. CONCRETE 04 FT. X 02 FT.	LF	180
6J300004003BOX	BOX CULVERT - REINF. CONCRETE 04 FT. X 03 FT.	LF	252
6J300004004BOX	BOX CULVERT - REINF. CONCRETE 04 FT. X 04 FT.	LF	283
6J300005003BOX	BOX CULVERT - REINF. CONCRETE 05 FT. X 03 FT.	LF	332
6J300005004BOX	BOX CULVERT - REINF. CONCRETE 05 FT. X 04 FT.	LF	370
6J300005005BOX	BOX CULVERT - REINF. CONCRETE 05 FT. X 05 FT.	LF	404
6J30000503DBOX	BOX CULVERT - REINF. CONCRETE DOUBLE 05FT X 03FT	LF	605
6J300006003BOX	BOX CULVERT - REINF. CONCRETE 06 FT. X 03 FT.	LF	397
6J300006004BOX	BOX CULVERT - REINF. CONCRETE 06 FT. X 04 FT.	LF	438
6J300006005BOX	BOX CULVERT - REINF. CONCRETE 06 FT. X 05 FT.	LF	481
6J300006006BOX	BOX CULVERT - REINF. CONCRETE 06 FT. X 06 FT.	LF	523
6J30000603DBOX	BOX CULVERT - REINF. CONCRETE DOUBLE 06FT X 03FT	LF	790
6J300007003BOX	BOX CULVERT - REINF. CONCRETE 07 FT. X 03 FT.	LF	310
6J300007004BOX	BOX CULVERT - REINF. CONCRETE 07 FT. X 04 FT.	LF	527
6J300007005BOX	BOX CULVERT - REINF. CONCRETE 07 FT. X 05 FT.	LF	579
6J300007006BOX	BOX CULVERT - REINF. CONCRETE 07 FT. X 06 FT.	LF	624
6J300007007BOX	BOX CULVERT - REINF. CONCRETE 07 FT. X 07 FT.	LF	675
6J30000703DBOX	BOX CULVERT - REINF. CONCRETE DOUBLE 07FT X 03FT	LF	875
6J300008003BOX	BOX CULVERT - REINF. CONCRETE 08 FT. X 03 FT.	LF	375
6J300008004BOX	BOX CULVERT - REINF. CONCRETE 08 FT. X 04 FT.	LF	576
6J300008005BOX	BOX CULVERT - REINF. CONCRETE 08 FT. X 05 FT.	LF	627
6J300008006BOX	BOX CULVERT - REINF. CONCRETE 08 FT. X 06 FT.	LF	672
6J300008007BOX	BOX CULVERT - REINF. CONCRETE 08 FT. X 07 FT.	LF	724
6J300008008BOX	BOX CULVERT - REINF. CONCRETE 08 FT. X 08 FT.	LF	781
6J30000804DBOX	BOX CULVERT - REINF. CONCRETE DOUBLE 08 FT. X 04FT.	LF	780
6J300009005BOX	BOX CULVERT - REINF. CONCRETE 09 FT. X 05 FT.	LF	756
6J300009006BOX	BOX CULVERT - REINF. CONCRETE 09 FT. X 06 FT.	LF	810
6J300009007BOX	BOX CULVERT - REINF. CONCRETE 09 FT. X 07 FT.	LF	864

Summary Item Listing

MSD PAY ITEMS AS OF MARCH 5, 2011

Item	Item Description	Unit	List Price
6J300009008BOX	BOX CULVERT - REINF. CONCRETE 09 FT. X 08FT.	LF	918
6J300009009BOX	BOX CULVERT - REINF. CONCRETE 09 FT. X 09 FT.	LF	990
6J30000905TBOX	BOX CULVERT - REINF. CONCRETE TRIPLE 09 FT. X 05 FT	LF	1,600
6J300010004BOX	BOX CULVERT - REINF. CONCRETE 10 FT. X 04 FT.	LF	550
6J300010005BOX	BOX CULVERT - REINF. CONCRETE 10 FT. X 05 FT.	LF	900
6J300010006BOX	BOX CULVERT - REINF. CONCRETE 10 FT. X 06 FT.	LF	960
6J300010007BOX	BOX CULVERT - REINF. CONCRETE 10 FT. X 07 FT.	LF	1,020
6J300010008BOX	BOX CULVERT - REINF. CONCRETE 10 FT. X 08 FT.	LF	1,080
6J300010009BOX	BOX CULVERT - REINF. CONCRETE 10 FT. X 09 FT.	LF	1,140
6J300010010BOX	BOX CULVERT - REINF. CONCRETE 10 FT. X 10 FT.	LF	1,208
6J300011004BOX	BOX CULVERT - REINF. CONCRETE 11 FT. X 04 FT.	LF	990
6J300011006BOX	BOX CULVERT - REINF. CONCRETE 11 FT. X 6 FT.	LF	1,122
6J300011008BOX	BOX CULVERT - REINF. CONCRETE 11 FT. X 08 FT.	LF	1,254
6J300012004BOX	BOX CULVERT - REINF. CONCRETE 12 FT. X 04 FT.	LF	1,152
6J300012006BOX	BOX CULVERT - REINF. CONCRETE 12 FT. X 06 FT.	LF	1,296
6J300012008BOX	BOX CULVERT - REINF. CONCRETE 12 FT. X 08 FT.	LF	1,440
6J300012010BOX	BOX CULVERT - REINF. CONCRETE 12 FT. X 10 FT.	LF	1,512
6J300015006BOX	BOX CULVERT - REINF. CONCRETE 15 FT. X 06 FT.	LF	1,200
6J300018008BOX	BOX CULVERT - REINF. CONCRETE 18 FT. X 08 FT.	LF	1,800
6J300028008BOX	BOX CULVERT - REINF. CONCRETE 28 FT. X 08 FT.	LF	2,200
6J4000000000RB	ROCK BLANKET	SY	52
6J400000000RBG	ROCK BLANKET - GROUTED	SY	68
6J500000000000	GABIONS IN PLACE	CY	186
6J60000000000AX	GRADED STONE A	CY	23
6J60000000000CX	GRADED STONE C	CY	23
6J6000000000HSX	HEAVY STONE REVETMENT	SY	60
6J6000000000LSX	LIGHT STONE REVETMENT	CY	64
6J6000000000RLX	ROCK LINING	SY	45
6J6000000000RRX	RIP RAP	SY	46
6J6000000000RTX	ROCK TOE PROTECTION	SY	80
6J600000000GRRX	GROUTED RIP-RAP	SY	60
6J600000000RL2X	ROCK LINING (2 FT. THICK)	SY	150
6J700000000000	CRUSHED LIMESTONE, CHANNEL	CY	38
6J800012000000	CONNECTION TO CHANNEL 12 INCH PIPE	PLC	650
6J800015000000	CONNECTION TO CHANNEL 15 INCH PIPE	PLC	1,100
6J800018000000	CONNECTION TO CHANNEL 18 INCH PIPE	PLC	1,550
6J800021000000	CONNECTION TO CHANNEL 21 INCH PIPE	PLC	2,000
6J800024000000	CONNECTION TO CHANNEL 24 INCH PIPE	PLC	2,500
6J800027000000	CONNECTION TO CHANNEL 27 INCH PIPE	PLC	2,750
6J800030000000	CONNECTION TO CHANNEL 30 INCH PIPE	PLC	3,000
6J800033000000	CONNECTION TO CHANNEL 33 INCH PIPE	PLC	3,250
6J800036000000	CONNECTION TO CHANNEL 36 INCH PIPE	PLC	3,500
6J800042000000	CONNECTION TO CHANNEL 42 INCH PIPE	PLC	3,750
6J800048000000	CONNECTION TO CHANNEL 48 INCH PIPE	PLC	4,000
6J800054000000	CONNECTION TO CHANNEL 54 INCH PIPE	PLC	4,250
6J800060000000	CONNECTION TO CHANNEL 60 INCH PIPE	PLC	1,500
6J800090000000	CONNECTION TO CHANNEL 90 INCH PIPE	PLC	6,000
3A300000OBSWELX	OBSERVATION WELLS	LF	70
8H000000000000	PROTECTION AND RESTORATION OF SITE	LS	0
8H100000PROPSVX	PRE-CONTRUCTION PROPERTY DAMAGE SURVEY	EA	310
8H100000SITRESX	SITE RESTORATION	LS	12,000
8H30000000GATEX	GATE	EA	5,000
8H300000WIGATEX	WROUGHT IRON GATE	LS	6,000
8H3000360000CLX	FENCE - 36 INCH CHAIN LINK	LF	9
8H3000420000CLX	FENCE - 42 INCH CHAIN LINK	LF	20
8H3000480000CLX	FENCE - 48 INCH CHAIN LINK	LF	22
8H3000480000WDX	FENCE - 48 INCH WOOD FENCE	LF	40
8H3000600000CLX	FENCE - 60 INCH CHAIN LINK	LF	25
8H3000720000CLX	FENCE - 72 INCH CHAIN LINK	LF	31
8H3000720000WIX	FENCE - 72 INCH WROUGHT IRON	LF	69
8H3000840000CLX	FENCE - 84 INCH CHAIN LINK	LF	38
8H3000960000CLX	FENCE - 96 INCH CHAIN LINK	LF	43
8H3001440000CLX	FENCE - 144 INCH CHAIN LINK	LF	80

Summary Item Listing

MSD PAY ITEMS AS OF MARCH 5, 2011

Item	Item Description	Unit	List Price
8H4000000000BG	SODDING - BLUEGRASS	SY	8
8H400000000FES	SODDING - FESCUE	SY	9
8H400000000ZOY	SODDING - ZOYSIA	SY	11
8H500000000000	SEEDING	SY	2
8H60000000TREEX	TREE	EA	250
8H600000LANSALX	LANDSCAPING ALLOWANCE	AL	500
8H600000TREERMX	TREE REMOVAL	LS	1,800
8H700000MODWALX	MODULAR BLOCK WALL	SF	30
8H700000RRTWLLX	RAILROAD TIE WALL - REMOVE AND REPLACE	SY	162
9B2000000000IN	CONNECTION TO EXISTING INLET (12" THRU 24" PIPE)	PLC	905
9B2000000000JCX	CONNECTION TO EXISTING JUNCTION CHAMBER	PLC	1,450
9B2000000000MH	CONNECTION TO EXISTING MANHOLE	PLC	2,000
9B200000000IMH	CONNECTION TO EXISTING INLET MANHOLE	EA	890
9B200000000MH2	CONNECTION TO EXISTING MANHOLE (8" THRU 24" PIPE)	PLC	890
9B300000000000	CONNECTION TO LARGE SEWER (8" THRU 36" PIPE)	PLC	3,500
9B300030000000	CONNECTION TO LARGE SEWER 30 INCH PIPE	PLC	6,000
9B300036000000	CONNECTION TO LARGE SEWER 36 INCH PIPE	PLC	11,000
9B300048000000	CONNECTION TO LARGE SEWER 48 INCH PIPE	PLC	15,500
9B300054000000	CONNECTION TO LARGE SEWER 54 INCH PIPE	PLC	17,000
9B300066000000	CONNECTION TO LARGE SEWER 66 INCH PIPE	PLC	20,000
9B300072000000	CONNECTION TO LARGE SEWER 72 INCH PIPE	PLC	25,000
9C400000RRRMRPX	RAILROAD TRACK REMOVE & REPLACE	LF	125
9D000000OVRLALX	CITY OVERLAY ALLOWANCE	AL	1
9D000000PAVERSX	VEHICLE ACCESS PAVERS	SY	60
9D000000SEALCTX	SEAL COAT	SY	28
9D100000GRDRALX	GUARD RAIL	LF	25
9D2B0000000000	CRUSHED LIMESTONE BASE	SY	25
9D300000000000	STREET PAVEMENT - BITUMINOUS WEARING SURFACE, REPLACEMENT	SY	44
9D400000000000	STREET PAVEMENT - ASPHALTIC CONCRETE REM. AND REP.	SY	67
9D400002OVRLAYX	STREET PAVEMENT - ASPHALT OVERLAY (2 INCH)	SY	20
9D5b0000000000	STREET PAVEMENT - CONCRETE REM. AND REP.	SY	68
9D5c0000000000	STREET PVMT-ASPHL CONC SURF & RIGID BASE-REM & REP	SY	83
9D600000BRKSIDX	SIDEWALK - BRICK REM. & REP.	SY	134
9D600000CHTSIDX	SIDEWALK - CHAT	SY	35
9D6C0000DRIVACX	DRIVEWAYS-ASPHALTIC CONCRETE	SY	60
9D6b0000000000	SIDEWALKS & DRIVEWAYS CONCRETE- REM. AND REP.	SY	63
9D6b0000000REMX	DRIVEWAY REMOVAL - CONCRETE	LS	2,500
9D6b0000CONCRTX	SIDEWALK - CONCRETE	SY	20
9D6b0000EXPAGGX	DRIVEWAYS - EXPOSED AGGREGATE CONCRETE REMOVE & REPLACE	SY	90
9D6b0000REPLACX	DRIVEWAY REPLACEMENT - CONCRETE	LS	3,700
9D6b0000SXPAGGX	SIDEWALKS EXPOSED AGGREGATE CONCRETE-REM AND REP	SY	63
9D6c0000000000	SIDEWALKS-ASPHALTIC CONCRETE-REM. & REP.	SF	7
9D6c0000ASPHLTX	SIDEWALK - ASPHALT	SY	40
9D6c0000DRIVACX	DRIVEWAYS-ASPHALTIC CONCRETE	SY	60
9D70000000000C	CURB - CONCRETE REM. AND REP.	LF	42
9D7000000000AC	CURB - ASPHALTIC CONCRETE REM. AND REP.	LF	33
9D700000000CCG	CURB AND GUTTER-CONCRETE-REM. AND REP.	LF	42
9D70000000CNEW	CURB - CONCRETE	LF	36
9D7000000ACNEWX	CURB - ASPHALTIC CONCRETE	LF	30
9D700000CCGNEWX	CURB AND GUTTER - CONCRETE	LF	40
9D700000GRANITX	CURB - GRANITE	LF	45
9D700000LIMESTX	CURB - LIMESTONE	LF	60
9F100000000000	ABANDONMENT - PIPE FILL	CY	190
9F100000CLVERTX	CULVERT REMOVAL	LS	4,500
9F200000000000	ABANDONMENT - STRUCTURE	EA	1,100
9L000000FLPROFX	FLOOD PROOF STRUCTURE	EA	20,000

