

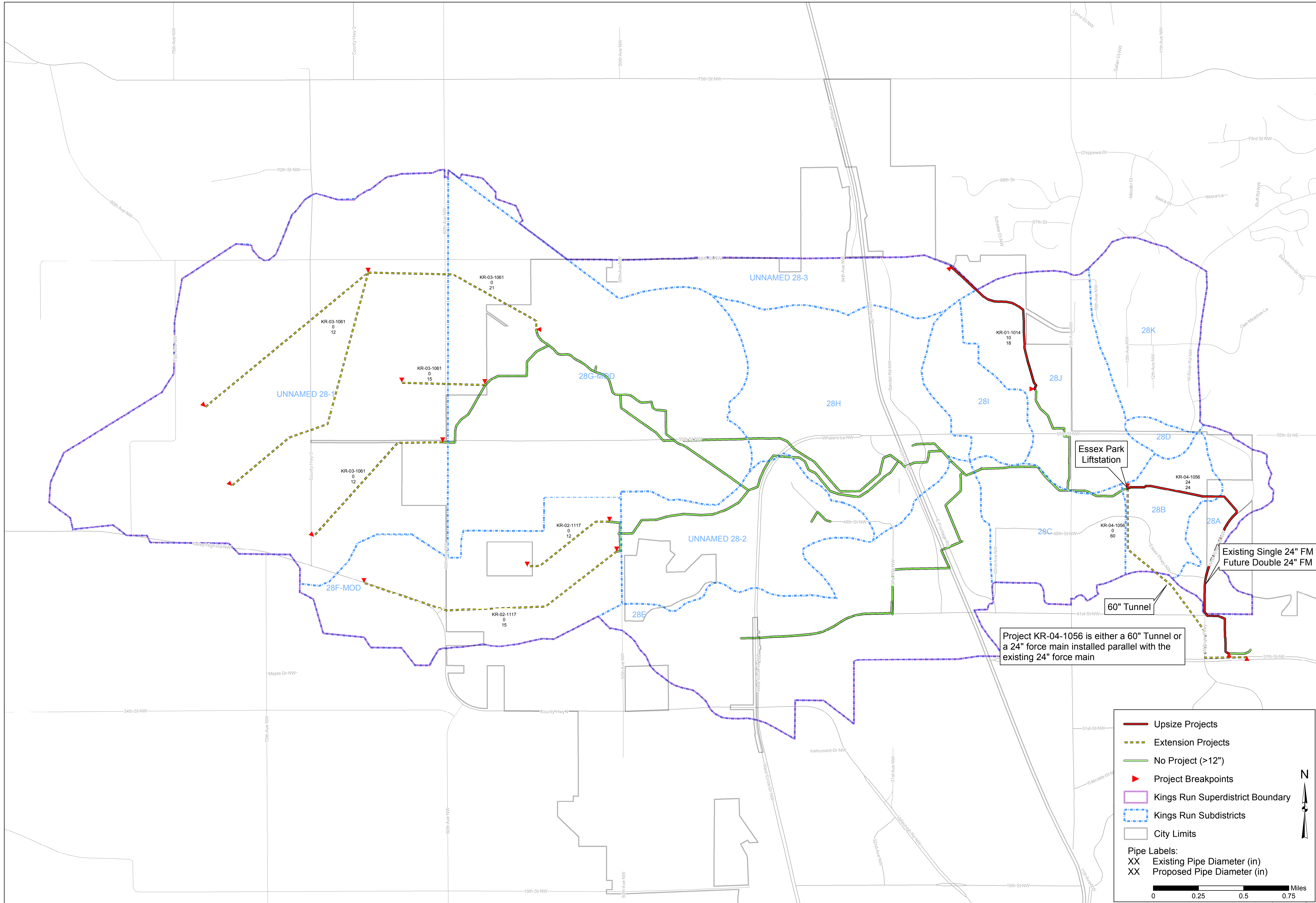
OVERALL MAP

**XII.E.1
Kings Run
Sanitary Sewer Pipe Network
Ultimate Service Area**

**Sanitary Sewer
Wastewater Master Plan
Rochester, MN**



Last Edited: 12/17/2019 By: JAW WHKS No. 8593



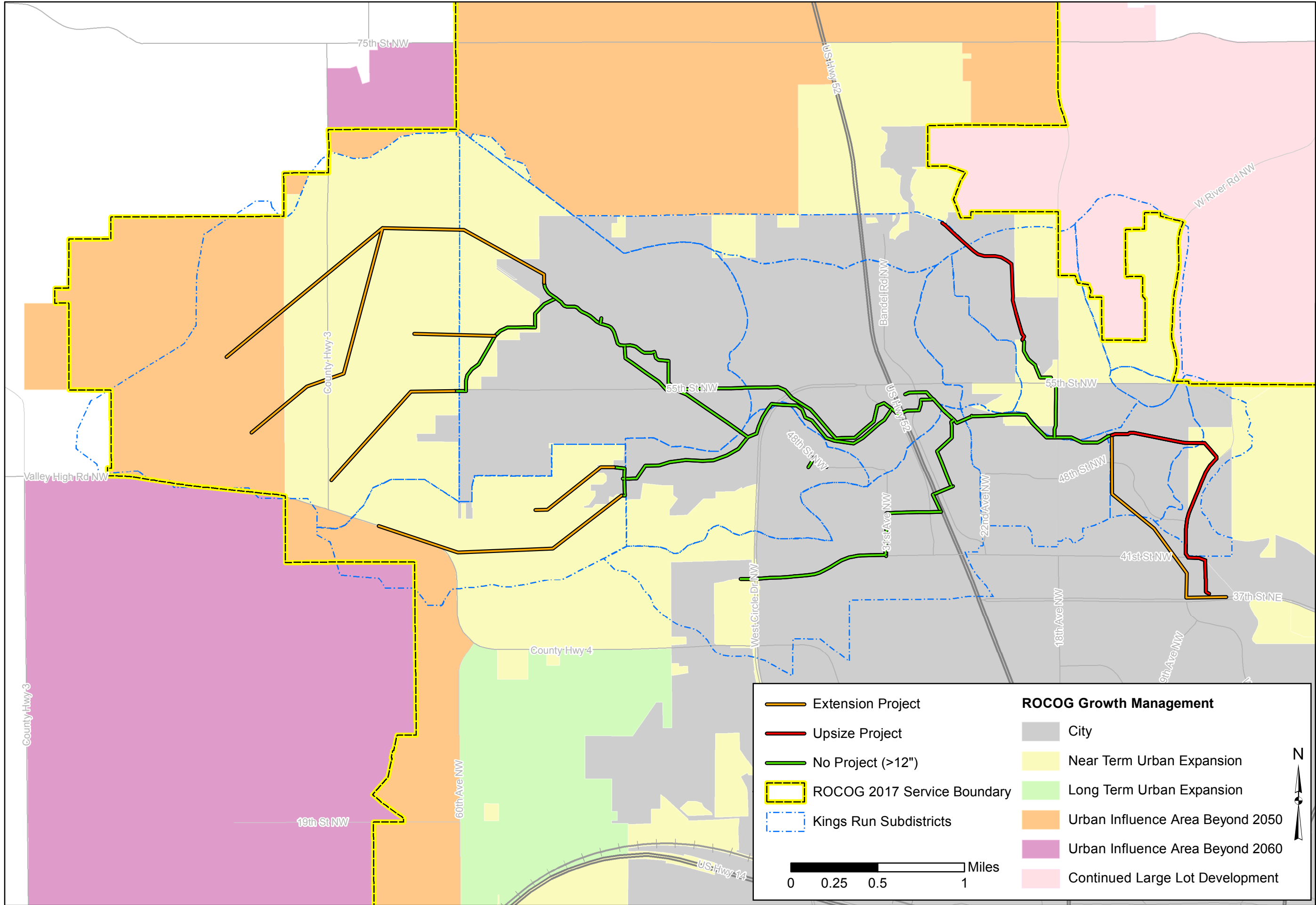
Legend

- Upsize Projects
- - - Extension Projects
- No Project (>12")
- ▲ Project Breakpoints
- ▭ Kings Run Superdistrict Boundary
- ▭ Kings Run Subdistricts
- ▭ City Limits

Pipe Labels:
 XX Existing Pipe Diameter (in)
 XX Proposed Pipe Diameter (in)

0 0.25 0.5 0.75 Miles

ULTIMATE SEWER SERVICE AREA AND ROCOG PLANNING AREAS MAP



**XII.E.2
Kings Run
Ultimate Sewer Service Area and
ROCOG Urban Planning Areas**

Sanitary Sewer
Wastewater Master Plan
Rochester, MN



PROJECT LIST

Kings Run Project List

GIS No. Project Name

| | | |
|--------|------|--|
| KR-XX- | 1014 | Crimson Ridge/Overland Dr Upsize MH 15/0014 to 15/0034 |
| KR-XX- | 1056 | 60" LS4 Tunnel Option from Essex Park LS'4' to WRP. ALTERNATIVE: Add twin 24" FM and Upsize Essex Park LS'4' to ~25-30 MGD. |
| KR-XX- | 1061 | Extensions to serve SSA 'UNNAMED 28-1' west of 60th Ave KR Extension N |
| KR-XX- | 1117 | Extensions to Serve SSA "28F-Mod" KR Extension S |

PRIORITIZATION LIST

Screening Criteria

Detailed Scoring

Project Sources: J4366 Feasibility Report

| Master Plan Project Name | GIS No. | Project Name | Condition Score 5 or 6 Or Other Risks = Yes? | Existing SSO Risk = Yes? | Existing Basement Backup Risk = Yes? | Advance or Stop | Weight: | Risk | | | | | Benefit | | | | | | | |
|--|---------|--------------|--|--------------------------|--------------------------------------|-----------------|---------|--|---|--|---|-------------|---|--|--|---------------------------------------|--|---|--|---|
| | | | | | | | | Consequence | | | Likelihood | | Future Growth | | | Rates | | Present Growth | | |