Appendix E

Alternative Cost Estimates

Creve Coeur Creek Main Branch (CC)

Smith Creek (SC)

Fernridge Creek (FC)

Deer Creek Main Branch (DC)

Windrush Creek (WC)

Monsanto Sunswept (MS)

Pebble Creek (PC)

Opinion of Probable Cost

11-Nov-11

CC-1
Fernview Drive #1009
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat (heavy)	$16	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Rip Rap	$46	Sq Yd	0	$0
7	Geofabric	$11	Sq Yd	0	$0
8	Reno Mattress	$200	Cu Yd	60	$12,000
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Asphalt Driveway Removal and Replace	$60	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	48" CMP	$140	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" RCP	$55	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Yard Grading	$5,000	Lump	1	$5,000
8	Landscaping	$2,500	Lump	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$3,780
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$5,400
2	Clearing = 10% of construction cost	Varies	Lump	1	$2,700
3	Contingency = 35% of construction cost	Varies	Lump	1	$9,450
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$4,050
	Total (rounded to nearest $1,000)				**$52,000**

Opinion of Probable Cost

11-Nov-11

CC-1
Fernview Drive #1009
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost	
	STABILIZATION AND EROSION CONTROL					
1	Grade Control	$135	Sq Yd	0	$0	
2	Coir Log (includes planting)	$22	Lin Ft	0	$0	
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0	
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0	
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0	
6	Rip Rap	$46	Sq Yd	49	$2,254	
7	Geofabric	$11	Sq Yd	49	$539	
8	Reno Mattress	$200	Cu Yd	0	$0	
9	Planting	$2	Sq Yd	0	$0	
	STREET IMPROVEMENTS					
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0	
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0	
3	Guard Rail	$25	Lin Ft	0	$0	
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0	
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0	
	STORM SEWERS					
1	Double Curb Inlet	$2,600	Each	0	$0	
2	Curb Inlet	$1,600	Each	0	$0	
3	Area Inlet	$1,500	Each	0	$0	
4	Manhole	$195	Lin Ft	0	$0	
5	12' x 4' RCB	$1,152	Lin Ft	0	$0	
6	Concrete Headwall	$5,200	Each	0	$0	
7	12" FES	$1,000	Lin Ft	0	$0	
8	18" Concrete Collar	$445	Each	0	$0	
9	18" RCP	$60	Lin Ft	0	$0	
10	24" RCP	$70	Lin Ft	0	$0	
11	21" Concrete Collar	$505	Each	0	$0	
12	36" RCP	$105	Lin Ft	0	$0	
13	48" CMP	$140	Lin Ft	0	$0	
14	15" Concrete Collar	$425	Each	0	$0	
15	15" RCP	$55	LF	0	$0	
	MISCELLANEOUS					
1	Mobilization	Varies	Lump	1	$10,000	
2	Excavation	$15	Cu Yd	0	$0	
3	Seeding	$2	Sq Yd	0	$0	
4	Sodding	$11	Sq Yd	0	$0	
5	Compacted Backfill	$31	Cu Yd	0	$0	
6	Granular Backfill	$36	Cu Yd	0	$0	
7	Yard Grading	$5,000	Lump	1	$5,000	
8	Landscaping	$2,500	Lump	0	$0	
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$2,491	$17,793
	CONTINGENCIES					
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$3,559	
2	Clearing = 10% of construction cost	Varies	Lump	1	$1,779	
3	Contingency = 35% of construction cost	Varies	Lump	1	$6,228	
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$2,669	
	Total (rounded to nearest $1,000)				**$35,000**	

Opinion of Probable Cost

11-Nov-11

CC-2
Fernview Drive #1020, 1028
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	200	$1,600
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Berm	$1,000	Lump	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Asphalt Driveway Removal and Replace	$60	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" RCP	$55	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	300	$3,300
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Yard Grading	$7,500	Lump	1	$5,000
8	Landscape/Vegetation	$2,500	Lump	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$2,786
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$3,980
2	Clearing = 10% of construction cost	Varies	Lump	1	$1,990
3	Contingency = 35% of construction cost	Varies	Lump	1	$6,965
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$2,985
	Total (rounded to nearest $1,000)				**$39,000**

Opinion of Probable Cost

11-Nov-11

CC-2
Fernview Drive #1020, 1028
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat (heavy)	$16	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Berm	$1,000	Lump	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Asphalt Driveway Removal and Replace	$60	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	1	$1,500
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	1	$890
6	12" RCP	$50	Lin Ft	180	$9,000
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" RCP	$55	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$5,000
2	Excavation	$15	Cu Yd	117	$1,755
3	Seeding	$2	Sq Yd	400	$800
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	100	$3,100
6	Granular Backfill	$36	Cu Yd	0	$0
7	Yard Grading	$5,000	Lump	1	$5,000
8	Detention Basin Modification	Varies	Allowance	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$3,786
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$5,409
2	Clearing = 10% of construction cost	Varies	Lump	1	$2,705
3	Contingency = 35% of construction cost	Varies	Lump	1	$9,466
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$4,057
	Total (rounded to nearest $1,000)				**$52,000**

Opinion of Probable Cost

11-Nov-11

CC-3
Fernway Lane #928
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Rip Rap	$46	Sq Yd	0	$0
6	Composite Revetment	$108	Sq Yd	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Gabion Baskets	$186	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Inlet Double	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Regrade Yard	$20,000	Lump	1	$20,000
8	Remove and Replace Fence	$2,500	Lump	1	$2,500
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$4,550
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$6,500
2	Clearing = 10% of construction cost	Varies	Lump	1	$3,250
3	Contingency = 35% of construction cost	Varies	Lump	1	$11,375
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$4,875
	Total (rounded to nearest $1,000)				**$63,000**

Opinion of Probable Cost

11-Nov-11

CC-3
Fernway Lane #928
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Rip Rap	$46	Sq Yd	0	$0
6	Composite Revetment	$108	Sq Yd	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Gabion Baskets	$186	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Inlet Double	$2,600	Each	1	$2,600
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Regrade Yard	$20,000	Lump	1	$20,000
8	Remove and Replace Fence	$2,500	Lump	1	$2,500
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$4,914
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$7,020
2	Clearing = 10% of construction cost	Varies	Lump	1	$3,510
3	Contingency = 35% of construction cost	Varies	Lump	1	$12,285
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$5,265
	Total (rounded to nearest $1,000)				**$68,000**

Opinion of Probable Cost

11-Nov-11

CC-4
Ferntop Lane #12970
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat (heavy)	$16	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Composite Revetment	$108	Sq Yd	0	$0
6	Rip Rap	$46	Sq Yd	420	$19,320
7	Geofabric	$11	Sq Yd	420	$4,620
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Asphalt Driveway Removal and Replace	$60	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	48" CMP	$140	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" RCP	$55	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$5,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Creek Grading	$5,000	Lump	1	$5,000
8	Landscaping	$2,500	Lump	1	$2,500
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$5,102
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$7,288
2	Clearing = 10% of construction cost	Varies	Lump	1	$3,644
3	Contingency = 35% of construction cost	Varies	Lump	1	$12,754
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$5,466
	Total (rounded to nearest $1,000)				**$71,000**

Opinion of Probable Cost

11-Nov-11

CC-4
Ferntop Lane #12970
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Biostabilization	$45	Sq Yd	420	$18,900
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Composite Revetment	$108	Sq Yd	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Rip Rap	$46	Sq Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Asphalt Driveway Removal and Replace	$60	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$5,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Box Culvert	$1,200	LF	0	$0
7	Creek Grading	$5,000	Lump	1	$5,000
8	Landscaping	$2,500	Lump	1	$2,500
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$4,396
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$6,280
2	Clearing = 10% of construction cost	Varies	Lump	1	$3,140
3	Contingency = 35% of construction cost	Varies	Lump	1	$10,990
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$4,710
	Total (rounded to nearest $1,000)				**$61,000**

Opinion of Probable Cost

11-Nov-11

CC-5
Fernway Lane #12921
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat (heavy)	$16	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Berm	$1,000	Lump	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Asphalt Driveway Removal and Replace	$60	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" RCP	$55	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	556	$1,112
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Yard Grading	$10,000	Lump	1	$10,000
8	Removal of Retaining Wall	$2,000	Lump	1	$2,000
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$3,236
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$4,622
2	Clearing = 10% of construction cost	Varies	Lump	1	$2,311
3	Contingency = 35% of construction cost	Varies	Lump	1	$8,089
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$3,467
	Total (rounded to nearest $1,000)				**$45,000**

Opinion of Probable Cost

11-Nov-11

CC-5
Fernway Lane #12921
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat (heavy)	$16	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Berm	$1,000	Lump	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Asphalt Driveway Removal and Replace	$60	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	1	$1,500
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	1	$890
6	12" RCP	$50	Lin Ft	160	$8,000
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" RCP	$55	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$5,000
2	Excavation	$15	Cu Yd	104	$1,560
3	Seeding	$2	Sq Yd	356	$712
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	89	$2,759
6	Granular Backfill	$36	Cu Yd	0	$0
7	Yard Grading	$10,000	Lump	1	$10,000
8	Removal of Retaining Wall	$2,000	Lump	1	$2,000
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$4,539
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$6,484
2	Clearing = 10% of construction cost	Varies	Lump	1	$3,242
3	Contingency = 35% of construction cost	Varies	Lump	1	$11,347
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$4,863
	Total (rounded to nearest $1,000)				**$63,000**