| | | | | | | | | Impact to Major Users (Previously of Failure) | Existing SSO Risk or Basement Backup Risk | Quantity of SSO/BB's this pipe puts at risk during Q25 | Condition Score or Other Risks | Utilization | Qty of Trunkline Upsize Projects Upstream of This Project | Developable Acres to be gained by String of Projects | Developable acres to be gained by this project | Capacity to be gained by this project | Sewer Trunk Rate for this project: \$/ Dev. Acres Gained (Project with no DS Restrictions) | Capacity Recovery Rate for this project: \$/ MGD gained | Availability of Other City Services for this project | DA's to be gained in Valid General Development Plan (GDP) by this project |
| | | | | | | | | 15 | 15 | 10 | 10 | 10 | 6 | 4 | 4 | 4 | 6 | 6 | 6 | 4 |
| All others = '1' HWY or <=36" Dia = '3' SIU, RR, or >36" Dia = '10' No = '1' Yes Q25 = '3' Yes Q10 = '10' <10 (SSOs + BB) = 1 11-99 (SSOs + BB)= 3 >100 (SSOs + BB) = 10 0, 1, 2 = '1' 3, 4 or in need repair in 3-5 years = '3' 5, 6 or in need of repair in 1-2 years = '10' <=100% Q25 = '1' >100% Q25 = '3' >100% Q10 = '10' | | | | | | | | 0 projects = 1 1-10 projects = 3 11+ projects = 10 <200 Ac = 1 2001-10000 Ac = 3 >10000 Ac = 10 <200 Ac = '1' 200-500 Ac = '3' >500 Ac = '10' <10 MGD = 1 11-60 MGD = 3 >60 MGD = 10 > \$10,000 / DA = '1' \$5,000 - \$10,000 / DA = '3' <\$5,000 DA = '10' > \$500,000 / MGD = '1' \$100,000-\$500,000 / MGD = '3' <\$100,000 / MGD = '10' | No = '1' Yes, Developed = '3' Yes, Completely Developed, Paved = '10' | No = '1' Yes = '10' | Risk Total (Max 600) Benefit Total (Max 400) Total Score (Max 1000) | | | | | | | | | |

Projects that passed screening sorted by total score - Additional projects that did not pass screening will need to be completed to provide full capacity to the system

| | | |
|---|--|--|
| There are no projects that passed screening in Kings Run. Ultimate-sized trunk sewer projects out to 60th Ave were constructed in 2005-2006. Essex Park LS'4' built in 2005-06. Crimson/Overland sewers have existing capacity. Only future extensions west of 60th Ave are needed. | | |
|---|--|--|