Opinion of Probable Cost

11-Nov-11

SC-2
Ladue Woods Drive #12229
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat (heavy)	$16	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Berm	$1,000	Lump	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Asphalt Driveway Removal and Replace	$60	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	2	$3,000
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	1	$890
6	12" RCP	$50	Lin Ft	230	$11,500
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" RCP	$55	LF	135	$7,425
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$5,000
2	Excavation	$15	Cu Yd	254	$3,810
3	Seeding	$2	Sq Yd	812	$1,624
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	214	$6,634
6	Granular Backfill	$36	Cu Yd	0	$0
7	Yard Grading	$5,000	Lump	1	$5,000
8	Detention Basin Modification	Varies	Allowance	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$6,284
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$8,977
2	Clearing = 10% of construction cost	Varies	Lump	1	$4,488
3	Contingency = 35% of construction cost	Varies	Lump	1	$15,709
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$6,732
	Total (rounded to nearest $1,000)				**$87,000**

Opinion of Probable Cost

11-Nov-11

SC-2
Ladue Woods Drive #12229
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat (heavy)	$16	Sq Yd	334	$5,344
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Berm	$1,000	Lump	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Asphalt Driveway Removal and Replace	$60	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" RCP	$55	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	667	$7,337
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Yard Grading	$7,500	Lump	1	$7,500
8	Landscape/Vegetation	$2,500	Lump	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$4,225
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$6,036
2	Clearing = 10% of construction cost	Varies	Lump	1	$3,018
3	Contingency = 35% of construction cost	Varies	Lump	1	$10,563
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$4,527
	Total (rounded to nearest $1,000)				**$59,000**

Opinion of Probable Cost

11-Nov-11

SC-3
Royal Manor #12554
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Biostabilization	$45	Sq Yd	267	$12,015
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Composite Revetment	$108	Sq Yd	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Rip Rap	$46	Sq Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Asphalt Driveway Removal and Replace	$60	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Box Culvert	$1,200	LF	0	$0
7	Clearing of Creek	$10,000	Lump	0	$0
8	Clearing of Overflow Structure	$2,500	Lump	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$3,082
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$4,403
2	Clearing = 10% of construction cost	Varies	Lump	1	$2,202
3	Contingency = 35% of construction cost	Varies	Lump	1	$7,705
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$3,302
	Total (rounded to nearest $1,000)				**$43,000**

Opinion of Probable Cost

11-Nov-11

SC-3
Royal Manor #12554
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Biostabilization	$45	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Composite Revetment	$108	Sq Yd	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Rip Rap	$46	Sq Yd	267	$12,282
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Asphalt Driveway Removal and Replace	$60	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Box Culvert	$1,200	LF	0	$0
7	Clearing of Creek	$10,000	Lump	0	$0
8	Clearing of Overflow Structure	$2,500	Lump	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$3,119
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$4,456
2	Clearing = 10% of construction cost	Varies	Lump	1	$2,228
3	Contingency = 35% of construction cost	Varies	Lump	1	$7,799
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$3,342
	Total (rounded to nearest $1,000)				**$43,000**

Opinion of Probable Cost

11-Nov-11

SC-4
Boothbay Lane #12318
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Geofabric	$11	Sq Yd	187	$2,057
6	Composite Revetment	$108	Sq Yd	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	160	$30,400
8	Gabion Baskets	$186	Cu Yd	80	$14,880
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$5,000
2	Excavation	$15	Cu Yd	80	$1,200
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Wing Wall Repair	$2,000	Lump	0	$0
8	Detention Basin Modification	Varies	Allowance	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$7,495
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$10,707
2	Clearing = 10% of construction cost	Varies	Lump	1	$5,354
3	Contingency = 35% of construction cost	Varies	Lump	1	$18,738
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$8,031
	Total (rounded to nearest $1,000)				**$104,000**

Opinion of Probable Cost

11-Nov-11

SC-4
Boothbay Lane #12318
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Biostabilization	$45	Sq Yd	160	$7,200
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Composite Revetment	$108	Sq Yd	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Rip Rap	$46	Sq Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Asphalt Driveway Removal and Replace	$60	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Box Culvert	$1,200	LF	0	$0
7	Regrading Yard	$7,500	Lump	0	$0
8	Demolition of Existing Manhole and Piping	$10,000	Lump	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$2,408
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$3,440
2	Clearing = 10% of construction cost	Varies	Lump	1	$1,720
3	Contingency = 35% of construction cost	Varies	Lump	1	$6,020
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$2,580
	Total (rounded to nearest $1,000)				**$33,000**

Opinion of Probable Cost

11-Nov-11

SC-5
Boothbay Lane #12310
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Biostabilization	$45	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Composite Revetment	$108	Sq Yd	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Rip Rap	$46	Sq Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Asphalt Driveway Removal and Replace	$60	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	1	$1,500
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	100	$7,000
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$5,000
2	Excavation	$15	Cu Yd	91	$1,365
3	Seeding	$2	Sq Yd	223	$446
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	65	$2,015
6	Box Culvert	$1,200	LF	0	$0
7	Regrading Yard	$7,500	Lump	1	$7,500
8	Demolition of Existing Manhole and Piping	$10,000	Lump	1	$10,000
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$4,876
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$6,965
2	Clearing = 10% of construction cost	Varies	Lump	1	$3,483
3	Contingency = 35% of construction cost	Varies	Lump	1	$12,189
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$5,224
	Total (rounded to nearest $1,000)				**$68,000**

Opinion of Probable Cost

11-Nov-11

SC-5
Boothbay Lane #12310
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	134	$1,072
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Composite Revetment	$108	Sq Yd	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Rip Rap	$46	Sq Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Asphalt Driveway Removal and Replace	$60	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	223	$2,453
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Box Culvert	$1,200	LF	0	$0
7	Regrading Yard	$7,500	Lump	1	$5,000
8	Landscaping	$2,500	Lump	1	$2,500
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$2,944
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$4,205
2	Clearing = 10% of construction cost	Varies	Lump	1	$2,103
3	Contingency = 35% of construction cost	Varies	Lump	1	$7,359
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$3,154
	Total (rounded to nearest $1,000)				**$41,000**

Opinion of Probable Cost

11-Nov-11

SC-6
Chamblee Lane #606, 622
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Geofabric	$11	Sq Yd	506	$5,566
6	Composite Revetment	$108	Sq Yd	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	434	$82,460
8	Gabion Baskets	$186	Cu Yd	217	$40,362
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$5,000
2	Excavation	$15	Cu Yd	217	$3,255
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Wing Wall Repair	$2,000	Lump	0	$0
8	Detention Basin Modification	Varies	Allowance	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$19,130
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$27,329
2	Clearing = 10% of construction cost	Varies	Lump	1	$13,664
3	Contingency = 35% of construction cost	Varies	Lump	1	$47,825
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$20,496
	Total (rounded to nearest $1,000)				**$265,000**

Opinion of Probable Cost

11-Nov-11

SC-6
Chamblee Lane #606, 622
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Biostabilization	$45	Sq Yd	1012	$45,540
6	Composite Revetment	$108	Sq Yd	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Gabion Baskets	$186	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$5,000
2	Excavation	$15	Cu Yd	867	$13,005
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Regrade Adjacent Property Banks	$7,500	Lump	1	$10,000
8	Detention Basin Modification	Varies	Allowance	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$10,296
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$14,709
2	Clearing = 10% of construction cost	Varies	Lump	1	$7,355
3	Contingency = 35% of construction cost	Varies	Lump	1	$25,741
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$11,032
	Total (rounded to nearest $1,000)				**$143,000**

Opinion of Probable Cost

11-Nov-11

SC-7
Clion Lane #212 & Ladue Lake # 225, 287
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	567	$4,536
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Berm	$1,000	Lump	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Asphalt Driveway Removal and Replace	$60	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" RCP	$55	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$5,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	945	$10,395
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Yard Grading	$7,500	Lump	1	$7,500
8	Landscape/Vegetation	$2,500	Lump	1	$2,500
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$4,190
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$5,986
2	Clearing = 10% of construction cost	Varies	Lump	1	$2,993
3	Contingency = 35% of construction cost	Varies	Lump	1	$10,476
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$4,490
	Total (rounded to nearest $1,000)				**$58,000**

Opinion of Probable Cost

11-Nov-11

SC-7
Clion Lane #212 & Ladue Lake # 225, 287
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat (heavy)	$16	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Berm	$1,000	Lump	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Asphalt Driveway Removal and Replace	$60	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	3	$4,500
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	600	$36,000
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" RCP	$55	LF	390	$21,450
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$5,000
2	Excavation	$15	Cu Yd	770	$11,550
3	Seeding	$2	Sq Yd	2200	$4,400
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	616	$19,096
6	Granular Backfill	$36	Cu Yd	0	$0
7	Yard Grading	$5,000	Lump	1	$5,000
8	Detention Basin Modification	Varies	Allowance	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$14,979
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$21,399
2	Clearing = 10% of construction cost	Varies	Lump	1	$10,700
3	Contingency = 35% of construction cost	Varies	Lump	1	$37,449
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$16,049
	Total (rounded to nearest $1,000)				**$208,000**

Opinion of Probable Cost

11-Nov-11

SC-8
Laduemont Drive #240
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost	
	STABILIZATION AND EROSION CONTROL					
1	Grade Control	$135	Sq Yd	0	$0	
2	Coir Log (includes planting)	$22	Lin Ft	0	$0	
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0	
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0	
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0	
6	Rip Rap	$46	Sq Yd	56	$2,576	
7	Geofabric	$11	Sq Yd	56	$616	
8	Reno Mattress	$200	Cu Yd	0	$0	
9	Planting	$2	Sq Yd	0	$0	
	STREET IMPROVEMENTS					
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0	
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0	
3	Guard Rail	$25	Lin Ft	0	$0	
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0	
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0	
	STORM SEWERS					
1	Double Curb Inlet	$2,600	Each	0	$0	
2	Curb Inlet	$1,600	Each	0	$0	
3	Area Inlet	$1,500	Each	0	$0	
4	Manhole	$195	Lin Ft	0	$0	
5	12' x 4' RCB	$1,152	Lin Ft	0	$0	
6	Concrete Headwall	$5,200	Each	0	$0	
7	12" FES	$1,000	Lin Ft	0	$0	
8	18" Concrete Collar	$445	Each	0	$0	
9	18" RCP	$60	Lin Ft	0	$0	
10	24" RCP	$70	Lin Ft	0	$0	
11	21" Concrete Collar	$505	Each	0	$0	
12	36" RCP	$105	Lin Ft	0	$0	
13	48" CMP	$140	Lin Ft	0	$0	
14	15" Concrete Collar	$425	Each	0	$0	
15	15" RCP	$55	LF	0	$0	
	MISCELLANEOUS					
1	Mobilization	Varies	Lump	1	$10,000	
2	Excavation	$15	Cu Yd	0	$0	
3	Seeding	$2	Sq Yd	0	$0	
4	Sodding	$11	Sq Yd	0	$0	
5	Compacted Backfill	$31	Cu Yd	0	$0	
6	Granular Backfill	$36	Cu Yd	0	$0	
7	Yard Grading	$5,000	Lump	1	$5,000	
8	Landscaping	$2,500	Lump	1	$2,500	
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$2,897	$20,692
	CONTINGENCIES					
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$4,138	
2	Clearing = 10% of construction cost	Varies	Lump	1	$2,069	
3	Contingency = 35% of construction cost	Varies	Lump	1	$7,242	
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$3,104	
	Total (rounded to nearest $1,000)				**$40,000**	

Opinion of Probable Cost

11-Nov-11

SC-8
Laduemont Drive #240
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat (heavy)	$16	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Rip Rap	$46	Sq Yd	0	$0
7	Geofabric	$11	Sq Yd	0	$0
8	Reno Mattress	$200	Cu Yd	18	$3,600
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Asphalt Driveway Removal and Replace	$60	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	48" CMP	$140	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" RCP	$55	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Yard Grading	$5,000	Lump	1	$5,000
8	Landscaping	$2,500	Lump	1	$2,500
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$2,954
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$4,220
2	Clearing = 10% of construction cost	Varies	Lump	1	$2,110
3	Contingency = 35% of construction cost	Varies	Lump	1	$7,385
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$3,165
	Total (rounded to nearest $1,000)				**$41,000**

Opinion of Probable Cost

11-Nov-11

SC-9
Hibler Oaks #219
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat (heavy)	$16	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Berm	$1,000	Lump	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Asphalt Driveway Removal and Replace	$60	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	1	$1,500
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	1	$890
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" RCP	$55	LF	190	$10,450
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$5,000
2	Excavation	$15	Cu Yd	148	$2,220
3	Seeding	$2	Sq Yd	423	$846
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	122	$3,782
6	Granular Backfill	$36	Cu Yd	0	$0
7	Yard Grading	$5,000	Lump	1	$5,000
8	Detention Basin Modification	Varies	Allowance	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$4,156
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$5,938
2	Clearing = 10% of construction cost	Varies	Lump	1	$2,969
3	Contingency = 35% of construction cost	Varies	Lump	1	$10,391
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$4,453
	Total (rounded to nearest $1,000)				**$58,000**

Opinion of Probable Cost

11-Nov-11

SC-9
Hibler Oaks #219
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat (heavy)	$16	Sq Yd	227	$3,632
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Berm	$1,000	Lump	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Asphalt Driveway Removal and Replace	$60	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" RCP	$55	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	378	$4,158
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Yard Grading	$5,000	Lump	1	$5,000
8	Detention Basin Modification	Varies	Allowance	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$3,191
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$4,558
2	Clearing = 10% of construction cost	Varies	Lump	1	$2,279
3	Contingency = 35% of construction cost	Varies	Lump	1	$7,977
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$3,419
	Total (rounded to nearest $1,000)				**$44,000**

Opinion of Probable Cost

11-Nov-11

SC-10
Balcon Estates #24,26
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Geofabric	$11	Sq Yd	187	$2,057
6	Composite Revetment	$108	Sq Yd	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	160	$30,400
8	Gabion Baskets	$186	Cu Yd	80	$14,880
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$5,000
2	Excavation	$15	Cu Yd	80	$1,200
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Backyard Grading	$5,000	Lump	1	$5,000
8	French Drain	$65	LF	75	$4,875
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$8,878
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$12,682
2	Clearing = 10% of construction cost	Varies	Lump	1	$6,341
3	Contingency = 35% of construction cost	Varies	Lump	1	$22,194
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$9,512
	Total (rounded to nearest $1,000)				**$123,000**

Opinion of Probable Cost

11-Nov-11

SC-11
Dartagnan Court #13200
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat (heavy)	$16	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Rip Rap	$46	Sq Yd	0	$0
7	Geofabric	$11	Sq Yd	0	$0
8	Reno Mattress	$200	Cu Yd	34	$6,800
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Asphalt Driveway Removal and Replace	$60	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	48" CMP	$140	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" RCP	$55	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Yard Grading	$5,000	Lump	1	$5,000
8	Landscaping	$2,500	Lump	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$3,052
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$4,360
2	Clearing = 10% of construction cost	Varies	Lump	1	$2,180
3	Contingency = 35% of construction cost	Varies	Lump	1	$7,630
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$3,270
	Total (rounded to nearest $1,000)				**$42,000**

Opinion of Probable Cost

11-Nov-11

SC-11
Dartagnan Court #13200
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost	
	STABILIZATION AND EROSION CONTROL					
1	Grade Control	$135	Sq Yd	0	$0	
2	Coir Log (includes planting)	$22	Lin Ft	0	$0	
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0	
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0	
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0	
6	Rip Rap	$46	Sq Yd	62	$2,852	
7	Geofabric	$11	Sq Yd	62	$682	
8	Reno Mattress	$200	Cu Yd	0	$0	
9	Planting	$2	Sq Yd	0	$0	
	STREET IMPROVEMENTS					
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0	
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0	
3	Guard Rail	$25	Lin Ft	0	$0	
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0	
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0	
	STORM SEWERS					
1	Double Curb Inlet	$2,600	Each	0	$0	
2	Curb Inlet	$1,600	Each	0	$0	
3	Area Inlet	$1,500	Each	0	$0	
4	Manhole	$195	Lin Ft	0	$0	
5	12' x 4' RCB	$1,152	Lin Ft	0	$0	
6	Concrete Headwall	$5,200	Each	0	$0	
7	12" FES	$1,000	Lin Ft	0	$0	
8	18" Concrete Collar	$445	Each	0	$0	
9	18" RCP	$60	Lin Ft	0	$0	
10	24" RCP	$70	Lin Ft	0	$0	
11	21" Concrete Collar	$505	Each	0	$0	
12	36" RCP	$105	Lin Ft	0	$0	
13	48" CMP	$140	Lin Ft	0	$0	
14	15" Concrete Collar	$425	Each	0	$0	
15	15" RCP	$55	LF	0	$0	
	MISCELLANEOUS					
1	Mobilization	Varies	Lump	1	$10,000	
2	Excavation	$15	Cu Yd	0	$0	
3	Seeding	$2	Sq Yd	0	$0	
4	Sodding	$11	Sq Yd	0	$0	
5	Compacted Backfill	$31	Cu Yd	0	$0	
6	Granular Backfill	$36	Cu Yd	0	$0	
7	Yard Grading	$5,000	Lump	1	$5,000	
8	Landscaping	$2,500	Lump	0	$0	
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$2,595	$18,534
	CONTINGENCIES					
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$3,707	
2	Clearing = 10% of construction cost	Varies	Lump	1	$1,853	
3	Contingency = 35% of construction cost	Varies	Lump	1	$6,487	
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$2,780	
	Total (rounded to nearest $1,000)				**$36,000**	

Opinion of Probable Cost

11-Nov-11

FC-2
Beauvis Court #741, 749
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Geofabric	$11	Sq Yd	0	$0
6	Composite Revetment	$108	Sq Yd	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Gabion Baskets	$186	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	1	$1,500
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	1	$890
6	12" RCP	$50	Lin Ft	200	$10,000
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$5,000
2	Excavation	$15	Cu Yd	130	$1,950
3	Seeding	$2	Sq Yd	445	$890
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	112	$3,472
6	Granular Backfill	$36	Cu Yd	0	$0
7	Regrade Yard and Construct Berm	$15,000	Lump	1	$15,000
8	Restore Landscaping	$2,500	LF	1	$2,500
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$5,768
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$8,240
2	Clearing = 10% of construction cost	Varies	Lump	1	$4,120
3	Contingency = 35% of construction cost	Varies	Lump	1	$14,421
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$6,180
	Total (rounded to nearest $1,000)				**$80,000**

Opinion of Probable Cost

11-Nov-11

FC-2
Beauvis Court #741, 749
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Geofabric	$11	Sq Yd	0	$0
6	Composite Revetment	$108	Sq Yd	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Gabion Baskets	$186	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	445	$890
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Construct Berm and swale	$15,000	Lump	1	$15,000
8	Restore Landscaping	$2,500	LF	1	$2,500
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$3,975
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$5,678
2	Clearing = 10% of construction cost	Varies	Lump	1	$2,839
3	Contingency = 35% of construction cost	Varies	Lump	1	$9,937
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$4,259
	Total (rounded to nearest $1,000)				**$55,000**

Opinion of Probable Cost

11-Nov-11

FC-3
Hibler Court #373
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat (heavy)	$16	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Rip Rap	$46	Sq Yd	0	$0
7	Geofabric	$11	Sq Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Asphalt Driveway Removal and Replace	$60	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	1	$1,500
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	1	$890
6	12" RCP	$50	Lin Ft	170	$8,500
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	48" CMP	$140	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" RCP	$55	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$5,000
2	Excavation	$15	Cu Yd	111	$1,665
3	Seeding	$2	Sq Yd	378	$756
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	95	$2,945
6	Granular Backfill	$36	Cu Yd	0	$0
7	Berm	$5,000	Lump	1	$5,000
8	Detention Basin Modification	Varies	Allowance	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$3,676
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$5,251
2	Clearing = 10% of construction cost	Varies	Lump	1	$2,626
3	Contingency = 35% of construction cost	Varies	Lump	1	$9,190
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$3,938
	Total (rounded to nearest $1,000)				**$51,000**

Opinion of Probable Cost

11-Nov-11

FC-3
Hibler Court #373
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat (heavy)	$16	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Rip Rap	$46	Sq Yd	0	$0
7	Geofabric	$11	Sq Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Asphalt Driveway Removal and Replace	$60	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	48" CMP	$140	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" RCP	$55	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Berm	$10,000	Lump	1	$10,000
8	Landscaping	$2,500	Lump	1	$2,500
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$3,150
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$4,500
2	Clearing = 10% of construction cost	Varies	Lump	1	$2,250
3	Contingency = 35% of construction cost	Varies	Lump	1	$7,875
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$3,375
	Total (rounded to nearest $1,000)				**$44,000**

Opinion of Probable Cost

11-Nov-11

FC-4
Country Manor Lane #12295
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat (heavy)	$16	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Composite Revetment	$108	Sq Yd	8	$864
6	Rip Rap	$46	Sq Yd	0	$0
7	Geofabric	$11	Sq Yd	0	$0
8	Reno Mattress	$200	Cu Yd	48	$9,600
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Asphalt Driveway Removal and Replace	$60	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	48" CMP	$140	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" RCP	$55	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Yard Grading	$5,000	Lump	1	$5,000
8	Landscaping	$2,500	Lump	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$3,565
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$5,093
2	Clearing = 10% of construction cost	Varies	Lump	1	$2,546
3	Contingency = 35% of construction cost	Varies	Lump	1	$8,912
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$3,820
	Total (rounded to nearest $1,000)				**$49,000**

Opinion of Probable Cost

11-Nov-11

FC-4
Country Manor Lane #12295
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost	
	STABILIZATION AND EROSION CONTROL					
1	Grade Control	$135	Sq Yd	0	$0	
2	Coir Log (includes planting)	$22	Lin Ft	0	$0	
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0	
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0	
5	Composite Revetment	$108	Sq Yd	8	$864	
6	Rip Rap	$46	Sq Yd	98	$4,508	
7	Geofabric	$11	Sq Yd	98	$1,078	
8	Reno Mattress	$200	Cu Yd	0	$0	
9	Planting	$2	Sq Yd	0	$0	
	STREET IMPROVEMENTS					
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0	
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0	
3	Guard Rail	$25	Lin Ft	0	$0	
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0	
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0	
	STORM SEWERS					
1	Double Curb Inlet	$2,600	Each	0	$0	
2	Curb Inlet	$1,600	Each	0	$0	
3	Area Inlet	$1,500	Each	0	$0	
4	Manhole	$195	Lin Ft	0	$0	
5	12' x 4' RCB	$1,152	Lin Ft	0	$0	
6	Concrete Headwall	$5,200	Each	0	$0	
7	12" FES	$1,000	Lin Ft	0	$0	
8	18" Concrete Collar	$445	Each	0	$0	
9	18" RCP	$60	Lin Ft	0	$0	
10	24" RCP	$70	Lin Ft	0	$0	
11	21" Concrete Collar	$505	Each	0	$0	
12	36" RCP	$105	Lin Ft	0	$0	
13	48" CMP	$140	Lin Ft	0	$0	
14	15" Concrete Collar	$425	Each	0	$0	
15	15" RCP	$55	LF	0	$0	
	MISCELLANEOUS					
1	Mobilization	Varies	Lump	1	$10,000	
2	Excavation	$15	Cu Yd	0	$0	
3	Seeding	$2	Sq Yd	0	$0	
4	Sodding	$11	Sq Yd	0	$0	
5	Compacted Backfill	$31	Cu Yd	0	$0	
6	Granular Backfill	$36	Cu Yd	0	$0	
7	Yard Grading	$5,000	Lump	1	$5,000	
8	Landscaping	$2,500	Lump	0	$0	
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$3,003	$21,450
	CONTINGENCIES					
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$4,290	
2	Clearing = 10% of construction cost	Varies	Lump	1	$2,145	
3	Contingency = 35% of construction cost	Varies	Lump	1	$7,508	
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$3,218	
	Total (rounded to nearest $1,000)				**$42,000**	