Projects that did not pass screening sorted by total score

| Project ID | Project Name | Condition Score | Existing SSO Risk | Existing Basement Backup Risk | Advance or Stop | Impact to Major Users | Existing SSO Risk | Quantity of SSO/BB's | Condition Score | Utilization | Qty of Trunkline Upsize | Developable Acres | Developable Acres | Capacity | Sewer Trunk Rate | Capacity Recovery Rate | Availability of Other City Services | DA's to be gained | Risk Total | Benefit Total | Total Score |
|------------|---|-----------------|-------------------|-------------------------------|-----------------|-----------------------|-------------------|----------------------|-----------------|-------------|-------------------------|-------------------|-------------------|----------|------------------|------------------------|-------------------------------------|-------------------|------------|---------------|-------------|
| KR-01-1014 | Crimson Ridge/Overland Dr Upsize MH 15/0014 to 15/0034 | -- | -- | -- | stop | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 3 | 1 | 1 | 1 | 10 | 10 | 60 | 150 | 210 |
| KR-02-1117 | Extensions to Serve SSA "28F-Mod" | -- | -- | -- | stop | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 1 | 10 | 10 | 60 | 138 | 198 |
| KR-03-1061 | Extensions to serve SSA 'UNNAMED 28-1' west of 60th Ave | -- | -- | -- | stop | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 10 | 1 | 1 | 1 | 3 | 10 | 60 | 124 | 184 |
| KR-04-1056 | 60" Tunnel option from Essex Park LS'4' to WRP. ALTERNATIVE: Add twin 24" FM and Upsize Essex Park LS'4' to ~25-30 MGD. | -- | -- | -- | stop | 1 | 1 | 1 | 1 | 1 | 3 | 3 | 1 | 3 | 1 | 1 | 10 | 1 | 60 | 122 | 182 |

Project Sources: J4366 Feasibility Report

| Master Plan Project Name | GIS No. | Project Name | Impact to Major Users (Previously Consequence of Failure) Notes | Existing SSO or Basement Backup Risk Notes | SSO or Basement Backup Quantity Notes | Condition Score or Other Risks Notes | Utilization/Remaining Capacity Notes | Qty of Trunkline Upsize Projects Upstream of This Project Notes | Developable Acres to be gained by String of Projects | Developable Acres to be gained by This Project Alone | Developable acres to be Gained by this project No Downstream Restrictions Notes | Capacity to be Gained | Capacity to be Gained Notes | Sewer Trunk Rate | Capacity Recovery Rate | DA's to be directly gained in General Development Plan (GDP) area (Valid Only) Notes | Cost | Cost Notes | Tied to Other Sanitary Projects | Opportunity Project Notes |
|---|---------|---|---|--|---------------------------------------|--------------------------------------|--------------------------------------|---|--|--|--|-----------------------|--|------------------|------------------------|---|--|------------------------------|---------------------------------|---------------------------|
| Projects that passed screening sorted by total score - Additi | | | | | | | | | | | | | | | | | | | | |
| There are no projects that passed screening in Kings Run. | | | | | | | | | | | | | | | | | | | | |
| Projects that did not pass screening sorted by total score | | | | | | | | | | | | | | | | | | | | |
| KR-01- | 1014 | Crimson Ridge/Overland Dr Upsize MH 15/0014 to 15/0034 | none | none | none | none | <50% in Q10 | Prairie Crossing | 480 in NWT | 430 (23 KR share)* | 430 (23 KR share)* | 1 MGD | LS upgrade to 1,000 gpm | \$ 11,559 | \$ 2,672,000 | 70 - The Homestead 23 Acres | \$ 2,672,000 | | | |
| KR-02- | 1117 | Extensions to Serve SSA "28F-Mod" | none | none | none | n/a | n/a | 0 | 2100 gross* 48% = 1008 | 330 (from J9657) | 330 (from J9657) | Assumed ~3 MGD | approx based on pipe size 12" and 15" | \$ 11,559 | \$ 972,000 | 27 -Highland Preserve 473 Acres, 32 - Kingsbury Hills 68 Acres | \$ 2,916,000 | | | |
| KR-03- | 1061 | Extensions to serve SSA 'UNNAMED 28-1' west of 60th Ave | none | none | none | n/a | n/a | 0 | 2100 gross* 48% = 1008 | 2100 gross* 48% = 1008 | 2100 gross* 48% = 1008 | Assumed ~5 MGD | approx based on pipe size 21"&15"&12" | \$ 11,559 | \$ 1,397,400 | 47 - Pebble Creek 328 Acres | \$ 6,987,000 | | | |
| KR-04- | 1056 | 60" Tunnel option from Essex Park LS'4' to WRP. ALTERNATIVE: Add twin 24" FM and Upsize Essex Park LS'4' to ~25-30 MGD. | none | none | none | built in2005 | | Extensions, Crimson Ridge, Prairie Crossing, all NWT | 5,717 (2,987 KR share) | 0 | 0 | 15 MGD | ex. 24"FM cap 15 MGD, proposed 60" tunnel 30 MGD | \$ 11,559 | \$ 2,400,000 | | \$36,000,000 (\$18,809,166 KR share) | \$24m (2005) \$36m (2019) | | |

COST OPINIONS

| Preliminary Cost Opinion for Pipe Segment "KR-01-1014 CrimsonRidge/Overland" | | | | |
|--|----------|------------|----------|---------------------|
| Grading and Base | | | | |
| Item | Unit | Unit Price | Quantity | Amount |
| Mobilization | Lump Sum | \$ 100,000 | 1 | \$ 100,000 |
| Traffic Control | Lump Sum | \$ 19,000 | 1 | \$ 19,000 |
| Remove Bituminous Pavement | Sq. Yd. | \$ 5 | 0 | \$ - |
| Remove Concrete Pavement | Sq. Yd. | \$ 8 | 12900 | \$ 103,000 |
| Remove Concrete Curb & Gutter | Lin. Ft. | \$ 8 | 2900 | \$ 23,000 |
| Remove Concrete Walk | Sq. Yd. | \$ 4 | 0 | \$ - |
| Common Excavation | Cu. Yd. | \$ 5 | 6400 | \$ 32,000 |
| Aggregate Base (CV) | Cu. Yd. | \$ 32 | 1800 | \$ 58,000 |
| Select Granular Material (CV) | Cu. Yd. | \$ 32 | 2900 | \$ 93,000 |
| Bituminous Paving | Ton | \$ 80 | 0 | \$ - |
| Bike Path Restoration | Sq. Yd. | \$ 50 | 0 | \$ - |
| Concrete Curb & Gutter | Lin. Ft. | \$ 18 | 2900 | \$ 52,000 |
| Concrete Walk | Sq. Ft. | \$ 6 | 0 | \$ - |
| Concrete Driveway | Sq. Yd. | \$ 60 | 0 | \$ - |
| Concrete Pavement | Sq. Yd. | \$ 60 | 12900 | \$ 774,000 |
| Erosion Control | Lin. Ft. | \$ 5 | 5200 | \$ 26,000 |
| Sod | Lin. Ft. | \$ 27 | 0 | \$ - |
| Seed & Mulch | Lin Ft. | \$ 3 | 2260 | \$ 7,000 |
| Erosion Control Supervisor | Lum Sum | \$ 5,000 | 1 | \$ 5,000 |
| Grading & Base | | | | \$ 1,292,000 |
| Sanitary Sewer | | | | |
| Item | Unit | Unit Price | Quantity | Amount |
| Remove Sanitary Sewer Manholes | Each | \$ 1,000 | 21 | \$ 21,000 |
| Remove Sanitary Sewer Pipe | Lin. Ft. | \$ 10 | 5200 | \$ 52,000 |
| Construct 18" Sanitary Sewer Pipe | Lin. Ft. | \$ 75 | 5200 | \$ 390,000 |
| Construct 48" Manhole | Each | \$ 6,000 | 21 | \$ 126,000 |
| Manhole Waterproofing | Each | \$ 1,000 | 21 | \$ 21,000 |
| Bypass Pumping | MGD | \$ 10,000 | 1 | \$ 10,000 |
| Solid Rock Excavation | Lin. Ft. | \$ - | 0 | \$ - |
| Dewatering | Lin. Ft. | \$ 20 | 5200 | \$ 104,000 |
| Highway Crossing | Lin. Ft. | \$ - | 0 | \$ - |
| Railroad Crossing | Lin. Ft. | \$ - | 0 | \$ - |
| Stream Crossing (non-siphon) | Lin. Ft. | \$ - | 0 | \$ - |
| Stream Crossing (siphon) | Lin. Ft. | \$ - | 0 | \$ - |
| Sanitary Sewer | | | | \$ 724,000 |
| Total Grading & Base & Sewer | | | | \$ 2,016,000 |
| 10% Contingency | | | | \$ 210,000 |
| Sub-total | | | | \$ 2,226,000 |
| 12% Engineering | | | | \$ 268,000 |
| 8% Administrative | | | | \$ 178,000 |
| Probable Cost Opinion | | | | \$ 2,672,000 |

5% of project cost, rounded to nearest \$10,000

1% of project cost, rounded to nearest \$1,000

Set rate

Set rate

Set rate

Set rate

Set rate

Set rate

Set rate

Set rate

Set rate

Set rate

Set rate

Set rate

Set rate

Set rate

40' width / 9 sq. ft. / sq. yd. x \$6 / sq. yd.

40' width / 43,560 sq. ft. /acre x \$2,000/acre

Set rate

Set rate

Set rate

Based on rate table

Based on rate table

Set rate

Set rate

Based on rate table

Set rate

Based on rate table

Based on rate table

Based on rate table

Use separate probable cost spreadsheet

Preliminary Cost Opinion for Pipe Segment "KR-01-1014 CrimsonRidge/Overland"

| Pipe Dia. & Material | | Rate Table | | | | Trenchless Steel Casing Hwy & RR | Open Cut Streams |
|----------------------|-------|------------|-----------------------|-----------|----------|----------------------------------|------------------|
| | | F&I Cost | Manhole Dia/ F&I Cost | Rock Exc. | | | |
| 12 | PVC | \$ 55 | 48 \$ 6,000 | \$ 80 | \$ 250 | \$ 300 | |
| 15 | PVC | \$ 65 | 48 \$ 6,000 | \$ 85 | \$ 500 | \$ 400 | |
| 18 | PVC | \$ 75 | 48 \$ 6,000 | \$ 90 | \$ 750 | \$ 500 | |
| 21 | PVC | \$ 100 | 60 \$ 8,000 | \$ 95 | \$ 1,000 | \$ 600 | |
| 24 | PVC | \$ 150 | 60 \$ 8,000 | \$ 105 | \$ 1,250 | \$ 700 | |
| 27 | PVC | \$ 175 | 60 \$ 8,000 | \$ 110 | \$ 1,500 | \$ 800 | |
| 30 | PVC | \$ 200 | 72 \$ 10,000 | \$ 120 | \$ 1,750 | \$ 900 | |
| 36 | Hobas | \$ 250 | 84 \$ 12,000 | \$ 130 | \$ 2,000 | \$ 1,200 | |
| 42 | Hobas | \$ 350 | 96 \$ 14,000 | \$ 145 | \$ 2,250 | \$ 1,400 | |
| 48 | Hobas | \$ 400 | 108 \$ 16,000 | \$ 155 | \$ 2,500 | \$ 1,600 | |
| 54 | Hobas | \$ 450 | 108 \$ 16,000 | \$ 170 | \$ 2,750 | \$ 1,800 | |
| 60 | Hobas | \$ 500 | 120 \$ 18,000 | \$ 180 | \$ 3,000 | \$ 2,000 | |
| 66 | Hobas | \$ 550 | 120 \$ 18,000 | \$ 195 | \$ 3,250 | \$ 2,200 | |

pipe size + 24"
10 foot depth
\$70/cu. yd.

| | | |
|-------------------------|------|------------------------|
| Linear Feet | 2260 | Crimson Ridge easement |
| Pipe Size | 18 | |
| # of MH | 10 | use existing |
| New Manhole Size | 48 | |
| Bypass Flow (MGD) | 0.5 | |
| Major Impacts? (1 or 0) | | |
| Rdwy Alignment | 0 | LF: 0 |
| HWY XING | 0 | LF: 0 |
| RR XING | 0 | LF: 0 |
| Stream XING | 0 | LF: 0 |
| Rock Excavation | 0 | LF: 0 |
| Dewatering | 1 | LF: 2260 |

Width (ft)
Driveways (#)
Drvwy Width (ft)
ROW (ft)
Curb and Gutter?
Sidewalk Length 5 ft Width
Bike Path Width 60 ft disturbance

| | | |
|-------------------------|------|--------------|
| Linear Feet | 2900 | Overland Dr |
| Pipe Size | 18 | |
| # of MH | 11 | use existing |
| New Manhole Size | 48 | |
| Bypass Flow (MGD) | 0.5 | |
| Major Impacts? (1 or 0) | | |
| Rdwy Alignment | 1 | LF: 2900 |
| HWY XING | 0 | LF: 0 |
| RR XING | 0 | LF: 0 |
| Stream XING | 0 | LF: 0 |
| Rock Excavation | 0 | LF: 0 |
| Dewatering | 1 | LF: 2900 |