Opinion of Probable Cost

11-Nov-11

FC-5
Halsgame #12318
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat (heavy)	$16	Sq Yd	200	$3,200
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Berm	$1,000	Lump	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Asphalt Driveway Removal and Replace	$60	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" RCP	$55	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	334	$3,674
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Yard Grading	$5,000	Lump	1	$5,000
8	Landscape/Vegetation	$2,500	Lump	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$3,062
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$4,375
2	Clearing = 10% of construction cost	Varies	Lump	1	$2,187
3	Contingency = 35% of construction cost	Varies	Lump	1	$7,656
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$3,281
	Total (rounded to nearest $1,000)				**$42,000**

Opinion of Probable Cost

11-Nov-11

FC-5
Halsgame #12318
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat (heavy)	$16	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Berm	$1,000	Lump	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Asphalt Driveway Removal and Replace	$60	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	1	$1,500
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	260	$15,600
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" RCP	$55	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$5,000
2	Excavation	$15	Cu Yd	203	$3,045
3	Seeding	$2	Sq Yd	578	$1,156
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	159	$4,929
6	Granular Backfill	$36	Cu Yd	0	$0
7	Yard Grading	$5,000	Lump	1	$5,000
8	Remove and Replace Fence	$2,500	Lump	1	$2,500
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$5,422
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$7,746
2	Clearing = 10% of construction cost	Varies	Lump	1	$3,873
3	Contingency = 35% of construction cost	Varies	Lump	1	$13,556
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$5,810
	Total (rounded to nearest $1,000)				**$75,000**

Opinion of Probable Cost

11-Nov-11

FC-6
Royal Valley Drive #12121, 12135
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat (heavy)	$16	Sq Yd	247	$3,952
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Berm	$1,000	Lump	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Asphalt Driveway Removal and Replace	$60	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" RCP	$55	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	489	$5,379
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Yard Grading	$5,000	Lump	1	$5,000
8	Landscape/Vegetation	$2,500	Lump	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$3,406
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$4,866
2	Clearing = 10% of construction cost	Varies	Lump	1	$2,433
3	Contingency = 35% of construction cost	Varies	Lump	1	$8,516
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$3,650
	Total (rounded to nearest $1,000)				**$47,000**

Opinion of Probable Cost

11-Nov-11

FC-6
Royal Valley Drive #12121, 12135
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat (heavy)	$16	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Berm	$1,000	Lump	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Asphalt Driveway Removal and Replace	$60	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	3	$4,500
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	1	$890
6	12" RCP	$50	Lin Ft	520	$26,000
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" RCP	$55	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$5,000
2	Excavation	$15	Cu Yd	337	$5,055
3	Seeding	$2	Sq Yd	1156	$2,312
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	289	$8,959
6	Granular Backfill	$36	Cu Yd	0	$0
7	Yard Grading	$5,000	Lump	1	$5,000
8	Remove and Replace Fence	$2,500	Lump	1	$2,500
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$8,430
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$12,043
2	Clearing = 10% of construction cost	Varies	Lump	1	$6,022
3	Contingency = 35% of construction cost	Varies	Lump	1	$21,076
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$9,032
	Total (rounded to nearest $1,000)				**$117,000**

Opinion of Probable Cost

11-Nov-11

DC-1
Tarrytown Drive #11732, 11700
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Biostabilization	$45	Sq Yd	89	$4,005
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Composite Revetment	$108	Sq Yd	9	$972
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Rip Rap	$46	Sq Yd	89	$4,094
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Asphalt Driveway Removal and Replace	$60	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Box Culvert	$1,200	LF	0	$0
7	Clearing of Creek	$10,000	Lump	1	$10,000
8	Clearing of Overflow Structure	$2,500	Lump	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$4,070
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$5,814
2	Clearing = 10% of construction cost	Varies	Lump	1	$2,907
3	Contingency = 35% of construction cost	Varies	Lump	1	$10,175
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$4,361
	Total (rounded to nearest $1,000)				**$56,000**

Opinion of Probable Cost

11-Nov-11

DC-2
Fairways Circle #631, 647
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Berm	$1,000	Lump	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	2	$3,000
4	Manhole	$195	Lin Ft	7	$1,365
5	Connection to Existing Sewer	$890	Place	1	$890
6	12" RCP	$50	Lin Ft	250	$12,500
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" RCP	$55	LF	130	$7,150
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$5,000
2	Excavation	$15	Cu Yd	264	$3,960
3	Seeding	$2	Sq Yd	845	$1,690
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	222	$6,882
6	Granular Backfill	$36	Cu Yd	0	$0
7	Regrading Yard	$5,000	Lump	1	$5,000
8	Detention Basin Modification	Varies	Allowance	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$6,641
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$9,487
2	Clearing = 10% of construction cost	Varies	Lump	1	$4,744
3	Contingency = 35% of construction cost	Varies	Lump	1	$16,603
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$7,116
	Total (rounded to nearest $1,000)				**$92,000**

Opinion of Probable Cost

11-Nov-11

DC-2
Fairways Circle #631, 647
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Berm	$1,000	Lump	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	1	$1,600
3	Area Inlet	$1,500	Each	2	$3,000
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	1	$890
6	12" RCP	$50	Lin Ft	260	$13,000
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" RCP	$55	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$5,000
2	Excavation	$15	Cu Yd	169	$2,535
3	Seeding	$2	Sq Yd	578	$1,156
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	145	$4,495
6	Granular Backfill	$36	Cu Yd	0	$0
7	Regrading Yard	$5,000	Lump	1	$5,000
8	Detention Basin Modification	Varies	Allowance	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$5,135
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$7,335
2	Clearing = 10% of construction cost	Varies	Lump	1	$3,668
3	Contingency = 35% of construction cost	Varies	Lump	1	$12,837
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$5,501
	Total (rounded to nearest $1,000)				**$71,000**

Opinion of Probable Cost

11-Nov-11

DC-3
Villa Coublay Drive #60
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Geofabric	$11	Sq Yd	600	$6,600
6	Composite Revetment	$108	Sq Yd	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	534	$101,460
8	Gabion Baskets	$186	Cu Yd	667	$124,062
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$5,000
2	Excavation	$15	Cu Yd	1067	$16,005
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Wing Wall Repair	$2,000	Lump	0	$0
8	Detention Basin Modification	Varies	Allowance	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$35,438
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$50,625
2	Clearing = 10% of construction cost	Varies	Lump	1	$25,313
3	Contingency = 35% of construction cost	Varies	Lump	1	$88,594
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$37,969
	Total (rounded to nearest $1,000)				**$491,000**

Opinion of Probable Cost

11-Nov-11

DC-3
Villa Coublay Drive #60
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Biostabilization	$45	Sq Yd	1243	$55,935
6	Composite Revetment	$108	Sq Yd	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Gabion Baskets	$186	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$5,000
2	Excavation	$15	Cu Yd	4630	$69,450
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Regrade Adjacent Property Banks	$7,500	Lump	1	$7,500
8	Detention Basin Modification	Varies	Allowance	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$19,304
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$27,577
2	Clearing = 10% of construction cost	Varies	Lump	1	$13,789
3	Contingency = 35% of construction cost	Varies	Lump	1	$48,260
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$20,683
	Total (rounded to nearest $1,000)				**$267,000**

Opinion of Probable Cost

11-Nov-11

DC-4
Fairways Circle #527
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Biostabilization	$45	Sq Yd	134	$6,030
6	Composite Revetment	$108	Sq Yd	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Landscaping	$500	Lump	1	$500
8	Detention Basin Modification	Varies	Allowance	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$2,314
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$3,306
2	Clearing = 10% of construction cost	Varies	Lump	1	$1,653
3	Contingency = 35% of construction cost	Varies	Lump	1	$5,786
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$2,480
	Total (rounded to nearest $1,000)				**$32,000**

Opinion of Probable Cost

11-Nov-11

DC-4
Fairways Circle #527
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Composite Revetment	$108	Sq Yd	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	1	$1,500
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	60	$3,000
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	39	$585
3	Seeding	$2	Sq Yd	134	$268
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	34	$1,054
6	Granular Backfill	$36	Cu Yd	0	$0
7	Berm	$1,000	Lump	1	$1,000
8	Regrade Yard	$2,500	Lump	1	$2,500
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$2,787
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$3,981
2	Clearing = 10% of construction cost	Varies	Lump	1	$1,991
3	Contingency = 35% of construction cost	Varies	Lump	1	$6,967
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$2,986
	Total (rounded to nearest $1,000)				**$39,000**

Opinion of Probable Cost

11-Nov-11

DC-5
Ladue Estates Drive #5
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	200	$1,600
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Composite Revetment	$108	Sq Yd	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	200	$400
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Landscaping	$2,500	Lump	1	$2,500
8	Detention Basin Modification	Varies	Allowance	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$2,030
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$2,900
2	Clearing = 10% of construction cost	Varies	Lump	1	$1,450
3	Contingency = 35% of construction cost	Varies	Lump	1	$5,075
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$2,175
	Total (rounded to nearest $1,000)				**$28,000**

Opinion of Probable Cost

11-Nov-11

DC-5
Ladue Estates Drive #5
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Composite Revetment	$108	Sq Yd	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	1	$1,500
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	1	$890
6	12" RCP	$50	Lin Ft	220	$11,000
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	143	$2,145
3	Seeding	$2	Sq Yd	489	$978
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	123	$3,813
6	Granular Backfill	$36	Cu Yd	0	$0
7	Regrading Yard	$2,500	Lump	1	$2,500
8	Berm	$1,000	Lump	1	$1,000
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$4,736
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$6,765
2	Clearing = 10% of construction cost	Varies	Lump	1	$3,383
3	Contingency = 35% of construction cost	Varies	Lump	1	$11,839
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$5,074
	Total (rounded to nearest $1,000)				**$66,000**

Opinion of Probable Cost

11-Nov-11

DC-6
Ladue Meadows Lane #104
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Berm	$1,000	Lump	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Asphalt Driveway Removal and Replace	$60	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	1	$1,500
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	1	$890
6	12" RCP	$50	Lin Ft	150	$7,500
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" RCP	$55	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$5,000
2	Excavation	$15	Cu Yd	98	$1,470
3	Seeding	$2	Sq Yd	334	$668
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	84	$2,604
6	Granular Backfill	$36	Cu Yd	0	$0
7	Yard Grading	$5,000	Lump	1	$5,000
8	Detention Basin Modification	Varies	Allowance	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$3,448
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$4,926
2	Clearing = 10% of construction cost	Varies	Lump	1	$2,463
3	Contingency = 35% of construction cost	Varies	Lump	1	$8,621
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$3,695
	Total (rounded to nearest $1,000)				**$48,000**

Opinion of Probable Cost

11-Nov-11

DC-6
Ladue Meadows Lane #104
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	167	$1,336
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Composite Revetment	$108	Sq Yd	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb	$36	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	334	$3,674
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Regrading Yard	$5,000	Lump	1	$5,000
8	Detention Basin Modification	Varies	Allowance	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$2,801
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$4,002
2	Clearing = 10% of construction cost	Varies	Lump	1	$2,001
3	Contingency = 35% of construction cost	Varies	Lump	1	$7,004
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$3,002
	Total (rounded to nearest $1,000)				**$39,000**