Width (ft) 40
Driveways (#) 0
Drvwy Width (ft) 0
ROW (ft) 60
Curb and Gutter? 2900
Sidewalk Length 50 5 ft Width
Bike Path Width 5 60 ft disturbance

| Preliminary Cost Opinion for Pipe Segment "KR-02-1117 KR Extension S" | | | | |
|---|----------|------------|----------|---------------------|
| Grading and Base | | | | |
| Item | Unit | Unit Price | Quantity | Amount |
| Mobilization | Lump Sum | \$ 100,000 | 1 | \$ 100,000 |
| Traffic Control | Lump Sum | \$ 21,000 | 1 | \$ 21,000 |
| Remove Bituminous Pavement | Sq. Yd. | \$ 5 | 0 | \$ - |
| Remove Concrete Pavement | Sq. Yd. | \$ 12 | 0 | \$ - |
| Remove Concrete Curb & Gutter | Lin. Ft. | \$ 8 | 0 | \$ - |
| Remove Concrete Walk | Sq. Yd. | \$ 4 | 0 | \$ - |
| Common Excavation | Cu. Yd. | \$ 6 | 0 | \$ - |
| Aggregate Base (CV) | Cu. Yd. | \$ 32 | 0 | \$ - |
| Aggregate Base Breaker Run (CV) | Cu. Yd. | \$ 32 | 0 | \$ - |
| Bituminous Paving | Ton | \$ 80 | 0 | \$ - |
| Bike Path Restoration | Sq. Yd. | \$ 50 | 0 | \$ - |
| Concrete Curb & Gutter | Lin. Ft. | \$ 18 | 0 | \$ - |
| Concrete Walk | Sq. Ft. | \$ 6 | 0 | \$ - |
| Concrete Driveway | Sq. Yd. | \$ 60 | 0 | \$ - |
| Concrete Pavement | Sq. Yd. | \$ 80 | 0 | \$ - |
| Erosion Control | Lin. Ft. | \$ 5 | 10900 | \$ 55,000 |
| Sod | Lin. Ft. | \$ 27 | | \$ - |
| Seed & Mulch | Lin. Ft. | \$ 3 | 10900 | \$ 33,000 |
| Erosion Control Supervisor | Lum Sum | \$ 5,000 | 1 | \$ 5,000 |
| Grading & Base | | | | \$ 214,000 |
| Sanitary Sewer | | | | |
| Item | Unit | Unit Price | Quantity | Amount |
| Remove Sanitary Sewer Manholes | Each | \$ 1,000 | 0 | \$ - |
| Remove Sanitary Sewer Pipe | Lin. Ft. | \$ 10 | 0 | \$ - |
| Construct 15" Sanitary Sewer Pipe | Lin. Ft. | \$ 65 | 8100 | \$ 527,000 |
| Construct 12" Sanitary Sewer Pipe | Lin. Ft. | \$ 55 | 2800 | \$ 154,000 |
| Construct 48" Manhole | Each | \$ 6,000 | 27 | \$ 162,000 |
| Manhole Waterproofing | Each | \$ 1,000 | 27 | \$ 27,000 |
| Bypass Pumping | MGD | \$ 10,000 | 0 | \$ - |
| Solid Rock Excavation | Lin. Ft. | \$ 80 | 10900 | \$ 872,000 |
| Dewatering | Lin. Ft. | \$ 20 | 10900 | \$ 213,000 |
| Highway Crossing | Lin. Ft. | \$ - | 0 | \$ - |
| Railroad Crossing | Lin. Ft. | \$ - | 0 | \$ - |
| Stream Crossing (non-siphon) | Lin. Ft. | \$ 400 | 100 | \$ 40,000 |
| Stream Crossing (siphon) | Lin. Ft. | \$ - | 0 | \$ - |
| Sanitary Sewer | | | | \$ 1,995,000 |
| Total Grading & Base & Sewer | | | | \$ 2,209,000 |
| 10% Contingency | | | | \$ 221,000 |
| Sub-total | | | | \$ 2,430,000 |
| 12% Engineering | | | | \$ 292,000 |
| 8% Administrative | | | | \$ 194,000 |
| Probable Cost Opinion | | | | \$ 2,916,000 |

5% of project cost, rounded to nearest \$10,000

1% of project cost, rounded to nearest \$1,000

Set rate

Set rate

Set rate

Set rate

Set rate

Set rate

Set rate

Set rate

Set rate

Set rate

Set rate

Set rate

Set rate

Set rate

40' width / 9 sq. ft. / sq. yd. x \$6 / sq. yd.

40' width / 43,560 sq. ft. /acre x \$2,000/acre

Set rate

Set rate

Set rate

Based on rate table

Based on rate table

Based on rate table

Set rate

Set rate

Based on rate table

Set rate

Based on rate table

Based on rate table

Based on rate table

Use separate probable cost spreadsheet

Preliminary Cost Opinion for Pipe Segment "KR-02-1117 KR Extension S"

| Rate Table | | | | | | Trenchless | Open Cut |
|----------------------|----------|-----------------------|-----------|-----------------------|----------|------------|----------|
| Pipe Dia. & Material | F&I Cost | Manhole Dia/ F&I Cost | Rock Exc. | Steel Casing Hwy & RR | Streams | | |
| 12 PVC | \$ 55 | 48 \$ 6,000 | \$ 80 | \$ 250 | \$ 300 | | |
| 15 PVC | \$ 65 | 48 \$ 6,000 | \$ 85 | \$ 500 | \$ 400 | | |
| 18 PVC | \$ 75 | 48 \$ 6,000 | \$ 90 | \$ 750 | \$ 500 | | |
| 21 PVC | \$ 100 | 60 \$ 8,000 | \$ 95 | \$ 1,000 | \$ 600 | | |
| 24 PVC | \$ 150 | 60 \$ 8,000 | \$ 105 | \$ 1,250 | \$ 700 | | |
| 27 PVC | \$ 175 | 60 \$ 8,000 | \$ 110 | \$ 1,500 | \$ 800 | | |
| 30 PVC | \$ 200 | 72 \$ 10,000 | \$ 120 | \$ 1,750 | \$ 900 | | |
| 36 Hobas | \$ 250 | 84 \$ 12,000 | \$ 130 | \$ 2,000 | \$ 1,200 | | |
| 42 Hobas | \$ 350 | 96 \$ 14,000 | \$ 145 | \$ 2,250 | \$ 1,400 | | |
| 48 Hobas | \$ 400 | 108 \$ 16,000 | \$ 155 | \$ 2,500 | \$ 1,600 | | |
| 54 Hobas | \$ 450 | 108 \$ 16,000 | \$ 170 | \$ 2,750 | \$ 1,800 | | |
| 60 Hobas | \$ 500 | 120 \$ 18,000 | \$ 180 | \$ 3,000 | \$ 2,000 | | |
| 66 Hobas | \$ 550 | 120 \$ 18,000 | \$ 195 | \$ 3,250 | \$ 2,200 | | |

pipe size + 24"
10 foot depth
\$70/cu. yd.

| | | | |
|-------------------------|------|-----|------|
| Linear Feet | 8072 | | |
| Pipe Size | 15 | | |
| # of MH | 20 | | |
| New Manhole Size | 48 | | |
| Bypass Flow (MGD) | 0 | | |
| Major Impacts? (1 or 0) | | | |
| Rdwy Alignment | 0 | LF: | 0 |
| HWY XING | 0 | LF: | 0 |
| RR XING | 0 | LF: | 0 |
| Stream XING | 1 | LF: | 100 |
| Rock Excavation | 1 | LF: | 8072 |
| Dewatering | 1 | LF: | 8072 |

Width (ft)
Driveways (#)
Drvwy Width (ft)
ROW (ft)
Curb and Gutter?
Sidewalk Length
Bike Path Width

5 ft Width
60 ft disturbance

| | | | |
|-------------------------|------|-----|------|
| Linear Feet | 2842 | | |
| Pipe Size | 12 | | |
| # of MH | 7 | | |
| New Manhole Size | 48 | | |
| Bypass Flow (MGD) | 0 | | |
| Major Impacts? (1 or 0) | | | |
| Rdwy Alignment | 0 | LF: | 0 |
| HWY XING | 0 | LF: | 0 |
| RR XING | 0 | LF: | 0 |
| Stream XING | 0 | LF: | 0 |
| Rock Excavation | 1 | LF: | 2842 |
| Dewatering | 1 | LF: | 2842 |

Width (ft)
Driveways (#)
Drvwy Width (ft)
ROW (ft)
Curb and Gutter?
Sidewalk Length
Bike Path Width

5 ft Width
60 ft disturbance

| Preliminary Cost Opinion for Pipe Segment "KR-03-1061 KR Extension N (J7713)" | | | | | |
|---|----------|------------|----------|---------------------|---|
| Grading and Base | | | | | |
| Item | Unit | Unit Price | Quantity | Amount | |
| Mobilization | Lump Sum | \$ 250,000 | 1 | \$ 250,000 | 5% of project cost, rounded to nearest \$10,000 |
| Traffic Control | Lump Sum | \$ 50,000 | 1 | \$ 50,000 | 1% of project cost, rounded to nearest \$1,000 |
| Remove Bituminous Pavement | Sq. Yd. | \$ 5 | 0 | \$ - | Set rate |
| Remove Concrete Pavement | Sq. Yd. | \$ 12 | 0 | \$ - | Set rate |
| Remove Concrete Curb & Gutter | Lin. Ft. | \$ 8 | 0 | \$ - | Set rate |
| Remove Concrete Walk | Sq. Yd. | \$ 4 | 0 | \$ - | Set rate |
| Common Excavation | Cu. Yd. | \$ 6 | 0 | \$ - | Set rate |
| Aggregate Base (CV) | Cu. Yd. | \$ 32 | 0 | \$ - | Set rate |
| Aggregate Base Breaker Run (CV) | Cu. Yd. | \$ 32 | 0 | \$ - | Set rate |
| Bituminous Paving | Ton | \$ 80 | 0 | \$ - | Set rate |
| Bike Path Restoration | Sq. Yd. | \$ 50 | 0 | \$ - | Set rate |
| Concrete Curb & Gutter | Lin. Ft. | \$ 18 | 0 | \$ - | Set rate |
| Concrete Walk | Sq. Ft. | \$ 6 | 0 | \$ - | Set rate |
| Concrete Driveway | Sq. Yd. | \$ 60 | 0 | \$ - | Set rate |
| Concrete Pavement | Sq. Yd. | \$ 80 | 0 | \$ - | Set rate |
| Erosion Control | Lin. Ft. | \$ 5 | 27000 | \$ 135,000 | Set rate |
| Sod | Lin. Ft. | \$ 27 | 0 | \$ - | 40' width / 9 sq. ft. / sq. yd. x \$6 / sq. yd. |
| Seed & Mulch | Lin. Ft. | \$ 3 | 27000 | \$ 81,000 | 40' width / 43,560 sq. ft. /acre x \$2,000/acre |
| Erosion Control Supervisor | Lum Sum | \$ 5,000 | 1 | \$ 5,000 | Set rate |
| Grading & Base | | | | \$ 521,000 | |
| Sanitary Sewer | | | | | |
| Item | Unit | Unit Price | Quantity | Amount | |
| Remove Sanitary Sewer Manholes | Each | \$ 1,000 | 0 | \$ - | Set rate |
| Remove Sanitary Sewer Pipe | Lin. Ft. | \$ 10 | 0 | \$ - | Set rate |
| Construct 21" Sanitary Sewer Pipe | Lin. Ft. | \$ 100 | 5500 | \$ 550,000 | Based on rate table |
| Construct 15" Sanitary Sewer Pipe | Lin. Ft. | \$ 65 | 2500 | \$ 163,000 | Based on rate table |
| Construct 12" Sanitary Sewer Pipe | Lin. Ft. | \$ 55 | 19000 | \$ 1,045,000 | Based on rate table |
| Construct 60" Manhole | Each | \$ 8,000 | 15 | \$ 120,000 | Based on rate table |
| Construct 48" Manhole | Each | \$ 6,000 | 52 | \$ 312,000 | Based on rate table |
| Manhole Waterproofing | Each | \$ 1,000 | 67 | \$ 67,000 | Set rate |
| Bypass Pumping | MGD | \$ 10,000 | 0 | \$ - | Set rate |
| Solid Rock Excavation | Lin. Ft. | \$ 80 | 27000 | \$ 2,160,000 | Based on rate table |
| Dewatering | Lin. Ft. | \$ 15 | 21500 | \$ 325,000 | Set rate |
| Highway Crossing | Lin. Ft. | \$ - | 0 | \$ - | Based on rate table |
| Railroad Crossing | Lin. Ft. | \$ - | 0 | \$ - | Based on rate table |
| Stream Crossing (non-siphon) | Lin. Ft. | \$ 300 | 100 | \$ 30,000 | Based on rate table |
| Stream Crossing (siphon) | Lin. Ft. | \$ - | 0 | \$ - | Use separate probable cost spreadsheet |
| Sanitary Sewer | | | | \$ 4,772,000 | |
| Total Grading & Base & Sewer | | | | \$ 5,293,000 | |
| 10% Contingency | | | | \$ 529,000 | |
| Sub-total | | | | \$ 5,822,000 | |
| 12% Engineering | | | | \$ 699,000 | |
| 8% Administrative | | | | \$ 466,000 | |
| Probable Cost Opinion | | | | \$ 6,987,000 | |