Opinion of Probable Cost

11-Nov-11

DC-7
Runnymede Drive #434
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Berm	$1,000	Lump	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Asphalt Driveway Removal and Replace	$60	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	2	$3,000
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	1	$890
6	12" RCP	$50	Lin Ft	300	$15,000
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" RCP	$55	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$5,000
2	Excavation	$15	Cu Yd	195	$2,925
3	Seeding	$2	Sq Yd	667	$1,334
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	167	$5,177
6	Granular Backfill	$36	Cu Yd	0	$0
7	Yard Grading	$5,000	Lump	1	$5,000
8	Detention Basin Modification	Varies	Allowance	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$5,366
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$7,665
2	Clearing = 10% of construction cost	Varies	Lump	1	$3,833
3	Contingency = 35% of construction cost	Varies	Lump	1	$13,414
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$5,749
	Total (rounded to nearest $1,000)				**$74,000**

Opinion of Probable Cost

11-Nov-11

DC-7
Runnymede Drive #434
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat (heavy)	$16	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Composite Revetment	$108	Sq Yd	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb	$36	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	1250	$2,500
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Regrading Yard	$15,000	Lump	1	$10,000
8	Vegetation/Landscaping	$2,500	Allowance	1	$2,500
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$3,500
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$5,000
2	Clearing = 10% of construction cost	Varies	Lump	1	$2,500
3	Contingency = 35% of construction cost	Varies	Lump	1	$8,750
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$3,750
	Total (rounded to nearest $1,000)				**$49,000**

Opinion of Probable Cost

11-Nov-11

WC-1
Mosely Acres #10,11,12
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Composite Revetment	$108	Sq Yd	0	$0
7	Geofabric	$11	Sq Yd	45	$495
8	Rip Rap	$46	Sq Yd	45	$2,070
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Asphalt Driveway Removal and Replace	$60	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Box Culvert	$1,200	LF	0	$0
7	Rebuild Dam Embankment	$10,000	Lump	1	$10,000
8	Clearing of Overflow Structure	$2,500	Lump	1	$2,500
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$3,509
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$5,013
2	Clearing = 10% of construction cost	Varies	Lump	1	$2,507
3	Contingency = 35% of construction cost	Varies	Lump	1	$8,773
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$3,760
	Total (rounded to nearest $1,000)				**$49,000**

Opinion of Probable Cost

11-Nov-11

WC-2
Graeser Lane #11076
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat (Heavy)	$16	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Composite Revetment	$108	Sq Yd	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	267	$18,156
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	75	$3,150
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Trench Drain	$5,800	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Yard Grading	$5,000	Lump	0	$0
8	Landscaping/Vegetation	$2,500	Lump	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$4,383
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$6,261
2	Clearing = 10% of construction cost	Varies	Lump	1	$3,131
3	Contingency = 35% of construction cost	Varies	Lump	1	$10,957
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$4,696
	Total (rounded to nearest $1,000)				**$61,000**

Opinion of Probable Cost

11-Nov-11

WC-2
Graeser Lane #11076
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat (Heavy)	$16	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Composite Revetment	$108	Sq Yd	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	89	$6,052
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Trench Drain	$5,800	Each	1	$5,800
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" RCP	$55	LF	40	$2,200
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	27	$405
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	18	$648
7	Yard Grading	$5,000	Lump	0	$0
8	Landscaping/Vegetation	$2,500	Lump	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$3,515
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$5,021
2	Clearing = 10% of construction cost	Varies	Lump	1	$2,511
3	Contingency = 35% of construction cost	Varies	Lump	1	$8,787
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$3,766
	Total (rounded to nearest $1,000)				**$49,000**

Opinion of Probable Cost

11-Nov-11

WC-3
Mosley Acres #16
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Geofabric	$11	Sq Yd	0	$0
6	Composite Revetment	$108	Sq Yd	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Rip Rap	$46	Sq Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	400	$16,800
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Trench Drain	$5,800	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	178	$356
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Demolition and Clear damaged retaining wall	$15,000	Lump	0	$0
8	Landscaping/Vegetation	$2,500	Lump	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$3,802
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$5,431
2	Clearing = 10% of construction cost	Varies	Lump	1	$2,716
3	Contingency = 35% of construction cost	Varies	Lump	1	$9,505
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$4,073
	Total (rounded to nearest $1,000)				**$53,000**

Opinion of Probable Cost

11-Nov-11

WC-4
Mystic Meadows Lane #121
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Berm	$1,000	Lump	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Asphalt Driveway Removal and Replace	$60	Sq Yd	112	$6,720
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	2	$3,000
4	Manhole	$195	Lin Ft	7	$1,365
5	Connection to Existing Sewer	$890	Place	2	$1,780
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" RCP	$55	LF	500	$27,500
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$5,000
2	Excavation	$15	Cu Yd	389	$5,835
3	Seeding	$2	Sq Yd	889	$1,778
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	320	$9,920
6	Granular Backfill	$36	Cu Yd	65	$2,340
7	Yard Grading	$5,000	Lump	1	$5,000
8	Detention Basin Modification	Varies	Allowance	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$9,833
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$14,048
2	Clearing = 10% of construction cost	Varies	Lump	1	$7,024
3	Contingency = 35% of construction cost	Varies	Lump	1	$24,583
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$10,536
	Total (rounded to nearest $1,000)				**$136,000**

Opinion of Probable Cost

11-Nov-11

WC-4
Mystic Meadows Lane #121
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat (Heavy)	$16	Sq Yd	667	$10,672
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Composite Revetment	$108	Sq Yd	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	1112	$12,232
5	Compacted Backfill	$31	Cu Yd		$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Yard Grading	$5,000	Lump	1	$5,000
8	Detention Basin Modification	Varies	Allowance	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$5,307
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$7,581
2	Clearing = 10% of construction cost	Varies	Lump	1	$3,790
3	Contingency = 35% of construction cost	Varies	Lump	1	$13,266
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$5,686
	Total (rounded to nearest $1,000)				**$74,000**

Opinion of Probable Cost

11-Nov-11

WC-5
Tureen Drive #11205
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat (heavy)	$16	Sq Yd	267	$4,272
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Composite Revetment	$108	Sq Yd	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb	$36	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	356	$3,916
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Regrading Yard	$5,000	Lump	1	$5,000
8	Detention Basin Modification	Varies	Allowance	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$3,246
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$4,638
2	Clearing = 10% of construction cost	Varies	Lump	1	$2,319
3	Contingency = 35% of construction cost	Varies	Lump	1	$8,116
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$3,478
	Total (rounded to nearest $1,000)				**$45,000**

Opinion of Probable Cost

11-Nov-11

WC-6
Wedgewood Lane #6, 7
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat (heavy)	$16	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Berm	$1,000	Lump	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Asphalt Driveway Removal and Replace	$60	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	2	$3,000
4	Manhole	$195	Lin Ft	7	$1,365
5	Connection to Existing Sewer	$890	Place	1	$890
6	12" RCP	$50	Lin Ft	170	$8,500
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" RCP	$55	LF	170	$9,350
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$5,000
2	Excavation	$15	Cu Yd	243	$3,645
3	Seeding	$2	Sq Yd	756	$1,512
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	203	$6,293
6	Granular Backfill	$36	Cu Yd	0	$0
7	Yard Grading	$10,000	Lump	1	$10,000
8	Removal of Retaining Wall	$2,000	Lump	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$6,938
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$9,911
2	Clearing = 10% of construction cost	Varies	Lump	1	$4,956
3	Contingency = 35% of construction cost	Varies	Lump	1	$17,344
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$7,433
	Total (rounded to nearest $1,000)				**$96,000**

Opinion of Probable Cost

11-Nov-11

WC-6
Wedgewood Lane #6, 7
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat (heavy)	$16	Sq Yd	334	$5,344
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Berm	$1,000	Lump	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Asphalt Driveway Removal and Replace	$60	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" RCP	$55	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$5,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	667	$7,337
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Yard Grading	$10,000	Lump	1	$10,000
8	Removal of Retaining Wall	$2,000	Lump	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$3,875
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$5,536
2	Clearing = 10% of construction cost	Varies	Lump	1	$2,768
3	Contingency = 35% of construction cost	Varies	Lump	1	$9,688
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$4,152
	Total (rounded to nearest $1,000)				**$54,000**

Opinion of Probable Cost

11-Nov-11

WC-7
Windrush Creek East #6
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost	
	STABILIZATION AND EROSION CONTROL					
1	Grade Control	$135	Sq Yd	0	$0	
2	Coir Log (includes planting)	$22	Lin Ft	0	$0	
3	Turf Reinforcement Mat	$8	Sq Yd	181	$1,448	
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0	
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0	
6	Rip Rap	$46	Sq Yd	0	$0	
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0	
8	Reno Mattress	$200	Cu Yd	0	$0	
9	Planting	$2	Sq Yd	181	$362	
	STREET IMPROVEMENTS					
1	Concrete Driveway Removal and Replace	$63	Sq Yd	27	$1,701	
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0	
3	Guard Rail	$25	Lin Ft	0	$0	
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0	
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0	
	STORM SEWERS					
1	Double Curb Inlet	$2,600	Each	0	$0	
2	Curb Inlet	$1,600	Each	0	$0	
3	Area Inlet	$1,500	Each	0	$0	
4	Manhole	$195	Lin Ft	0	$0	
5	12' x 4' RCB	$1,152	Lin Ft	25	$28,800	
6	Concrete Headwall	$5,200	Each	2	$10,400	
7	12" FES	$1,000	Lin Ft	0	$0	
8	18" Concrete Collar	$445	Each	0	$0	
9	18" RCP	$60	Lin Ft	0	$0	
10	24" RCP	$70	Lin Ft	0	$0	
11	21" Concrete Collar	$505	Each	0	$0	
12	36" RCP	$105	Lin Ft	0	$0	
13	30" CMP	$90	Lin Ft	0	$0	
14	15" Concrete Collar	$425	Each	0	$0	
15	15" RCP	$55	LF	0	$0	
	MISCELLANEOUS					
1	Mobilization	Varies	Lump	1	$5,000	
2	Excavation	$15	Cu Yd	0	$0	
3	Seeding	$2	Sq Yd	0	$0	
4	Sodding	$11	Sq Yd	0	$0	
5	Compacted Backfill	$31	Cu Yd	0	$0	
6	Granular Backfill	$36	Cu Yd	0	$0	
7	Yard Grading	$10,000	Lump	1	$10,000	
8	Remove Existing Culvert	$1,000	Lump	1	$1,000	
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$8,220	$58,711
	CONTINGENCIES					
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$11,742	
2	Clearing = 10% of construction cost	Varies	Lump	1	$5,871	
3	Contingency = 35% of construction cost	Varies	Lump	1	$20,549	
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$8,807	
	Total (rounded to nearest $1,000)				**$114,000**	

Opinion of Probable Cost

11-Nov-11

WC-7
Windrush Creek East #6
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost	
	STABILIZATION AND EROSION CONTROL					
1	Grade Control	$135	Sq Yd	0	$0	
2	Coir Log (includes planting)	$22	Lin Ft	0	$0	
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0	
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0	
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0	
6	Rip Rap	$46	Sq Yd	0	$0	
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0	
8	Reno Mattress	$200	Cu Yd	0	$0	
9	Planting	$2	Sq Yd	0	$0	
	STREET IMPROVEMENTS					
1	Concrete Driveway Removal and Replace	$63	Sq Yd	54	$3,402	
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0	
3	Guard Rail	$25	Lin Ft	0	$0	
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0	
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0	
	STORM SEWERS					
1	Double Curb Inlet	$2,600	Each	0	$0	
2	Curb Inlet	$1,600	Each	0	$0	
3	Area Inlet	$1,500	Each	0	$0	
4	Manhole	$195	Lin Ft	0	$0	
5	12' x 4' RCB	$1,152	Lin Ft	0	$0	
6	Concrete Headwall	$5,200	Each	0	$0	
7	12" FES	$1,000	Lin Ft	0	$0	
8	18" Concrete Collar	$445	Each	0	$0	
9	18" RCP	$60	Lin Ft	0	$0	
10	24" RCP	$70	Lin Ft	300	$21,000	
11	21" Concrete Collar	$505	Each	0	$0	
12	48" RCP	$160	Lin Ft	0	$0	
13	30" CMP	$90	Lin Ft	0	$0	
14	15" Concrete Collar	$425	Each	0	$0	
15	15" RCP	$55	LF	0	$0	
	MISCELLANEOUS					
1	Mobilization	Varies	Lump	1	$5,000	
2	Excavation	$15	Cu Yd	273	$4,095	
3	Seeding	$2	Sq Yd	0	$0	
4	Sodding	$11	Sq Yd	0	$0	
5	Compacted Backfill	$31	Cu Yd	195	$6,045	
6	Granular Backfill	$36	Cu Yd	0	$0	
7	Yard Grading	$5,000	Lump	1	$10,000	
8	Remove Existing Culvert	$1,000	Lump	2	$2,000	
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$7,216	$51,542
	CONTINGENCIES					
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$10,308	
2	Clearing = 10% of construction cost	Varies	Lump	1	$5,154	
3	Contingency = 35% of construction cost	Varies	Lump	1	$18,040	
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$7,731	
	Total (rounded to nearest $1,000)				**$100,000**	