Preliminary Cost Opinion for Pipe Segment "KR-03-1061 KR Extension N (J7713)"

| | | Rate Table | | | | | | |
|----------------------|-------|------------|-----------------------|-----------|----------------------------------|------------------|----|-------|
| Pipe Dia. & Material | | F&I Cost | Manhole Dia/ F&I Cost | Rock Exc. | Trenchless Steel Casing Hwy & RR | Open Cut Streams | | |
| 12 | PVC | \$ 55 | 48 | \$ 6,000 | \$ 80 | \$ 250 | \$ | 300 |
| 15 | PVC | \$ 65 | 48 | \$ 6,000 | \$ 85 | \$ 500 | \$ | 400 |
| 18 | PVC | \$ 75 | 48 | \$ 6,000 | \$ 90 | \$ 750 | \$ | 500 |
| 21 | PVC | \$ 100 | 60 | \$ 8,000 | \$ 95 | \$ 1,000 | \$ | 600 |
| 24 | PVC | \$ 150 | 60 | \$ 8,000 | \$ 105 | \$ 1,250 | \$ | 700 |
| 27 | PVC | \$ 175 | 60 | \$ 8,000 | \$ 110 | \$ 1,500 | \$ | 800 |
| 30 | PVC | \$ 200 | 72 | \$ 10,000 | \$ 120 | \$ 1,750 | \$ | 900 |
| 36 | Hobas | \$ 250 | 84 | \$ 12,000 | \$ 130 | \$ 2,000 | \$ | 1,200 |
| 42 | Hobas | \$ 350 | 96 | \$ 14,000 | \$ 145 | \$ 2,250 | \$ | 1,400 |
| 48 | Hobas | \$ 400 | 108 | \$ 16,000 | \$ 155 | \$ 2,500 | \$ | 1,600 |
| 54 | Hobas | \$ 450 | 108 | \$ 16,000 | \$ 170 | \$ 2,750 | \$ | 1,800 |
| 60 | Hobas | \$ 500 | 120 | \$ 18,000 | \$ 180 | \$ 3,000 | \$ | 2,000 |
| 66 | Hobas | \$ 550 | 120 | \$ 18,000 | \$ 195 | \$ 3,250 | \$ | 2,200 |

pipe size + 24"
10 foot depth
\$70/cu. yd.

| | | | |
|-------------------------|------|-----|------|
| Linear Feet | 5521 | | |
| Pipe Size | 21 | | |
| # of MH | 15 | | |
| New Manhole Size | 60 | | |
| Bypass Flow (MGD) | 0 | | |
| Major Impacts? (1 or 0) | | | |
| Rdwy Alignment | 0 | LF: | 0 |
| HWY XING | 0 | LF: | 0 |
| RR XING | 0 | LF: | 0 |
| Stream XING | 0 | LF: | 0 |
| Rock Excavation | 1 | LF: | 5521 |
| Dewatering | 1 | LF: | 5521 |

Width (ft)
Driveways (#)
Drwy Width (ft)
ROW (ft)
Curb and Gutter?
Sidewalk Length
Bike Path Width

5 ft Width
60 ft disturbance

| | | | |
|-------------------------|------|-----|------|
| Linear Feet | 4947 | | |
| Pipe Size | 12 | | |
| # of MH | 11 | | |
| New Manhole Size | 48 | | |
| Bypass Flow (MGD) | 0 | | |
| Major Impacts? (1 or 0) | | | |
| Rdwy Alignment | 0 | LF: | 0 |
| HWY XING | 0 | LF: | 0 |
| RR XING | 0 | LF: | 0 |
| Stream XING | 0 | LF: | 0 |
| Rock Excavation | 1 | LF: | 4947 |
| Dewatering | 1 | LF: | 4947 |

| | | | |
|-------------------------|------|-----|------|
| Linear Feet | 2459 | | |
| Pipe Size | 15 | | |
| # of MH | 6 | | |
| New Manhole Size | 48 | | |
| Bypass Flow (MGD) | 0 | | |
| Major Impacts? (1 or 0) | | | |
| Rdwy Alignment | 0 | LF: | 0 |
| HWY XING | 0 | LF: | 0 |
| RR XING | 0 | LF: | 0 |
| Stream XING | 0 | LF: | 0 |
| Rock Excavation | 1 | LF: | 2459 |
| Dewatering | 1 | LF: | 1639 |

Width (ft)
Driveways (#)
Drwy Width (ft)
ROW (ft)
Curb and Gutter?
Sidewalk Length
Bike Path Width

5 ft Width
60 ft disturbance

| | | | |
|-------------------------|-------|-----|-------|
| Linear Feet | 14126 | | |
| Pipe Size | 12 | | |
| # of MH | 35 | | |
| New Manhole Size | 48 | | |
| Bypass Flow (MGD) | 0 | | |
| Major Impacts? (1 or 0) | | | |
| Rdwy Alignment | 0 | LF: | 0 |
| HWY XING | 0 | LF: | 0 |
| RR XING | 0 | LF: | 0 |
| Stream XING | 1 | LF: | 100 |
| Rock Excavation | 1 | LF: | 14126 |
| Dewatering | 1 | LF: | 9417 |

| Preliminary Cost Opinion for Pipe Segment "KR-04-1056 60" Tunnel" | | | | | | | | | | |
|--|------------|--|---------------|-----------------------|---------------------------------|--|------|-----|------|------|
| Project | | Total (J4366, 2005) | Total (2019) | Notes | | | | | | |
| KR-04-1056 | 60" Tunnel | \$ 24,000,000 | \$ 36,000,000 | (100/66.7)*2005 Costs | | | | | | |
| | | Probable Cost Opinion \$ 36,000,000 | | | | | | | | |
| <table border="1"> <thead> <tr> <th colspan="2">RSMeans Construction Cost Index</th> </tr> </thead> <tbody> <tr> <td>2019</td> <td>100</td> </tr> <tr> <td>2005</td> <td>66.7</td> </tr> </tbody> </table> | | | | | RSMeans Construction Cost Index | | 2019 | 100 | 2005 | 66.7 |
| RSMeans Construction Cost Index | | | | | | | | | | |
| 2019 | 100 | | | | | | | | | |
| 2005 | 66.7 | | | | | | | | | |

SEWER TRUNK RATE CALCULATION

Kings Run Sewer Trunk Rate Calculation

| Trunk Line | Pipe Section | Cost | Developable Acres | \$/Acre | With Outstanding Project Balances | |
|---------------------------------|----------------------------|--|----------------------|---------|--------------------------------------|-----------|
| Kings Run | KR-02-1117, KR-03-1061 | Extensions | \$ 9,903,000 | 2,987 | \$ 3,315 | |
| | | | \$ 9,903,000 | | | \$ 5,214 |
| Kings Run/NWT common benefit | *KR-01-1014 *KR-04-1056 | Crimson Ridge/ Overland Drive 60" Tunnel | \$ 142,921 | 2,987 | \$ 9,660 | |
| | | | \$ 18,809,166 | | | \$ 11,559 |
| | | | \$ 28,855,087 | | | |

*Costs split between KR and NWT by Dev Acres gained, see tables below.