Opinion of Probable Cost

11-Nov-11

WC-8
Ladue Estates Drive #71, 73
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat (heavy)	$16	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Composite Revetment	$108	Sq Yd	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb	$36	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	889	$1,778
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Regrading Yard	$15,000	Lump	1	$15,000
8	Detention Basin Modification	Varies	Allowance	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$3,749
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$5,356
2	Clearing = 10% of construction cost	Varies	Lump	1	$2,678
3	Contingency = 35% of construction cost	Varies	Lump	1	$9,372
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$4,017
	Total (rounded to nearest $1,000)				**$52,000**

Opinion of Probable Cost

11-Nov-11

WC-8
Ladue Estates Drive #71, 73
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Berm	$1,000	Lump	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Asphalt Driveway Removal and Replace	$60	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	2	$3,000
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	1	$890
6	12" RCP	$50	Lin Ft	300	$15,000
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" RCP	$55	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$5,000
2	Excavation	$15	Cu Yd	195	$2,925
3	Seeding	$2	Sq Yd	667	$1,334
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	167	$5,177
6	Granular Backfill	$36	Cu Yd	0	$0
7	Yard Grading	$5,000	Lump	1	$5,000
8	Detention Basin Modification	Varies	Allowance	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$5,366
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$7,665
2	Clearing = 10% of construction cost	Varies	Lump	1	$3,833
3	Contingency = 35% of construction cost	Varies	Lump	1	$13,414
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$5,749
	Total (rounded to nearest $1,000)				**$74,000**

Opinion of Probable Cost

11-Nov-11

MS-1
Spoede Acres Street #2
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat (heavy)	$16	Sq Yd	284	$4,544
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Composite Revetment	$108	Sq Yd	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb	$36	Lin Ft	300	$10,800
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	378	$4,158
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Regrading Yard	$5,000	Lump	1	$5,000
8	Detention Basin Modification	Varies	Allowance	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$4,830
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$6,900
2	Clearing = 10% of construction cost	Varies	Lump	1	$3,450
3	Contingency = 35% of construction cost	Varies	Lump	1	$12,076
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$5,175
	Total (rounded to nearest $1,000)				**$67,000**

Opinion of Probable Cost

11-Nov-11

MS-2
Spoede View Court #10677
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Geofabric	$11	Sq Yd	389	$4,279
6	Composite Revetment	$108	Sq Yd	14	$1,512
7	Vegetated Gabion Baskets	$190	Cu Yd	334	$63,460
8	Gabion Baskets	$186	Cu Yd	167	$31,062
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$5,000
2	Excavation	$15	Cu Yd	334	$5,010
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Wing Wall Repair	$2,000	Lump	0	$0
8	Detention Basin Modification	Varies	Allowance	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$15,445
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$22,065
2	Clearing = 10% of construction cost	Varies	Lump	1	$11,032
3	Contingency = 35% of construction cost	Varies	Lump	1	$38,613
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$16,548
	Total (rounded to nearest $1,000)				**$214,000**

Opinion of Probable Cost

11-Nov-11

MS-2
Spoede View Court #10677
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Biostabilization	$45	Sq Yd	750	$33,750
6	Composite Revetment	$108	Sq Yd	14	$1,512
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Gabion Baskets	$186	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$5,000
2	Excavation	$15	Cu Yd	445	$6,675
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Regrade Adjacent Property Banks	$7,500	Lump	1	$7,500
8	Detention Basin Modification	Varies	Allowance	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$7,621
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$10,887
2	Clearing = 10% of construction cost	Varies	Lump	1	$5,444
3	Contingency = 35% of construction cost	Varies	Lump	1	$19,053
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$8,166
	Total (rounded to nearest $1,000)				**$106,000**

Opinion of Probable Cost

11-Nov-11

MS-3
Country View Drive #10671
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	360	$2,880
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Berm	$1,000	Lump	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	600	$6,600
5	Compacted Backfill	$31	Cu Yd		$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Yard Grading	$5,000	Lump	1	$5,000
8	Detention Basin Modification	Varies	Allowance	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$3,427
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$4,896
2	Clearing = 10% of construction cost	Varies	Lump	1	$2,448
3	Contingency = 35% of construction cost	Varies	Lump	1	$8,568
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$3,672
	Total (rounded to nearest $1,000)				**$47,000**

Opinion of Probable Cost

11-Nov-11

MS-3
Country View Drive #10671
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Berm	$1,000	Lump	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	34	$2,312
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	20	$840
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	1	$1,500
4	Manhole	$195	Lin Ft	7	$1,365
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	525	$26,250
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$5,000
2	Excavation	$15	Cu Yd	341	$5,115
3	Seeding	$2	Sq Yd	1112	$2,224
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	292	$9,052
6	Granular Backfill	$36	Cu Yd	17	$612
7	Yard Grading	$5,000	Lump	1	$5,000
8	Detention Basin Modification	Varies	Allowance	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$8,298
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$11,854
2	Clearing = 10% of construction cost	Varies	Lump	1	$5,927
3	Contingency = 35% of construction cost	Varies	Lump	1	$20,745
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$8,891
	Total (rounded to nearest $1,000)				**$115,000**

Opinion of Probable Cost

11-Nov-11

MS-4
Oak Park Court #3
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Live Stakes	$38	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Biostabilization	$45	Sq Yd	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	50	$2,100
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	1	$1,600
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	90	$4,500
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	59	$885
3	Seeding	$2	Sq Yd	200	$400
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	81	$2,511
6	Granular Backfill	$36	Cu Yd	0	$0
7	Removal of Existing Inlet	$2,000	Lump	1	$2,000
8	Detention Basin Modification	Varies	Allowance	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$3,359
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$4,799
2	Clearing = 10% of construction cost	Varies	Lump	1	$2,400
3	Contingency = 35% of construction cost	Varies	Lump	1	$8,399
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$3,599
	Total (rounded to nearest $1,000)				**$47,000**

Opinion of Probable Cost

11-Nov-11

MS-4
Oak Park Court #3
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat (Heavy)	$16	Sq Yd	133	$2,128
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Composite Revetment	$108	Sq Yd	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	50	$2,100
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	200	$2,200
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Removal of Existing Inlet	$2,000	Lump	1	$2,000
8	Detention Basin Modification	Varies	Allowance	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$2,580
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$3,686
2	Clearing = 10% of construction cost	Varies	Lump	1	$1,843
3	Contingency = 35% of construction cost	Varies	Lump	1	$6,450
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$2,764
	Total (rounded to nearest $1,000)				**$36,000**

Opinion of Probable Cost

11-Nov-11

MS-5
Chaminade Drive #13, 14
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Geofabric	$11	Sq Yd	134	$1,474
6	Composite Revetment	$108	Sq Yd	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Rip Rap	$46	Sq Yd	134	$6,164
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Trench Drain	$5,800	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Demolition and Clear damaged retaining wall	$15,000	Lump	1	$15,000
8	Landscaping/Vegetation	$2,500	Lump	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$4,569
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$6,528
2	Clearing = 10% of construction cost	Varies	Lump	1	$3,264
3	Contingency = 35% of construction cost	Varies	Lump	1	$11,423
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$4,896
	Total (rounded to nearest $1,000)				**$63,000**

Opinion of Probable Cost

11-Nov-11

MS-5
Chaminade Drive #13, 14
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0
4	Biostabilization	$45	Sq Yd	134	$6,030
5	Geofabric	$11	Sq Yd	0	$0
6	Composite Revetment	$108	Sq Yd	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Rip Rap	$46	Sq Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Trench Drain	$5,800	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Demolition and Clear damaged retaining wall	$15,000	Lump	1	$15,000
8	Landscaping/Vegetation	$2,500	Lump	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$4,344
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$6,206
2	Clearing = 10% of construction cost	Varies	Lump	1	$3,103
3	Contingency = 35% of construction cost	Varies	Lump	1	$10,861
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$4,655
	Total (rounded to nearest $1,000)				**$60,000**

Opinion of Probable Cost

11-Nov-11

MS-6
Colonial Hills Drive #77
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Berm	$1,000	Lump	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	12	$756
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	3	$4,500
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	1	$890
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	320	$19,200
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" RCP	$55	LF	500	$27,500
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$5,000
2	Excavation	$15	Cu Yd	393	$5,895
3	Seeding	$2	Sq Yd	1123	$2,246
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	314	$9,734
6	Granular Backfill	$36	Cu Yd	8	$288
7	Yard Grading	$10,000	Lump	1	$10,000
8	Remove Existing Culvert	$1,000	Lump	1	$1,000
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$12,181
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$17,402
2	Clearing = 10% of construction cost	Varies	Lump	1	$8,701
3	Contingency = 35% of construction cost	Varies	Lump	1	$30,453
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$13,051
	Total (rounded to nearest $1,000)				**$169,000**

Opinion of Probable Cost

11-Nov-11

MS-6
Colonial Hills Drive #77
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat (Heavy)	$16	Sq Yd	600	$9,600
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Composite Revetment	$108	Sq Yd	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	1000	$11,000
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Yard Grading	$5,000	Lump	1	$5,000
8	Landscaping/Vegetation	$2,500	Lump	1	$2,500
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$5,334
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$7,620
2	Clearing = 10% of construction cost	Varies	Lump	1	$3,810
3	Contingency = 35% of construction cost	Varies	Lump	1	$13,335
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$5,715
	Total (rounded to nearest $1,000)				**$74,000**

Opinion of Probable Cost

11-Nov-11

MS-7
Larkin Avenue #859
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	167	$1,336
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Rip Rap	$46	Sq Yd	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	25	$1,575
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Guard Rail	$25	Lin Ft	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	12' x 4' RCB	$1,152	Lin Ft	0	$0
6	Concrete Headwall	$5,200	Each	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" CMP	$60	Lin Ft	20	$1,200
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" RCP	$55	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	167	$1,837
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Yard Grading	$5,000	Lump	1	$5,000
8	Remove Existing Culvert	$1,000	Lump	1	$1,000
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$3,073
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$4,390
2	Clearing = 10% of construction cost	Varies	Lump	1	$2,195
3	Contingency = 35% of construction cost	Varies	Lump	1	$7,682
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$3,292
	Total (rounded to nearest $1,000)				**$43,000**