Pro-rating Crimson Ridge/Overland Sewer costs between Kings Run and NWT by Developable Acres:

| District | Existing D.A. (source) | Ultimate D.A. (source) | D.A.'s Gained | Proportion | Project Cost | Proportioned Cost |
|-----------|------------------------|------------------------|---------------|------------|--------------|-------------------|
| Kings Run | 0 | 23 (GDP Homestead) | 23 | 5% | \$2,672,000 | \$142,921 |
| NWT | 73 (2016 Sewer Comp) | 480 (J7823) | 407 | 95% | | \$2,529,079 |

Pro-rating 60" Tunnel costs between Kings Run and NWT by Developable Acres:

(\$24m in 2005 J4366)

| District | Existing D.A. (source) | Ultimate D.A. (source) | D.A.'s Gained | Proportion | Project Cost | Proportioned Cost |
|-----------|------------------------|------------------------|---------------|------------|--------------|-------------------|
| Kings Run | 2341 (2016 Sewer Comp) | 5328 (J4366) | 2987 | 52% | \$36,000,000 | \$18,809,166 |
| NWT | 73 (2016 Sewer Comp) | 2803 (J2131) | 2730 | 48% | | \$17,190,834 |

| | | | |
|--|--------------|----------------------|----------|
| OUTSTANDING PROJECT BALANCE FOR KINGS RUN | \$ 5,670,343 | =(\$/All Dev. Acres) | \$ 1,898 |
|--|--------------|----------------------|----------|

Example Calculation

$$\frac{\text{Project Costs}}{\text{Developable Acres}} + \frac{\text{Outstanding Project Balance}}{\text{Developable Acres}} = \text{Sewer Trunk Rate with Outstanding Project}$$

Outstanding Trunk Sewer Project Balances

| J No. | Project Description | Balance | NW Territory | Kings Run | Hadley Valley | West Zumbro | South Zumbro | East Zumbro | Total |
|-------|---|-------------------------|---------------------|---------------------|---------------------|---------------------|-------------------|---------------------|----------------------|
| 2170 | Reconstruct 1st Ave SW from 4th St SW to Soldier's Field Park | \$ 397,400.00 | | | | | \$ 397,400 | | \$ 397,400 |
| 2175 | East Zumbro River Sanitary Sewer Interceptor from 37th St NW to 13 1/2 St NW | \$ 3,911,805.33 | | | | | \$ 271,936 | \$ 3,639,870 | \$ 3,911,805 |
| 4366 | Pump Station to Serve NW & Hadley Valley Area | \$ 1,400,000.00 | \$ 504,000 | \$ 546,000 | \$ 350,000 | | | | \$ 1,400,000 |
| 7703 | Subtrunkline Sanitary Sewer to Serve Portions of Sewer Service District 24 (Silver Creek) | \$ 820,000.00 | | | | | | \$ 820,000 | \$ 820,000 |
| 7708 | Construction of Kings Run Trunkline Relief Sanitary Sewer | \$ 2,100,000.00 | | \$ 2,100,000 | | | | | \$ 2,100,000 |
| 7712 | Gravity Interceptor Sewer Phase 1 | \$ 5,150,000.00 | \$ 1,372,949 | \$ 1,487,361 | \$ 2,289,690 | | | | \$ 5,150,000 |
| 7713 | Trunk Sanitary Sewer & Watermain to Serve portion of Section 7, Cascade Township west of 60th Ave NW (Sewer Service Area 28G) | \$ 250,000.00 | | \$ 250,000 | | | | | \$ 250,000 |
| 7721 | Relocate the T.H. 63 South Sanitary Sewer Trunkmain from 40th St SW to approximately 1000 feet north of 48th St SW | \$ 150,000.00 | | | | | | \$ 150,000 | \$ 150,000 |
| 7733 | Construct Sanitary Sewer Diverter in 12th Street North from West Silver Lake Drive NE to 2nd Ave NW and north along 2nd Ave NW to Cascade Creek | \$ 1,050,000.00 | | | | | \$ 72,992 | \$ 977,008 | \$ 1,050,000 |
| 7739 | Lift Station No. 4 Essex Park Lift Station Replacement | | | | | | | | |
| 7744 | Hadley Valley Trunk Sanitary Sewer to Serve portions of Sections 7, 8, 9, 16, 17, 18, 19, 20, & 21, Haverhill Township (Sewer Service Area 29A) - PHASE 2 | \$ 4,300,000.00 | | \$ 4,300,000 | | | | | \$ 4,300,000 |
| 7751 | Bear Creek Sub-trunkline Sanitary Sewer to Serve Portions of Sewer District 16 in Marion Township, Phase II. | \$ 1,486,680.00 | | | | | | \$ 1,486,680 | \$ 1,486,680 |
| 7754 | Parkwood Hills Sub-Trunkline Sanitary Sewer | \$ 112,309.94 | | | | | | \$ 112,310 | \$ 112,310 |
| 7758 | Hadley Valley trunkline sanitary sewer Phase 3A from 1/4 mile east of TH 63 easterly along 48th Street NE to Hadley Valley Road NE to serve portions of Sewer Service Area 29A. | \$ 1,600,000.00 | | | \$ 1,600,000 | | | | \$ 1,600,000 |
| 7759 | Construction of Interceptor 60 inch Sanitary Sewer from New Lift Station #4 to King's Run Trunkline Sanitary Sewer and the future NW Territory Trunkline Sanitary Sewer | \$ 984,581.58 | \$ 472,599 | \$ 511,982 | | | | | \$ 984,582 |
| 7772 | Parkwood Hills Sub-Trunkline Sanitary Sewer - Phase II | \$ 325,000.00 | | | | | | \$ 325,000 | \$ 325,000 |
| 9657 | Trunk sanitary sewer and watermain to serve portions of section 17, 18, 19 and 20 of Cascade Township, Sewer Service Area 28F | \$ 775,000.00 | | \$ 775,000 | | | | | \$ 775,000 |
| 9751 | Sub Trunkline SSA 6G Phase 1 | \$ 1,139,500.00 | | | | \$ 1,139,500 | | | \$ 1,139,500 |
| 9869 | Bear Creek Sub-Trunkline Sanitary Sewer to Serve Portions of Sewer District 16 in Marion Township. | \$ 638,320.00 | | | | | | \$ 638,320 | \$ 638,320 |
| | Totals | \$ 26,590,596.85 | \$ 2,349,548 | \$ 5,670,343 | \$ 8,539,690 | \$ 1,139,500 | \$ 742,328 | \$ 8,149,187 | \$ 26,590,597 |