Opinion of Probable Cost

11-Nov-11

MS-7
Larkin Avenue #859
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost	
	STABILIZATION AND EROSION CONTROL					
1	Grade Control	$135	Sq Yd	0	$0	
2	Coir Log (includes planting)	$22	Lin Ft	0	$0	
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0	
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0	
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0	
6	Rip Rap	$46	Sq Yd	0	$0	
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0	
8	Reno Mattress	$200	Cu Yd	0	$0	
9	Planting	$2	Sq Yd	0	$0	
	STREET IMPROVEMENTS					
1	Concrete Driveway Removal and Replace	$63	Sq Yd	134	$8,442	
2	Street Pavement Removal and Replace	$68	Sq Yd	556	$37,808	
3	Guard Rail	$25	Lin Ft	0	$0	
4	Concrete Curb	$36	Lin Ft	1000	$36,000	
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0	
	STORM SEWERS					
1	Double Curb Inlet	$2,600	Each	0	$0	
2	Curb Inlet	$1,600	Each	3	$4,800	
3	Area Inlet	$1,500	Each	0	$0	
4	Manhole	$195	Lin Ft	0	$0	
5	12' x 4' RCB	$1,152	Lin Ft	0	$0	
6	Connection to Existing Sewer	$890	Place	1	$890	
7	12" FES	$1,000	Lin Ft	0	$0	
8	18" Concrete Collar	$445	Each	0	$0	
9	18" CMP	$60	Lin Ft	0	$0	
10	24" RCP	$70	Lin Ft	0	$0	
11	21" Concrete Collar	$505	Each	0	$0	
12	12" RCP	$50	Lin Ft	400	$20,000	
13	30" CMP	$90	Lin Ft	0	$0	
14	15" Concrete Collar	$425	Each	0	$0	
15	15" RCP	$55	LF	550	$30,250	
	MISCELLANEOUS					
1	Mobilization	Varies	Lump	1	$5,000	
2	Excavation	$15	Cu Yd	688	$10,320	
3	Seeding	$2	Sq Yd	1778	$3,556	
4	Sodding	$11	Sq Yd	0	$0	
5	Compacted Backfill	$31	Cu Yd	575	$17,825	
6	Granular Backfill	$36	Cu Yd	160	$5,760	
7	Yard Grading	$5,000	Lump	0	$0	
8	Remove Existing Culvert	$1,000	Lump	0	$0	
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$25,291	$180,651
	CONTINGENCIES					
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$36,130	
2	Clearing = 10% of construction cost	Varies	Lump	1	$18,065	
3	Contingency = 35% of construction cost	Varies	Lump	1	$63,228	
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$27,098	
	Total (rounded to nearest $1,000)				**$350,000**	

Opinion of Probable Cost

11-Nov-11

MS-8
Middlebrook Lane #3-6
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Composite Revetment	$45	Sq Yd	0	$0
7	Rip Rap	$46	Sq Yd	120	$5,520
8	Geofabric	$11	Sq Yd	120	$1,320
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Concrete Headwall	$5,200	Each	2	$10,400
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Trench Drain	$5,800	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Yard Grading	$5,000	Lump	0	$0
8	Landscaping/Vegetation	$2,500	Lump	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$3,814
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$5,448
2	Clearing = 10% of construction cost	Varies	Lump	1	$2,724
3	Contingency = 35% of construction cost	Varies	Lump	1	$9,534
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$4,086
	Total (rounded to nearest $1,000)				**$53,000**

Opinion of Probable Cost

11-Nov-11

MS-8
Middlebrook Lane #3-6
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0
4	Biostabilization	$45	Sq Yd	120	$5,400
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Composite Revetment	$45	Sq Yd	0	$0
7	Rip Rap	$46	Sq Yd	0	$0
8	Geofabric	$11	Sq Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Concrete Headwall	$5,200	Each	2	$10,400
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Trench Drain	$5,800	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Yard Grading	$5,000	Lump	0	$0
8	Landscaping/Vegetation	$2,500	Lump	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$3,612
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$5,160
2	Clearing = 10% of construction cost	Varies	Lump	1	$2,580
3	Contingency = 35% of construction cost	Varies	Lump	1	$9,030
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$3,870
	Total (rounded to nearest $1,000)				**$50,000**

Opinion of Probable Cost

11-Nov-11

MS-9
Rondelay Drive #10835
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	134	$1,072
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Composite Revetment	$108	Sq Yd	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Trench Drain	$5,800	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	134	$1,474
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Yard Grading	$5,000	Lump	1	$5,000
8	Landscaping/Vegetation	$2,500	Lump	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$2,456
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$3,509
2	Clearing = 10% of construction cost	Varies	Lump	1	$1,755
3	Contingency = 35% of construction cost	Varies	Lump	1	$6,141
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$2,632
	Total (rounded to nearest $1,000)				**$34,000**

Opinion of Probable Cost

11-Nov-11

MS-9
Rondelay Drive #10835
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Berm	$1,000	Lump	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Asphalt Driveway Removal and Replace	$60	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	2	$3,000
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	2	$1,780
6	12" RCP	$50	Lin Ft	200	$10,000
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" RCP	$55	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	130	$1,950
3	Seeding	$2	Sq Yd	445	$890
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	112	$3,472
6	Granular Backfill	$36	Cu Yd	0	$0
7	Yard Grading	$5,000	Lump	1	$5,000
8	Detention Basin Modification	Varies	Allowance	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$5,053
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$7,218
2	Clearing = 10% of construction cost	Varies	Lump	1	$3,609
3	Contingency = 35% of construction cost	Varies	Lump	1	$12,632
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$5,414
	Total (rounded to nearest $1,000)				**$70,000**

Opinion of Probable Cost

11-Nov-11

MS-10
Chilton Lane #12-13
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Rip Rap	$46	Sq Yd	26	$1,196
7	Geofabric	$11	Cu Yd	26	$286
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	167	$11,356
3	Guard Rail	$25	Lin Ft	20	$500
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	3' x 3' RCB	$189	Lin Ft	30	$5,670
6	Concrete Headwall	$5,200	Each	2	$10,400
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" RCP	$55	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$5,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Granular Backfill	$36	Cu Yd	0	$0
7	Yard Grading	$10,000	Lump	0	$0
8	Remove Existing Culvert	$1,000	Lump	1	$1,000
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$4,957
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$7,082
2	Clearing = 10% of construction cost	Varies	Lump	1	$3,541
3	Contingency = 35% of construction cost	Varies	Lump	1	$12,393
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$5,311
	Total (rounded to nearest $1,000)				**$69,000**

Opinion of Probable Cost

11-Nov-11

MS-10
Chilton Lane #12-13
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost	
	STABILIZATION AND EROSION CONTROL					
1	Grade Control	$135	Sq Yd	0	$0	
2	Coir Log (includes planting)	$22	Lin Ft	0	$0	
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0	
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0	
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0	
6	Rip Rap	$46	Sq Yd	26	$1,196	
7	Geofabric	$11	Cu Yd	26	$286	
8	Reno Mattress	$200	Cu Yd	0	$0	
9	Planting	$2	Sq Yd	0	$0	
	STREET IMPROVEMENTS					
1	Concrete Driveway Removal and Replace	$63	Sq Yd	0	$0	
2	Street Pavement Removal and Replace	$68	Sq Yd	167	$11,356	
3	Guard Rail	$25	Lin Ft	20	$500	
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0	
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0	
	STORM SEWERS					
1	Double Curb Inlet	$2,600	Each	0	$0	
2	Curb Inlet	$1,600	Each	0	$0	
3	Area Inlet	$1,500	Each	0	$0	
4	Manhole	$195	Lin Ft	0	$0	
5	3' x 3' RCB	$189	Lin Ft	0	$0	
6	Concrete Headwall	$5,200	Each	2	$10,400	
7	12" FES	$1,000	Lin Ft	0	$0	
8	18" Concrete Collar	$445	Each	0	$0	
9	18" RCP	$60	Lin Ft	0	$0	
10	24" RCP	$70	Lin Ft	0	$0	
11	21" Concrete Collar	$505	Each	0	$0	
12	36" RCP	$105	Lin Ft	0	$0	
13	36" CMP	$100	Lin Ft	30	$3,000	
14	15" Concrete Collar	$425	Each	0	$0	
15	15" RCP	$55	LF	0	$0	
	MISCELLANEOUS					
1	Mobilization	Varies	Lump	1	$5,000	
2	Excavation	$15	Cu Yd	0	$0	
3	Seeding	$2	Sq Yd	0	$0	
4	Sodding	$11	Sq Yd	0	$0	
5	Compacted Backfill	$31	Cu Yd	0	$0	
6	Granular Backfill	$36	Cu Yd	0	$0	
7	Yard Grading	$10,000	Lump	0	$0	
8	Remove Existing Culvert	$1,000	Lump	1	$1,000	
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$4,583	$32,738
	CONTINGENCIES					
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$6,548	
2	Clearing = 10% of construction cost	Varies	Lump	1	$3,274	
3	Contingency = 35% of construction cost	Varies	Lump	1	$11,458	
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$4,911	
	Total (rounded to nearest $1,000)				**$64,000**	

Opinion of Probable Cost

11-Nov-11

PC-1
Tealwood North Drive #47
(Preferred Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Composite Revetment	$108	Sq Yd	0	$0
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Asphalt Driveway Removal and Replace	$60	Sq Yd	34	$2,040
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Box Culvert	$1,200	LF	15	$18,000
7	Headwalls	$1,000	Lump	1	$1,000
8	Guardrail	$25	LF	40	$1,000
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$4,486
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$6,408
2	Clearing = 10% of construction cost	Varies	Lump	1	$3,204
3	Contingency = 35% of construction cost	Varies	Lump	1	$11,214
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$4,806
	Total (rounded to nearest $1,000)				**$62,000**

Opinion of Probable Cost

11-Nov-11

PC-1
Tealwood North Drive #47
(Alternate Solution)

	Description	Cost	Units	Quantity	Cost
	STABILIZATION AND EROSION CONTROL				
1	Grade Control	$135	Sq Yd	0	$0
2	Coir Log (includes planting)	$22	Lin Ft	0	$0
3	Turf Reinforcement Mat	$8	Sq Yd	0	$0
4	Erosion Blanket - Channel	$4	Sq Ft	0	$0
5	Erosion Blanket - Fill	$2	Sq Yd	0	$0
6	Composite Revetment	$108	Sq Yd	18	$1,944
7	Vegetated Gabion Baskets	$190	Cu Yd	0	$0
8	Reno Mattress	$200	Cu Yd	0	$0
9	Planting	$2	Sq Yd	0	$0
	STREET IMPROVEMENTS				
1	Asphalt Driveway Removal and Replace	$60	Sq Yd	0	$0
2	Street Pavement Removal and Replace	$68	Sq Yd	0	$0
3	Sidewalks Remove and Replace	$63	Sq Yd	0	$0
4	Concrete Curb Removal and Replace	$42	Lin Ft	0	$0
5	Asphalt Concrete Overlay	$55	Sq Yd	0	$0
	STORM SEWERS				
1	Double Curb Inlet	$2,600	Each	0	$0
2	Curb Inlet	$1,600	Each	0	$0
3	Area Inlet	$1,500	Each	0	$0
4	Manhole	$195	Lin Ft	0	$0
5	Connection to Existing Sewer	$890	Place	0	$0
6	12" RCP	$50	Lin Ft	0	$0
7	12" FES	$1,000	Lin Ft	0	$0
8	18" Concrete Collar	$445	Each	0	$0
9	18" RCP	$60	Lin Ft	0	$0
10	24" RCP	$70	Lin Ft	0	$0
11	21" Concrete Collar	$505	Each	0	$0
12	36" RCP	$105	Lin Ft	0	$0
13	30" CMP	$90	Lin Ft	0	$0
14	15" Concrete Collar	$425	Each	0	$0
15	15" CMP	$52	LF	0	$0
	MISCELLANEOUS				
1	Mobilization	Varies	Lump	1	$10,000
2	Excavation	$15	Cu Yd	0	$0
3	Seeding	$2	Sq Yd	0	$0
4	Sodding	$11	Sq Yd	0	$0
5	Compacted Backfill	$31	Cu Yd	0	$0
6	Box Culvert	$1,200	LF	0	$0
7	Headwalls	$1,000	Lump	0	$0
8	Guardrail	$25	LF	0	$0
9	Site Restoration = 14% of construction cost	Varies	Allowance	1	$1,672
	CONTINGENCIES				
1	Utility Relocation = 20% of construction cost	Varies	Lump	1	$2,389
2	Clearing = 10% of construction cost	Varies	Lump	1	$1,194
3	Contingency = 35% of construction cost	Varies	Lump	1	$4,180
4	Engineering Design = 15% of construction cost	Varies	Lump	1	$1,792
	Total (rounded to nearest $1,000)				**$23,000**